SL D1/20.f.2 ~~030.1~~

Digitized by the Internet Archive
in 2016

https://archive.org/details/b24991454_0023

THE

CYCLOPÆDIA;

OR,

Universal Dictionary

OF

ARTS, SCIENCES, AND LITERATURE.

VOL. XXIII.

Printed by A. Strahan,
New-Street-Square, London.

THE

CYCLOPÆDIA;

OR,

UNIVERSAL DICTIONARY

OF

Arts, Sciences, and Literature.

BY

ABRAHAM REES, D.D. F.R.S. F.L.S. *S. Amer. Soc.*

WITH THE ASSISTANCE OF

EMINENT PROFESSIONAL GENTLEMEN.

COLLEGE OF PHYSICIANS

ILLUSTRATED WITH NUMEROUS ENGRAVINGS,

BY THE MOST DISTINGUISHED ARTISTS.

IN THIRTY-NINE VOLUMES.

VOL. XXIII.

LONDON:
PRINTED FOR LONGMAN, HURST, REES, ORME, & BROWN, PATERNOSTER-ROW,
F. C. AND J. RIVINGTON, A. STRAHAN, PAYNE AND FOSS, SCATCHERD AND LETTERMAN, J. CUTHELL,
CLARKE AND SONS, LACKINGTON HUGHES HARDING MAVOR AND JONES, J. AND A. ARCH,
CADELL AND DAVIES, S. BAGSTER, J. MAWMAN, JAMES BLACK AND SON, BLACK KINGSBURY
PARBURY AND ALLEN, R. SCHOLEY, J. BOOTH, J. BOOKER, SUTTABY EVANCE AND FOX, BALDWIN
CRADOCK AND JOY, SHERWOOD NEELY AND JONES, R. SAUNDERS, HURST ROBINSON AND CO.,
J. DICKINSON, J. PATERSON, E. WHITESIDE, WILSON AND SONS, AND BRODIE AND DOWDING.
1819.

SL

030.1
1849

CYCLOPÆDIA:

OR, A NEW

UNIVERSAL DICTIONARY

OF

ARTS and SCIENCES.

MATTHEW.

MATTHEW, or *Goſpel of St. Matthew*, a canonical book of the New Teſtament. The writer of this goſpel, an apoſtle and evangeliſt, ſurnamed Levi, and ſon of Alpheus, was, before his converſion to Chriſtianity, a publican, or toll-gatherer under the Romans. He was a native of Galilee, but of what city in that country, or of what tribe of the people of Iſrael, we are not informed. Jeſus found him at the receipt of cuſtom, and called him to be witneſs of his words and works, thus conferring upon him the honourable office of an apoſtle. From this time he continued with Chriſt; and after his aſcenſion, he was at Jeruſalem, and partook of the gift of the Holy Ghoſt, with the other apoſtles. With them he bore teſtimony to the reſurrection of Jeſus; and, as we may reaſonably ſuppoſe, preached for ſome time at Jeruſalem, and in various parts of Judea, confirming his doctrine with miracles, which God enabled him to perform in the name of Jeſus. Socrates, in the fifth century, ſays, that when the apoſtles went abroad to preach to the Gentiles, Thomas took Parthia for his lot, Matthew Ethiopia, and Bartholomew India; and it is now a common opinion, that Matthew died a martyr in Ethiopia, in a city called Naddabar, or Naddever; but the mode of his death is not aſcertained. Others ſpeak of his preaching and dying in Parthia or Perſia; but we may infer from the diverſity of theſe accounts, that none of them are well founded. Heracleon, a learned Valentinian, in the ſecond century, whom Clement of Alexandria has cited, reckons Matthew among thoſe apoſtles who did not die by martyrdom; nor does Clement contradict him. Chryſoſtom, though he mentions him with peculiar commendation, and ſpeaks of his "coming from the preſence of the council rejoicing," (ſee Acts, v. 41.) ſays nothing of his martyrdom. Hence we may infer, that there was not any tradition about it among Chriſtians at that time, or that it was not much regarded.

St. Matthew is ſaid by many to have written his goſpel in Judea, at the requeſt of the Jewiſh believers, when they were likely to be diſperſed by perſecution; and it is thought by ſome, as Baronius, Grotius, Voſſius, Jones, Wetſtein, &c. that he began it in the year 41, eight years after Chriſt's aſcenſion. But according to others, as Baſnage, Dr. Lardner, &c. who follow the teſtimony of Irenæus, this goſpel was written in the time of Nero, about thirty years after our Saviour's aſcenſion, or about the year 63, 64, or 65 of the vulgar epoch. At the year 64, or about that period, the goſpel had been propagated in many Gentile countries, the times were troubleſome in Judea, and the war was coming on: ſeveral of the apoſtles were dead, others of them, who ſurvived, were going abroad, and many of the Jewiſh believers were about to ſeek ſhelter elſewhere: now, ſays Dr. Lardner, was a proper time to write a hiſtory of Chriſt, and of his miracles. Moreover in this goſpel are recorded divers plain predictions of the miſeries and deſolations of Jeruſalem, and the overthrow of the temple and the Jewiſh ſtate, beſides many other figurative intimations of the ſame things in many of our Lord's diſcourſes and parables; which could not be well publiſhed to all the world in writing till about this time. The ſuitableneſs of St. Matthew's goſpel to the ſtate of the Chriſtian religion, and of the Jewiſh people, about the year 64 or 65, leads to that time. And however unwillingly, from private apprehenſions and prejudices, we may admit the thought of protracting ſo long the writing of the hiſtory of our Lord's miniſtry; the circumſtances of things, ſays Lardner, will conſtrain us to acquieſce in this ſeaſon as the moſt likely. Cave thought that it was written about the 15th year after our Saviour's aſcenſion, in the year 48. It was written, according to the teſtimony of moſt of the ancients, as Papias, A. D. 116, Irenæus in 178, Origen in 230, Euſebius in 315, Athanaſius, Cyril of

Strahan and Preſton.

Jeruſalem, Epiphanius, Gregory Nazianzen, Jerome, Chryſoſtom, &c. in the Hebrew or Syro-Chaldaic language, which was then common in Judea; but the Greek verſion of it, which now paſſes for the original, is ſaid to be as old as the apoſtolical times. However, many learned moderns, as Fabricius, Eraſmus, Lightfoot, Calvin, Le Clerc, Beauſobre, Whitby, &c. are of opinion, that this goſpel was firſt written in Greek, which was much uſed at that time throughout the whole Roman empire, and particularly in Judea: and it is alleged that Papias, who firſt advanced the contrary opinion, was a weak and credulous man. Jones, Baſnage, Lardner, Jortin, &c. are of this opinion. Dr. Lardner obſerves on this point, that if St. Matthew did not write till about thirty years after our Lord's aſcenſion, which he thinks moſt probable, he would uſe the Greek language; but if he wrote his goſpel within the ſpace of eight years after Chriſt's aſcenſion, it is moſt likely that he wrote in the Hebrew. He adds, farther, that there was very early a Greek goſpel of St. Matthew, cited or referred to by Clement of Rome, Ignatius, Polycarp, Juſtin Martyr, and others, none of whom intimate that they made uſe of a tranſlation: that many of the ancients do not ſeem to have fully believed that Matthew wrote in Hebrew, becauſe they have ſhewn very little regard to the Hebrew edition of it: that there are not in our Greek goſpel of St. Matthew any marks of a tranſlation: that there is no where any probable account who tranſlated this goſpel into Greek; and beſides, as the Greek goſpel was tranſlated into Hebrew in very early days of Chriſtianity, many not examining it particularly, nor indeed being able to do it, for want of underſtanding the language, might imagine, that it was firſt written in Hebrew. Hence, according to Dr. Lardner, ſprung the opinion, that Matthew publiſhed his goſpel at Jeruſalem, or in Judea, for the Jewiſh believers, and at their requeſt, before he went abroad to other people: whereas he apprehends, that this goſpel, as well as the others, were written and intended for believers of all nations; and that the Nazarene goſpel was St. Matthew's goſpel, tranſlated from Greek, with the addition of ſome other things, taken from the other goſpels, and from tradition. Allowing the date of this goſpel already aſſigned, he cannot conceive the reaſon why Matthew ſhould write in Hebrew any more than any of the other evangeliſts; for it may be reckoned highly probable, or even certain, that he underſtood Greek, before he was called by Chriſt to be an apoſtle. Whilſt a publican, he would have frequent occaſions both to write and ſpeak Greek, and could not diſcharge his office, without underſtanding that language.

According to the teſtimony of Irenæus, all the Jewiſh believers in general received the goſpel of St. Matthew entire, with the genealogy at the beginning: for Irenæus ſays expreſsly that Matthew "ſtrove by all means to give to the Jews full ſatisfaction, that Chriſt was of the ſeed of David: wherefore he began with his genealogy." The firſt chapter of this goſpel is quoted by Juſtin Martyr (A.D. 140) in his Firſt Apology; by Tertullian (A. D. 200), who ſays that Matthew, "for no other reaſon than that we might be informed of the origin of Chriſt according to the fleſh, began in this manner:"—"The book of the generation of Jeſus Chriſt, the ſon of David, the ſon of Abraham." Novatus (A. D. 251) ſeveral times quotes the firſt chapter of this goſpel. The ſecond chapter is referred to by Ignatius (A. D. 107), and by Hegeſippus (A. D. 173), whence we are led to conclude, that this part of St. Matthew's goſpel was owned by this Hebrew Chriſtian. Epiphanius, however, informs us, that the goſpel of the Ebionites begins thus: "It came to paſs in the days of Herod, the king of Judea, that John came baptizing with the baptiſm of repentance in the river Jordan," which is the beginning of the third chapter of St. Matthew, a little altered: and he ſays expreſsly, that their goſpel called according to Matthew, is "defective and corrupted." It is nevertheleſs plain from a paſſage in Hegeſippus, that he received the hiſtory in the ſecond chapter of St. Matthew; ſo that, as Lardner ſuggeſts, he uſed our Greek goſpel. Or, if he uſed only the Hebrew edition of St. Matthew's goſpel, this hiſtory muſt have been in it in his time. The firſt and ſecond chapters of this goſpel are referred to in the Sibylline oracles, a work of the ſecond century, according to Lardner: and the ſecond chapter is alluded to by Victorinus (A. D. 290.) Cerinthus, an early heretic, who is ſuppoſed to have lived in or near the age of the apoſtles, made uſe of the beginning of St. Matthew's goſpel, and from thence endeavoured to prove, that Jeſus was deſcended in a natural way from Joſeph and Mary. Theſe chapters, however, are of doubtful authenticity, and have been rejected by ſeveral ancient and modern writers; and the candid reader muſt allow that they are liable to various objections. The external teſtimony againſt them is ſtrong; and their contents preſent us with difficulties that are not eaſily ſolved. It has been alleged, that though the ancients, with one conſent, affirm that the goſpel by St. Matthew was originally publiſhed in Hebrew or Syro-Chaldaic, ſome of them repreſent the copies of it as not having the two firſt chapters; and this circumſtance, it is ſaid, affords a ſtrong preſumption againſt their authenticity. Whether this Syro-Chaldaic or Hebrew goſpel be the original copy or not, ſuch a copy certainly exiſted at a very early period; and its authority muſt be allowed to have conſiderable weight in deciding this queſtion; eſpecially when it is conſidered that we have no *certain* references or alluſions to theſe chapters till the days of Celſus the Epicurean, about the year 150, or later, and of Irenæus, about 178. As to this Hebrew copy, the reception of it by the Ebionites, and perhaps alſo by the Nazarenes, yields a ſtrong argument in ſavour of its authority. Epiphanius ſays, that the Nazarene goſpel was *πληρεστατον*, *i. e.* moſt entire, but that the Ebionite goſpel was *ουχ ὁλω πληρεστατον*, *i. e.* not altogether entire. The former, it is thought by ſome, was the true original copy of St. Matthew; and the latter might be, in ſome degree, corrupted. Irenæus, Euſebius, and Epiphanius ſay, that the goſpel received by the Nazarenes and Ebionites was the goſpel of Matthew altered in ſome particulars, according to their different ſentiments. Dr. Lardner adopts this opinion. Dr. Mills thinks, that the Nazarenes and Ebionites had the trueſt copy of St. Matthew's Hebrew goſpel. That this Hebrew goſpel was the original of St. Matthew, and that he wrote his goſpel in Hebrew, is maintained by Papias, A.D. 116, the diſciple and companion of Polycarp; Irenæus, A.D. 148; Tatian, A.D. 172; Hegeſippus, A.D. 173; Origen, A.D. 230; Euſebius, A.D. 315; Pantænus, A.D. 192; Cyril of Jeruſalem, Epiphanius, Gregory Nazianzen, Jerome, Auguſtin, Chryſoſtom, Iſidore of Seville, Theophylact, and ſeveral other orthodox writers. Nor was this fact queſtioned, it has been ſaid, till of late; for Eraſmus was one of the firſt, who, in oppoſition to all antiquity, aſſerted that Matthew wrote in Greek; and he has been followed by many ingenious moderns; ſuch are cardinal Cajetan, Oecolampadius, Flaccius Illyricus, Calvin, Voſſius, and other foreigners, and Dr. Lightfoot, Dr. Whitby, Mr. Jer. Jones, Dr. Lardner, and other Engliſh divines.

Thoſe who allow that there was a Syro-Chaldaic goſpel of St. Matthew extant in very early times, and that the Nazarenes and Ebionites believed and declared it to be the original of St. Matthew, are nevertheleſs of opinion, that this goſpel was originally written in Greek. To this purpoſe they allege, that the preſent Greek copy has no mark of a tranſlation; that the Greek was the moſt proper language, becauſe it was the moſt univerſal; and that St. Matthew, who was a publican before he became an apoſtle, muſt have been acquainted with it; that if our preſent copy of St. Matthew's goſpel be only a tranſlation, it muſt be of very doubtful and precarious authority, and that it muſt appear to be very ſtrange and ſurpriſing that this Syro-Chaldaic goſpel ſhould be ſo ſoon loſt, if it had been the work of an apoſtle. But to return from this digreſſion to the queſtion concerning the genuineneſs of the two firſt chapters: it has been urged that theſe chapters were not referred to for a conſiderable time after St. Matthew's goſpel was publicly known. It is not certain that they are referred to by any of thoſe who are uſually called the apoſtolical fathers, though theſe fathers frequently refer to other parts of the goſpel. Under this claſs we may comprehend Barnabas, A.D. 71; Clement of Rome, A.D. 96; Hermas, A.D. 100; Polycarp, A.D. 108. Irenæus, without doubt, acknowledged both the chapters as the genuine production of St. Matthew; ſo do alſo Clement of Alexandria, A.D. 194, and Tertullian, A.D. 200; and as we deſcend to later periods, alluſions to them more frequently occur. The firſt and ſecond chapters of St. Matthew's goſpel are inſerted in the Syriac verſion of the New Teſtament, and this may be conſidered as a ſtrong argument in favour of their authenticity. The arguments from external teſtimony againſt their authenticity may be ſummed up in the following epitome: we have undoubted evidence that theſe two chapters were wanting in ſome very ancient copies of this goſpel, which were uſed by the firſt Chriſtians; the Ebionites certainly omitted theſe chapters, and we know that the genealogy was omitted by other Chriſtians, nor have we any reaſon to think that they were inſerted in the Hebrew or Syro-Chaldaic copy, which all the fathers jointly affirm to have been the original of St. Matthew: it is not probable that they would have been expunged, if they had been genuine, becauſe there was but one point, *viz.* our Saviour's birth of a virgin, by which they ſeemed to oppoſe the notions of ſome particular ſects of Chriſtians, and that thoſe ſects might have overcome the difficulty in a much ſafer way, by either reaſoning, as Cerinthus actually did, from the genealogy, that Jeſus was the ſon of Joſeph and Mary; or by receiving St. Mark's goſpel, and rejecting St. Matthew's altogether. The collateral arguments againſt the authenticity of theſe chapters, deduced from their contents, are ſuch as follow: it has been agreed by many writers, that St. Mark, in moſt places, agrees with the method and order of both St. Matthew and St. Luke, and ſo doth alſo St. John, after a ſhort introduction concerning the Logos. St. Mark begins his goſpel at what we call the third chapter of St. Matthew; that is, at the time when John came baptizing in the wilderneſs. As it is moſt probable that St. Luke was the firſt who publiſhed a goſpel, and as he had given the genealogy, and a full account of the birth, &c. of Chriſt, there was no neceſſity for thoſe who came after him to repeat the ſame things, as they were not particularly important to the virtue and happineſs of man, the great end which our Saviour and his diſciples had in view. Beſides, St. Luke's account of the birth of Jeſus, and of all the events which followed it, till Joſeph and Mary carried him home to Nazareth, which he has fully detailed, is totally different from that which is found in the firſt and ſecond chapters of St. Matthew's goſpel. No coincidence occurs, except in Chriſt's being born at Bethlehem of a virgin, and in his dwelling at Nazareth. Hence it is inferred, that the abſolute ſilence of St. Luke, reſpecting many remarkable events ſuppoſed to be related by St. Matthew, yields a ſtrong negative argument againſt the authenticity of theſe two chapters. There is alſo in the contents of theſe chapters ſomething peculiar both in the ſentiments and language, ſuch as does not occur in other parts of the New Teſtament, chap. i. 20. ii. 12, 13. 19. 22. The appearance of a ſtar in the eaſt, directing the wiſe men to the new-born Meſſiah, in Judea, has, it has been ſaid, more the air of an eaſtern invention than of a real hiſtory. In chap. ii. v. 3. a circumſtance is mentioned that is ſcarcely credible, *viz.* that "when Herod the king had heard theſe things, he was troubled, and *all Jeruſalem* with him." Another peculiarity in theſe chapters is the behaviour of the Magi to the child Jeſus; "they fell down and worſhipped him," chap. ii. 11. Moreover, Dr. Wall obſerves, that the account of the genealogy in St. Matthew is the moſt difficult to reconcile with St. Luke, or with itſelf, of any place in the goſpel: he adds that there are more difficulties in theſe two chapters than in the whole Bible beſides. There are alſo in theſe two firſt chapters ſeveral prophecies of the Old Teſtament, ſaid to be fulfilled, but which cannot eaſily be made to correſpond with the events by which they are declared to be accompliſhed. (See chap. i. 22, 23. chap. ii. 6. compared with Micah. v. 2.) The ſlaughter of the infants at Bethlehem, though a very remarkable fact, is not mentioned by any writer but by the ſuppoſed St. Matthew in this ſecond chapter, and by thoſe who quote from him. To this is annexed a prophecy, cited from Jerem. xxxi. 15, &c. ſuppoſed to relate to a totally different ſubject. The paſſage cited from Hoſea, xi. 1. does not ſeem to have the moſt diſtant reference to the Meſſiah. (See ACCOMMODATION.) The flight from Bethlehem ſeems to have been impracticable; and from Nazareth it was altogether unneceſſary, becauſe the ſlaughter of the infants did not extend ſo far.

In order to account for the interpolation of theſe two chapters, without impugning the authenticity of the whole goſpel, thoſe who diſpute their genuineneſs, and maintain that the difficulties which they furniſh cannot be obviated by the records of hiſtory and the aid of criticiſm, recur to one or other of the following hypotheſes. They take for granted that the goſpel was originally written in the Syro-Chaldaic language; and that when it was tranſlated into Greek, the body of Chriſtians had little acquaintance with the language of the original, and therefore left the tranſlator at liberty to add, or, if he had been ſo diſpoſed, to take away what he pleaſed, without much danger of detection. If the tranſlator was a believing Jew, it is poſſible that he might think a few prophecies, cited from the Old Teſtament, by way of accommodation, would have conſiderable influence upon ſome of his unbelieving brethren abroad, who, having never ſeen the original, would naturally think that the Greek copy was, in every reſpect, a faithful tranſlation of that original. Or, this interpolation might have happened without the leaſt deſign. Theſe chapters might originally be a kind of introduction to the goſpel of St. Matthew, drawn up by the tranſlator of it into Greek, and never intended by him to be conſidered as a part of it. When the Greek copy of the goſpel was ſpread abroad, thoſe who were unacquainted with the original would naturally think, that, as it was called the goſpel by St. Matthew, it contained nothing but the authentic writing of that apoſtle; and accordingly, it might be received as ſuch in the countries out of Judea. When Origen, Jerome, &c. perceived that theſe chapters were wanting in the Ebionite goſpel, there was nothing unnatural in their ſuppoſing, that they were left out with deſign, becauſe the Ebionites, &c. were then conſidered as heretics, and, of conſequence, capable of any fraud or impoſture. The Greek copy of St. Matthew ſoon gained reputation, becauſe it was uſed by the generality of Chriſtians, whereas the Syro-Chaldaic copy was uſed by only a few poor Jewiſh converts in Paleſtine; and theſe, reputed enemies to the true faith. Hence the former copy would be deemed of much greater reputation than the latter. Upon the whole it ſhould be obſerved, that no doctrine, or fact in Chriſtianity, will be affected by the omiſſion of the firſt and ſecond chapters of St. Matthew; for as to the genealogy, birth, &c. of Chriſt, we have, in St. Luke's goſpel, a full and conſiſtent account of them; whereas theſe chapters contain ſcarcely any thing that is not difficult and liable to objections. We do not, however, think the difficulties incapable of ſolution, nor the objections altogether unanſwerable. Profeſſor Michaelis, in his "Introductory Lectures, &c." ſtates, that if theſe chapters had been wanting in St. Matthew's original text, they ought not to be immediately rejected as an interpolation; for they may have been a ſeparate writing of St. Matthew, deſigned by him to give an account of the childhood of Chriſt, to which he prefixed the title Βιβλος γενεσεως, and to prevent its being loſt as a ſeparate compoſition, the tranſlator, as it related to the ſame ſubject, might join it to the goſpel of St. Matthew. The profeſſor acknowledges the difficulties that occur in theſe two chapters, but he thinks it unwarrantable to reject them on that account. See Williams's Free Enquiry, &c. firſt publiſhed in 1771, and republiſhed with additions in 1789. Michaelis's Introduction to the New Teſtament, by Marſh, vol. iii. part 1.

Matthew of Weſtminſter, in *Biography*, an ancient Engliſh chronicler, and Benedictine monk of the abbey of Weſtminſter, flouriſhed in the fourteenth century: he compiled a chronicle in Latin, commencing from the creation, and proceeding down to the year 1307, which was entitled "Flores Hiſtoriarum," hence its author was named "Florilegus." This work related almoſt entirely to Engliſh hiſtory, and is freely tranſcribed from Matthew Paris and others. The writer is applauded for veracity and accuracy, but biſhop Nicolſon holds him up as a mere compiler, without any great degree of judgment. The "Flores Hiſtoriarum," &c. was publiſhed at London in 1567, and again at Frankfort in 1601. It is divided into three books, 1. From the creation to the birth of Chriſt; 2. From that period to the Norman Conqueſt; and 3. From thence to the beginning of Edward II.'s reign. A period of ſeventy years was added by other hands. Gen. Biog.

Matthew, *St.*, in *Geography*, an iſland in the Atlantic ocean, diſcovered in 1516 by the Portugueſe, who have a ſettlement on the iſland. S. lat. 1° 45′. W. long. 13 .—Alſo, an iſland in the Indian ſea, near the coaſt of Siam. N. lat. 9° 35′. E. long. 97 52′.—Alſo, a river of Lower Siam, which runs into the Eaſt Indian ſea, N. lat. 10° 5′.

Matthew's *Bay*, *St.*, a bay in the gulf of Mexico, W. of the gulf of Campeachy.—Alſo, a bay called *Mattheo* bay, on the coaſt of Peru, in the North Pacific ocean; ſix leagues to the N.E. by E. from Point Galera, and five or ſix leagues S.S.W. from the river St. Jago, with anchorage all the way.

Matthew's, *St.*, *Day*, is a feſtival obſerved on the 21ſt of September.

Matthew's *Shoals*, *St.*, in *Geography*, two rocky iſlets ſurrounded with ſhoals, in the Eaſt Indian ſea. S. lat. 5° 14′. E. long. 124 54′.

MATTHEWS, a county of Virginia, 18 miles long and ſix broad, bounded W. by Glouceſter, N. by Middleſex, E. by the Cheſapeak, and S. by Mobjack bay; 193 miles from Waſhington.

MATTHIAS, St., in *Scripture Hiſtory*, an apoſtle, who was choſen in the room of Judas. He was qualified for the office to which he was appointed, by having been a conſtant attendant on our bleſſed Lord during the courſe of his miniſtry, and was probably one of the 70 diſciples. He preached in Judea and part of Ethiopia, and ſuffered martyrdom. The traditions, and alſo the goſpel of Matthias, are ſpurious. See Gospel.

Matthias's *Day*, *St.*, a feſtival of the Chriſtian church, obſerved on the 24th of February.

Matthias, in *Biography*, emperor of Germany, ſon of the emperor Maximilian II. was born in 1557. When he was twenty years of age, he was invited by the revolted ſtates of the Low Countries to take upon himſelf the government of thoſe provinces, which he accepted, appointing the prince of Orange to act as his lieutenant. His power was very circumſcribed, and ſerved only to give a ſort of reputation to the revolters as their nominal head; and in 1581, through the jealouſy of the houſe of Auſtria, he was honourably diſmiſſed. In 1594, he was appointed general of the army which his brother Rodolph II., emperor of Germany, ſent againſt the Turks. In this ſervice he was very ſucceſsful, and ſo well ingratiated himſelf with the Hungarians, that they conferred upon him the moſt diſtinguiſhed honours, and in 1607 elected him their king, on condition that he ſhould confirm all their privileges, and allow the Proteſtants the free exerciſe of their religion. After this he was proclaimed king of Bohemia, in prejudice to his own brother Rodolph, and was crowned at Prague in the year 1611: he had, previouſly to this, obliged his brother to yield him the poſſeſſion of the archduchy of Auſtria: and on the death of Rodolph, in 1612, Matthias was elected to ſucceed him. Such was the rapid elevation of this prince; but ſoon after he ſucceeded to the empire, a diet was convoked at Ratiſbon, at which the Proteſtants agreed to preſent a memorial to the emperor, complaining of his privy-council for interfering in various matters relative to religion, over which they, by right, had no juriſdiction, and making ſeveral demands for the purpoſe of ſecuring to them an equal adminiſtration of juſtice. An evaſive anſwer was given, and the Proteſtants declined giving ſupplies of men and money to the empire till their grievances were redreſſed. The Catholics, on the other hand, recriminated on the Proteſtants, and, during their conteſts, the Turks made an irruption into Tranſylvania. After a variety of fortune, in which Bethlem Gabor took a diſtinguiſhed part, peace was made in 1615, by which the grand ſeignor reſtored to the houſe of Auſtria all the places in Hungary that had been conquered by his arms, and re-inſtated the owners of all lands that had been alienated. Matthias now reſolved to curb his Proteſtant ſubjects; and took meaſures accordingly. The Proteſtants were, however, enabled to procure a convocation of the ſtates, and ſent deputies to renew their remonſtrances before the council. Theſe, being rouſed by the ill treatment which they experienced, could not reſtrain their paſſions, and actually threw ſeveral of the members of the council out of the window; but fortunately no lives were loſt on the occaſion. The count de la Tour, who was the principal actor in this buſineſs, foreſeeing its probable conſequences, perſuaded the Proteſtants to take up arms in their own defence. Matthias ſaw he had carried matters too far, and endeavoured to reclaim them by gentle means; but they returned bold remonſtrances to his declarations, and accuſed his prime miniſter, Kleſel, cardinal and archbiſhop of Vienna, of promoting the perſecutions that they had ſuſtained. The Proteſtants of Sileſia were equally diſcontented, and made an alliance with the Bohemians, who were now in a ſtate of actual rebellion. This was the commencement of that thirty years war which deſolated Germany, and was productive of ſo many great and diſaſtrous events. Matthias was obliged to baniſh his miniſters, and the war between the Proteſtants and Catholics began with various ſucceſs, but in the end Bohemia remained in the power of the Proteſtants. Matthias died in 1619, at the age of ſixty-three, after a reign of ſeven years as emperor. He left no legitimate iſſue, and recommended moderation to his ſucceſſor Ferdinand. Univer. Hiſt.

Matthias Corvinus, king of Hungary, ſon of the celebrated Huniades, was a priſoner at his father's death, together with his elder brother Ladiſlaus, on account of the ſhare which the latter had in the aſſaſſination of the count de Cilley, for which he was afterwards executed. Matthias was detained in cuſtody at Vienna, whence he was removed by a counterfeit order to Bohemia. He was ſtill held in confinement at Prague, but upon the death of Ladiſlaus the Poſthumous, in 1458, he was elected king of Hungary, being then about the age of eighteen. From his very early youth he had manifeſted a martial ſpirit, and had excelled in warlike exerciſes. He could not obtain his liberation from the hands of the governor Podzebraſki, till he had paid a large ranſom and married his daughter. The emperor Frederic, having got poſſeſſion of the ancient crown of Hungary, refuſed to deliver it up, and Matthias found himſelf obliged to go to war for its recovery, which at length he procured by a treaty. He then marched into Boſnia, and recovered Jaycza, the capital, from the Turks, which ſultan Mahomet afterwards vainly attempted to reconquer. In 1468, he made a truce with the Turks, and being at peace in his own dominions, he was induced, as well from motives of ambition, as by the perſuaſions of the pope, to accept the crown of Bohemia offered him by the pontiff, on condition of extirpating the hereſy of the Huſſites in that country. Againſt this harmleſs people, and his father-in-law, the king of Bohemia elect, he carried on a ſanguinary war, which was terminated by a treaty, ſecuring to him the crown after the death of Podzebraſki. Two years afterwards, that event took place, but the Bohemians elected Uladiſlaus, ſon of the king of Poland. Matthias, enraged at this proceeding, marched an army into the country, in order to compel the people to acknowledge him for their ſovereign; he was however ſhortly recalled by a rebellion in Hungary, led on by Caſimir, ſecond ſon of the king of Poland, to whom the crown had been offered. Matthias ſtopped his progreſs, and, in his turn, became the aggreſſor. War was continued till 1475, when, by a treaty, the king of Poland kept Luſatia, and the part of Sileſia bordering on Bohemia, and Matthias retained the reſt of Sileſia and Moravia. While engaged in theſe conteſts, the Turks were making great progreſs in the frontiers of Chriſtendom: Matthias, as ſoon as he had leiſure, turned his arms againſt them, and having, in a meaſure, attained his object, he attacked the emperor Frederic III., with whom he had a quarrel in 1478. After ravaging Auſtria, and laying ſiege to Vienna, he conſented to withdraw his troops, on being paid the expences of the war, and receiving the inveſtiture of Bohemia from the emperor, who was to renounce his title of king of Hungary. The payment being refuſed, and the title ſtill retained, Matthias invaded Lower Auſtria, of which, together with Vienna, he made himſelf the complete maſter in 1487. He died in that city in 1490, about the fiftieth year of his age, leaving no iſſue but a natural ſon. Matthias was reckoned one of the moſt ſplendid monarchs of his age; a man of great enterprize, and of fine military talents, liberal and magnificent, an encourager of learning and the fine arts: he was himſelf acquainted with a variety of languages, and was lively and pleaſant in converſation. He was, however, ambitious, and ſo violent in his temper, as ſometimes to ſurpaſs, in his reſentment, the boundaries of juſtice and humanity, though he was at no time deſtitute of the generoſity and magnanimity that characterize a great prince. Univer. Hiſt.

Matthias, *St.*, in *Geography*, an iſland in the Eaſt Indian ſea, about 90 miles in circumference. St. lat. 1 50′. E. long. 144° 30′.

MATTHIEU, Peter, in *Biography*, was born at Porentru, in France, of a family in humble life. He ſtudied among the Jeſuits, became principal of the college of Verceil, and was afterwards an advocate at Lyons. He attached himſelf to the ſtudy of the belles lettres, but was particularly partial to hiſtory, to which he chiefly devoted himſelf when he took up his reſidence at Paris. He had an intention of writing the hiſtory of Alexander, prince of Parma, but was not permitted to ſtay long enough in the country to accompliſh his deſign. He was introduced to Henry IV. by the preſident Jeannin, and at the death of Du Haillon was made hiſtoriographer of France. He was aſſiduous in collecting memoirs of every kind, relative to the times in which he lived, as well as the earlier periods of French hiſtory. He was continued in his office by Lewis XIII., and accompanied that king in his wars againſt the Hugonots. He died at Toulouſe in 1621. His works are not reckoned among thoſe of the firſt rank, but they are eſteemed exceedingly uſeful for elucidating the periods on which he treats: among theſe are the following; "L'Hiſtoire des Choſes memorables arrivèes ſous le Regne de Henri le Grand:" "Hiſtoire de la Mort dèplorable de Henri le Grand:" "Hiſtoire de St. Louis—et Louis XI.;" "Hiſtoire de France ſous François I., Henri II., François II., Charles IX., Henri III. et IV., et Louis XIII." This laſt was a poſthumous work, and publiſhed by his ſon, who continued the hiſtory of Lewis XIII. to 1621. He was author of ſome moral verſes, entitled "Quatrains ſur la Vie et la Mort;" and the tragedy "La Guiſade." Moreri.

MATTHIOLA, in *Botany*, is a genus of Plumier's, named by him after Peter Andrew Matthiolus, the moſt popular commentator on Dioſcorides; ſee the following article. Linn. Gen. 566. Schreb. 131. Willd. Sp. Pl. v. 1. 998. Mart. Mill. Dict. v. 3. Juſſ. 206. Plum. Gen. 16. t. 6.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Rubiaceæ*, Juſſ.

Gen. Ch. (according to Linnæus) *Cal.* Perianth cylindrical, entire, erect, ſhort, permanent. *Cor.* of one petal, very long, its ſlender tube gradually terminating in an undivided limb, waved at the margin. *Stam.* Filaments five, awl-ſhaped, ſhorter than the corolla; anthers ſimple. *Piſt.* Germen globoſe, inferior; ſtyle thread-ſhaped, the length of the corolla; ſtigma thickiſh, blunt. *Peric.* Drupa globoſe, of one cell, crowned with the calyx. *Seed.* Nut globoſe, with a globoſe kernel.

Eſſ. Ch. Corolla tubular, ſuperior, undivided. Calyx entire. Drupa with a globoſe nut.

1. M. *ſcabra*. Rough Matthiola. Linn. Sp. Pl. 1661. (M. folio aſpero ſubrotundo, fructu nigricante; Plum. Ic. 166. t. 173. f. 2. Rategal, arbore indiano; Zann. Iſt. 167. t. 75. f. 1, 2? Guettarda ſcabra; Vent. Choix de Pl. 1. t. 1.)—Gathered by Plumier in the Weſt Indies. Ventenat ſays, it is a native of the Caribbee iſlands.

This has always been a very obſcure plant. Plumier repreſents

preſents it as a *ſhrub*, with ſcattered, obovate, entire, very rough *leaves*, the *flowers* ſomewhat cymoſe, with pinnated *bracteas*. This laſt character however is erroneous, as well as the ſame author's figure and deſcription of the *flower*, from whence Linnæus took his generic characters. Reichard and Swartz have long ago ſuſpected the *Matthiola* to be a *Guettarda*, and Ventenat has at length reduced it to that genus, in the new work, left unfiniſhed at his death, entitled *Choix de Plantes*. He ſaw the plant in flower in the gardens at Paris, and appears to have had no doubt of its being the ſame as Plumier's. See GUETTARDA ; to the ſpecies of which this ſhould now be added, by the name of

G. *ſcabra*. Leaves obovate, pointed, rough; rugged above; veiny beneath. Flowers with ſix ſtamens.—The *ſtem* is as thick as that of an apple-tree, with numerous, horizontal, widely ſpreading branches, whoſe ſubdiviſions are oppoſite, round, rough, with ſhort grey hairs, and leafy at the extremity. *Leaves* oppoſite (not ſcattered), on ſhort thick ſtalks, accompanied by a pair of awl-ſhaped *ſtipulas*. They are three inches long and above an inch broad, rough like the foliage of a fig, obovate, or ſomewhat elliptical, ſlightly wavy; dark green above; downy and whitiſh beneath. *Flower-ſtalks* axillary, ſhorter than the leaves, divided at the top into two ſpreading denſe ſpikes of white, ſilky, ſhort-lived, highly ſcented *flowers*, much reſembling a jaſmine. The *bracteas* are lanceolate and crowded, ſo that Plumier's figure, though not very inaccurate, eaſily miſled Linnæus. The limb of the *corolla* is divided into ſix oval horizontal ſegments, one-third the length of its tube. *Drupa* as big as a cherry, black and bitter, its nut of from four to ſix cells.—This ſeems to be what Lamarck has figured in his t. 154. f. 3. He, like Ventenat, has properly preferred the name *Guettarda*, to the more ancient one of *Matthiola*, becauſe of the number of ſpecies already known under the former appellation, which it would be inconvenient to call *Matthiolæ*. So the old *Genipa* of Plumier is rightly ſunk in the modern but better known *Gardenia*. The ſynonym of Zannoni, quoted by Linnæus with heſitation, ought ſurely to be excluded. See GUETTARDA and GARDENIA.

MATTHIOLUS, or MATTIOLI, PETER ANDREW, in *Biography*, an eminent phyſician, and medical botaniſt, was born at Sienna, in Tuſcany, in the year 1501, where his father practiſed the ſame profeſſion. His early education was received at Venice; and thence he was ſent to the univerſity of Padua, for the purpoſe of ſtudying the law; for which, however, he conceived an antipathy, and turned his attention to medicine. His ſtudies were prematurely interrupted by the death of his father; but his conduct had acquired for him the good opinion of the profeſſors, who gave him the degree of doctor before his departure from the univerſity. He returned to Sienna, where he ſpeedily ſucceeded in finding ample employment. He appears, however, to have quitted his native place ſubſequently, and to have gone to Rome; whence he removed, in 1527, to the court of cardinal Bernardo Cleſio, prince biſhop of Trent, who held him in great eſtimation. He reſided 14 years in the valley of Anania, in the diſtrict of Trent, where he acquired the reſpect and affection of the inhabitants to ſuch a degree, that on his departure, men, women, and children accompanied him on his way, calling him their father and benefactor. He next ſettled as public phyſician at Gorizia, where a ſingular proof of the eſteem in which he was held was likewiſe given; when a fire having conſumed all his furniture, the people flocked to him the next day, with preſents of goods and money, that made him richer than before, and the magiſtrates advanced him a year's ſalary. After a reſidence of twelve years at Gorizia, he accepted an invitation from Ferdinand, king of the Romans, to take the office of phyſician to his ſon, the archduke Ferdinand. He was greatly honoured at the imperial court, and in 1562 was created aulic-counſellor to the emperor Ferdinand. Afterwards Maximilian II. prevailed upon his brother to part with him, and made him his firſt phyſician. Finding, however, the weight of age preſſing upon him, Matthiolus took leave of the court, and retired to a life of repoſe at Trent, where he ſoon after died of the plague, in the year 1577.

He left ſeveral works, of which the following are the titles: "Dialogus de Morbi Gallici curatione," printed in the collection of Luiſinus. "Apologia verſus Amatum Luſitanum," Venice, 1558. "Epiſtolarum Medicinalium, Libri V." Prague, 1561. "Diſputatio adverſus viginti Problemata Melchioris Guilandi," Ven. 1563. "Opuſcula de Simplicium Medicamentorum Facultatibus ſecundum genera et loca," ibid. 1569; which is a compendium of vegetable materia medica. His Epiſtolæ alſo relate chiefly to the virtues of plants, and their mode of exhibition.

The great work, however, by which this phyſician acquired his fame and honour, was his commentary on the writings of Dioſcorides. His firſt Commentaries in illuſtration of this ancient botaniſt, were printed at Venice in 1548, in the Italian language, with the title of "Il Dioſcoride, con li ſuoi diſcorſi, aggiuntovi il ſeſto libro de gli antidoti contra tutti i veneni." It was ſoon twice reprinted. He afterwards publiſhed it in the Latin language, and with the addition of ſmall cuts, in 1554, with the title of "Commentarii in ſex Libros P. Dioſcoridis, adjectis quamplurimis plantarum et animalium imaginibus." Numerous editions, in Latin, enlarged and improved, were afterwards given; and the work was alſo many times reprinted in Italian, and in French and German tranſlations by different perſons. The beſt edition is that of Venice, 1565, folio, with large plates. Haller remarks, when ſpeaking of the value of this work, that while the author was deeply verſed in the ſtudy of the Arabians and their followers, he too much neglected the original ſources, and the examination of plants. He was, therefore, frequently impoſed upon by his correſpondents, and ſometimes even gave fictitious repreſentations of plants, drawn merely from the deſcriptions of the ancients. He did not, however, altogether neglect the examination of plants; for he diſcovered ſeveral in Bohemia, and the diſtrict about Gorizia, the medicinal properties of which he made the ſubject of experiments on malefactors. He certainly contributed much to lay the foundation of botanical ſcience; but, as Eloy remarks, the multitude of editions and verſions of his work evinces the penury of the age in botanical books. An edition of all his works was publiſhed by Caſpar Bauhin, with the addition of more than three hundred figures, at Baſle, in 1598, folio, which was reprinted in 1674.

Matthiolus was twice married, and left ſeveral children: one of his ſons was phyſician to the elector of Saxony. Gen. Biog. Eloy. Haller. Bibl. Botan.

MATTIA, in *Geography*, a river of Albania, which runs into the Adriatic, S. of Aleſſio.

MATTIACI, in *Ancient Geography*, a people who, according to Tacitus, reſembled the Batavi in their habits and manners, and who had a common origin with them. They were alike valiant, but leſs firm in combat. They were taken under the protection of the Romans, and are ſuppoſed to have inhabited the country now called Zealand.

MATTIACUM, a town of Germany, placed by Ptolemy between Budoris and Artaunum; ſuppoſed to be Marpurg in Heſſe.

MATTIG, in *Geography*, a river of Bavaria, which runs into the Inn, near Braunau.

MATTIGAY, a town of Hindooſtan, in Myſore, on the Cavery, oppoſite to Allumbaddy.

MATTIGKOFEN, a town of Bavaria; nine miles S. of Braunau.

MATTINATELLO, a town of Naples, in Capitanata; ſeven miles E. of Monte St. Angelo.

MATTINS, from the Italian, *mattina*, or the French, *matin, morning*, the firſt part in the daily ſervice of the Romiſh church.

Mattins are ſometimes held early in the morning, ſometimes at midnight, and ſometimes the evening before; and infirm people, even in monaſteries, are diſpenſed from attending mattins.

MATTKEM, in *Ornithology*, a common name in Germany for the *Matkneltzel*.

MATTO-GROSSO, in *Geography*. See Mato-grosso.

MATTS, on board a *Ship*, a kind of broad, thick clouts wove out of ſpun-yarn, or of a variety of ſtrands, or ſeparate parts of a ſmall rope, or of a number of rope-yarns, twiſted into ſoxes; and uſed to preſerve the main and fore-yards from galling againſt the maſts at the ties, and at the gunnel of the loof. They alſo ſerve to keep the clew of the ſail from galling there; as alſo to ſave the clews of the fore-ſail from doing ſo at the beak-head and boltſprit. The longeſt and ſtrongeſt ſort of theſe matts are called panches.

MATT-SEE, in *Geography*, a lake in the archbiſhopric of Salzburg; 12 miles in circumference.—Alſo, a town of the ſame archbiſhopric; a fief of the biſhop of Paſſau; 12 miles N. of Salzburg.

MATTUSCHKÆA, in *Botany*, named by Schreber, in commemoration of count Mattuſchka, a German botaniſt, who was born in the year 1734, and died in 1779. The following works rank him in the liſt of authors on botany. In 1776, and the following year, Mattuſchka publiſhed his *Flora Sileſiaca*, in 2 vols. 8vo.; and in 1779 appeared his *Enumeratio ſtirpium in Sileſia ſponte creſcentium*, in 1 vol. 8vo., a ſort of compendium of the other work.—Schreb. 788. Willd. Sp. Pl. v. 1. 606. Vahl. Symb. p. 3. 11. Mart. Mill. Dict. v. 3. (Perama; Aubl. Guian. 54. Juſſ. 109. Lamarck Illuſtr. t. 68.)—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Vitices*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, cloven into four, ovate, acute, villoſe ſegments. *Cor.* of one petal; tube long; limb cloven into four roundiſh lobes. *Stam.* Filaments four, nearly equal, the length of the clefts of the limb; anthers roundiſh, two-celled. *Piſt.* Germen ſuperior, four-cleſt, furrowed on each ſide; ſtyle thread-ſhaped; ſtigma ſimple, (Aubl.) *Peric.* none. *Seeds* two or four, very ſmall, naked (Juſſ.)

Eſſ. Ch. Calyx in four deep ſegments. Corolla funnel-ſhaped, equally four-cleft. Seeds naked.

1. M. *hirſuta*. Willd. n. 1. (Perama hirſuta; Aubl. Guian. t. 18.)—A native of moiſt and ſandy places at Aroura and Orapu, in Guiana, where it flowers in June or July. According to Aublet, the whole plant is completely covered with reddiſh or ruſty hairs. *Stem* ſlender, branched, villoſe, from one to two feet high. *Leaves* oppoſite, ſeſſile, ovate, villoſe, longitudinally ribbed. *Flowers* apitate, terminal, yellow. *Receptacle* chaffy, with fringed cales between each flower.—Vahl's deſcription of this plant differs ſomewhat from the former, for which reaſon we ſubjoin profeſſor Martyn's tranſlation. "*Stem* thread-ſhaped, erect, frequently quite ſimple; hirſute, as is the whole plant, eſpecially the calyx. *Leaves* almoſt like thoſe of *Thymus ſerpyllum*, ſeſſile, oppoſite, acute, veinleſs, obſcurely three-nerved; the loweſt ſmaller, approximating, ovate; the upper oblong, remote, three lines long. *Flowers* in a terminal ſeſſile head, the ſize of a pea. This plant is a finger's length in height, or more, but never ſo gigantic as Aublet has drawn it, according to an obſervation of Van Rohr, an eye-witneſs, who gathered it in Guiana."

MATTUT, in *Geography*, a town of Perſia, in Chuſiſtan; 15 miles N.E. of El-Tiib.

MATTY's Island, an iſland in the Pacific ocean, diſcovered by Capt. Carteret in 1767. S. lat. 1° 45. E. long. 143° 2′.

MATUARO, an iſland near the N.E. coaſt of New Zealand, on the S.E. ſide of the Bay of Iſlands. S. lat. 35°. E. long. 156° 28′.

MATUGUAN, a town of Peru, in the audience of Lima; 60 miles N. of Guanca Velica.

MATVIEV, an iſland of Ruſſia, in the ſtraits of Vagatſkoi N. lat. 69° 15′. E. long. 52° 14′.

MATVIEVKA, a town of Ruſſia, in the government of Ekaterinoſlav, on the Bug; 40 miles N.W. of Cherſon.

MATUITI, in *Ornithology*, a name given by Ray, Wilughby, and Buffon, to the Braſilian ſpotted king-fiſher of Latham, or *Alcedo maculata*. See Alcedo.

MATUITUI, a name given by Marcgrave to the ſea-lark or ringed-plover. See Charadrius *Hiaticula*. See alſo Tantalus *Griſeus*.

MATULAM, *Hydrops ad Matulam*. See Hydrops.

MATURA, in *Geography*, a ſmall village and fort at the ſouthernmoſt point of Ceylon; 30 miles E. of Point de Galle. (See Galle.) The country round Matura is very wild, but well ſupplied with proviſions of all ſorts, and particularly game, which is abundant. The houſe for the commandant is tolerably good, agreeably ſituated near the river, which is broad here, and runs into the ſea at a ſmall diſtance. The circumjacent country abounds with elephants, and here they were principally caught for exportation. Every three or four years the elephant is hunted here, by order of government. In 1797, at one of theſe hunts, 176 were caught, and this was the greateſt number ever known to be taken at one time. Matura is four miles diſtant from Dondre *Head;* which ſee.

Matura, a chain of villages of Egypt, on the right bank of the Nile; 12 miles N. of Enſeneh.

MATURANTIA, in *Medicine*, &c. *ripeners;* or ſuch things as promote maturation; are ſuppoſed to favour the production and complete formation of pus in inflammatory humours. There are, certainly, ſays Dr. Cullen, means which may be employed for favouring theſe operations of nature; but as it cannot be admitted that any medicines are endowed with any ſpecific powers to this purpoſe, the term, as applied to medicine, ſeems to be quite improper. See Suppuration.

MATURAQUE, in *Ichthyology*, the name of an American fiſh, of the harengiform kind, and having only one ſhort fin on the back. It ſeldom grows to more than four inches long, and is ſomewhat flattiſh, but not very broad; its head is very broad, and covered with a ſhelly cruſt; it is caught in lakes, not in rivers, and is a well-taſted fiſh.

MATURATION *of* Fruit, in *Gardening*. See Caprification, Forcing, and Hot-*Beds*.

Maturation, in *Pharmacy*, a preparation of fruits, or other ſimples, gathered before their maturity, to fit them to be eaten, or for other uſes. See Fruit, &c.

MATURU, in *Geography*, a town of Brazil, on the river Xingi; 45 miles S.W. of Curupa.

MATUSARUM, in *Ancient Geography*, a town of Luſitania, S.E. of Scalabis. The Itinerary of Antonine marks it upon the route from Liſbon to Emerita.

MATUSFALVA, in *Geography*, a town of Hungary; 25 miles N.E. of Caſchau.

MATY, Matthew, in *Biography*, a phyſician and man of letters, was the ſon of a refugee Proteſtant clergyman, from Beaufort in Provence, and was born at Montfort, near Utrecht, in 1718. He was originally intended for the clerical profeſſion; but, in conſequence of ſome mortifications which his father had received from the ſynod, on account of his ſentiments relative to the Trinity, his attention was turned to the profeſſion of medicine. He graduated at Leyden in 1740, and came to ſettle in England, his father having determined to quit Holland for ever. In 1747, he publiſhed at Leyden, "Eſſai ſur le Caractère du Grand Medecin, ou Euloge critique de Boerhaave." Three years afterwards he began to publiſh at the Hague, in French, an account of the principal books printed in England, under the title of "Journal Britannique." This journal was well received, and anſwered the chief end which he had in view, by introducing him to the notice of ſome of the moſt reſpectable literary characters of the country, which he had adopted as his reſidence, and to whoſe active and uninterrupted friendſhip he owed the places which he afterwards obtained. At the inſtitution of the Britiſh Muſeum in 1753, he was appointed an under-librarian; and at the death of Dr. Knight, in 1772, he became principal librarian to that eſtabliſhment. In 1758 he was elected a fellow of the Royal Society; and in 1765, on the reſignation of Dr. Birch, who ſoon afterwards died, and made him his executor, he was choſen ſecretary to that learned body. He filled theſe offices with great reputation, and was in general eſteem for the benevolence of his private character, and the extent of his literary information. He died in 1776. In his medical capacity, Dr. Maty was diſtinguiſhed as an active and zealous promoter of the practice of inoculating the ſmall-pox; and actually re-inoculated himſelf, unknown to his family, in order to diſprove the ſuppoſition that it might be produced a ſecond time in this way. He tranſlated, in 1768, Dr. Gatti's "New Obſervations on Inoculation," which had been originally written by the author at his requeſt. He had nearly completed, at the time of his death, the "Memoirs of the Earl of Cheſterfield," which were finiſhed by his ſon-in-law, Mr. Juſtamond, and prefixed to an edition of the "Miſcellaneous Works" of that nobleman, in 1777. Gen. Biog. Hutchinſon's Biog. Med. Anecdotes of Bowyer.

Maty, Paul-Henry, ſon of the preceding, was born in 1745. He was educated at Weſtminſter-ſchool, whence, in 1763, he was elected to Trinity college, Cambridge, and obtained from thence a travelling fellowſhip. He paſſed three years on the continent, after which he was appointed chaplain to lord Stormont, ambaſſador at the court of France. He might, from his connections, have ſecured preferment in the church, but ſcruples concerning its doctrines and ceremonies prevented him from continuing to perform the duties of a miniſter in it. After his father's death he retired from its ſervice, and, in 1777, he publiſhed his reaſons for this ſtep. From this period he devoted himſelf to a literary life, and was almoſt immediately appointed aſſiſtant librarian to the Britiſh Muſeum; he was elected one of the under librarians, and likewiſe ſucceeded Dr. Horſley as one of the ſecretaries of the Royal Society. In 1782 he commenced a review of ſelect works, Engliſh and foreign, which he carried on almoſt without any aſſiſtance till 1786. He died, in the following year, at the age of forty-two. Mr. Maty publiſhed a tranſlation of Rieſbeck's travels through Germany, and tranſlated into the French language the deſcriptions in the "Gemmæ Marlburienſes." After his death a volume of ſermons was publiſhed for the benefit of his family: they are ſpirited and original compoſitions; but the editor, through ſome inadvertence, printed, as Mr. Maty's, three that had been copied from the ſermons of archbiſhop Secker. Gen. Biog.

MATYLUS, in *Ancient Geography*, a town of Pamphylia, placed by Ptolemy between the mouth of the river Cataractus and that of the river Caſter.

MATZEN, in *Geography*, a town of Auſtria; ſeven miles S. of Ziſterſtorff.

MATZENDORF, a town of Switzerland, in the canton of Soleure; ſix miles N. of Soleure.

MATZOL, a cape of Ruſſia, at the mouth of the Obſkaia gulf. N. lat. 72° 30'. E. long. 75° 30'.

MATZUNEA, a town of Poland, in the palatinate of Kiev; 24 miles S.W. of Kiev.

MAU, a town of the iſland of Ceylon; 40 miles W.N.W. of Candi.

MAVA, a river of Africa, which paſſes through the country of Quoja, and runs into the Atlantic near cape Monte.

MAUBAL, a town of Candahar; 65 miles N.N.E. of Candahar.

MAUBECHE, in *Ornithology*, a name given by Buffon to the Tringa *Calidris*; which ſee.

MAUBEUGE, in *Geography*, a town of France, in the department of the North, and chief place of a canton, in the diſtrict of Aveſnes, ſituated on the Sambre. The place contains 4726, and the canton 14,084 inhabitants, on a territory of 205 kiliometres, in 32 communes. N. lat. 50° 16'. E. long. 4° 2'.

MAUBOURGUET, a town of France, in the department of the Upper Pyrenées, and chief place of a canton, in the diſtrict of Tarbes; 15 miles N. of Tarbes. The place contains 1400, and the canton 7345 inhabitants, on a territory of 102½ kiliometres, in 11 communes.

MAUCAUCO, in *Zoology*. See Lemur and Viverra *Caudivolvula*.

MAUDERDALLY, in *Geography*, a town of Hindooſtan, in Coimbetore; 10 miles W.N.W. of Coimbetore.

MAUDIHOCA, the caſſada, or the poiſonous root of which bread is made in many parts of the Weſt Indies.

MAUDISIMILIA, in *Geography*, a town of Hindooſtan, in Bahar; 35 miles S.E. of Bahar.

MAUDLIN, in *Botany*. See Yarrow, and Ageratum.

MAUDUIT, Jaques, in *Biography*, ſaid by M. Laborde to have been a great muſician in the time of Henry IV. who accompanied wonderfully on the lute. (Eſſais ſur la Muſ. t. iii. p. 519.) We are likewiſe told, that he added a ſixth ſtring to viols, which had originally but five; and that he was the firſt in France who introduced theſe inſtruments in concert, inſtead of baſe-viols.

Père Merſenne, who had a particular regard for this muſician, has given us an engraved head and eloge of him in his "Harmonie Univerſelle;" with the chief part of which we ſhall preſent our readers.

"Jaques Mauduit, deſcended from a noble family, was born in 1557. He had a liberal education, and travelled during his youth into Italy, where he learned the language of that country, together with Spaniſh and German, which, with the literature he had acquired at college, enabled him to read the beſt authors of almoſt every kind. He had a general knowledge of moſt ſciences as well as of mechanics; and ſtudying muſic with unwearied diligence, without any other aſſiſtance than that of books, he rendered himſelf ſo eminent, that he was honoured, even during his life, with the reſpectable title of *Père de la Muſique*," father of muſic. "And with reaſon," ſays his panegyriſt, "being the inventor of good muſic in France, by the many excellent works he publiſhed, both vocal and inſtrumental, which have been long the ornament of our concerts.

"His merit obtained him admiſſion into the famous Academy of Muſic, inſtituted by the learned Baïf, 1583; and many writers of his time ſeem to have produced their poetical effuſions, in order to have them immortalized by the airs of Mauduit.

"The firſt compoſition in which he diſtinguiſhed himſelf as a learned harmoniſt, was his maſs of Requiem, which he ſet for the funeral of his friend, the celebrated poet Ronſard; it was afterwards performed at the funeral of Henry IV. and, laſtly, at his own, 1627, under the direction of his ſon Louis Mauduit, at which time Merſennus officiated in the ſacred function as prieſt.

"He left behind him innumerable maſſes, hymns, motets, fancies, and ſongs. A ſmall hereditary place at the court of requeſts deſcended to him from his father, which he ſeemed to exerciſe for no other purpoſe than to oblige and ſerve his friends. At the ſiege of Paris, when the Fauxbourg was taken by ſtorm, he ventured through the victorious ſoldiers to the houſe of his friend Baïf, then dead, and ſaved all his manuſcripts, at the hazard of his own life.

"Upon a ſimilar occaſion, in which there was ſtill greater difficulty and danger, he ſaved the *douze modes* de Claude le Jeune, and his other manuſcript works, at the time that this compoſer was ſeized at the gate of St. Denis as a Hugonot; ſo that all thoſe who have ſince received pleaſure from the productions of this excellent maſter, are obliged to Mauduit for their preſervation, as he ſaved them from deſtruction by ſeizing the arm of a ſerjeant at the very inſtant that he was going to throw them into the flames; perſuading the ſoldiery that theſe papers were perfectly innocent and free from Calviniſtical poiſon, or any kind of treaſon againſt the League: and it was by his zeal and addreſs, with the aſſiſtance of an officer of his acquaintance, that Claude eſcaped with his own life."

Such are the praiſes beſtowed upon Jaques Mauduit, by his friend the learned and benign Merſennus, whoſe diligence, ſcience, and candour, far ſurpaſſed his taſte. The Requiem, by Mauduit, is printed in the Harm. Univ. in five ſeparate parts; but in ſcoring it, neither the harmony nor modulation offer any thing that is either curious or uncommon, at any period of counterpoint. It is in literally *plain* counterpoint of crotchets and minims moving all together, as in our cathedral chanting. The chief merit of this production is in the exact accentuation of the words, *à l'antique:* a minim for a long ſyllable, and a crotchet for a ſhort.

Merſennus, in his Commentary on Geneſis, has illuſtrated his muſical remarks with many of his friend Mauduit's compoſitions, in which we have never been able to dig out the leaſt fragment that would do honour to this compoſer or his country.

MAVEBARA, in *Geography*, a town of South America, in the province of Choco; 20 miles N. of Zitara.

MAVELAGONGUE, a river of Ceylon, which runs into the ſea at Trinconomaly.

MAVELICAN, a town of Hindooſtan, in the Carnatic; 40 miles from Travancore.

MAVENHELLY, a town of Hindooſtan, in the Myſore, ceded to Great Britain in 1799; 60 miles S.E. of Seringapatam.

MAUG, Turas, or *St. Laurence*, one of the ſmaller of the iſlands called "Ladrones," compoſed of three rocks, about 20 miles in circumference; 15 miles from the iſland of Aſſumption.

MAUGERVILLE, a townſhip of Sunbury county, in the province of New Brunſwick, in St. John's river, 30 miles above Beliſle. N. lat. 45° 59′. W. long. 66° 40′.

MAUGHOLD Head, a cape on the E. coaſt of the Iſle of Man; 40 miles W.S W. from St. Bee's Head. N. lat. 54° 18′. W. long. 3° 28′.

MAUGSEE, three ſmall iſlands in the Eaſt Indian ſea, between Borneo and Paraguay. N. lat. 7° 33′. E. long. 117° 30′.

MAUGUIO, a town of France, in the department of the Herault, and chief place of a canton, in the diſtrict of Montpellier; ſix miles E. of Montpellier. The place contains 1167, and the canton 3386 inhabitants, on a territory of 160 kiliometres, in five communes.

MAUHLIA, in *Botany*, Dahl. Obſ. Bot. 25. Thunb. Prod. 60, is the ſame genus with the *Agapanthus* of Solander in Ait. Hort. Kew. ed. 1. v. 1. 414, the *Tulbaghia* of Heiſter; ſee Agapanthus. The only genuine ſpecies is *Agapanthus umbellatus*, Curt. Mag. t. 500. Redout. Liliac. t. 6. (Crinum africanum; Linn. Sp. Pl. 419.) Thunberg however has added a ſecond, by the name of *Mauhlia enſifolia*, and he is followed by Willdenow; but their plant is our *Maſſonia enſifolia*. See Massonia.

The name of *Mauhlia* was given by Dahl, (ſee Dahlia,) in honour of Mr. John Mauhle, who, as this author informs us, had for many years the ſuperintendance of the Swediſh mercantile affairs in China; and has, ſince his return, laboured, with great ardour, to promote various economical objects at home. He is ſaid to have furniſhed Dahl with the ſum neceſſary for the purchaſe of the Linnæan Muſeum; (ſee Linnæus the ſon,) in order that it might not go out of Sweden; and the narrator above-mentioned aſſerts that "the ſame ſum of money for which it paſſed into foreign hands, was offered to retain it." This aſſertion bears hard upon the honour and patriotiſm of the highly reſpectable profeſſor Acrel, who alone was entruſted with the ſale of the collection in queſtion, and we have his authority to ſay the account is incorrect. We know alſo that this excellent man was falſely accuſed of having received a bribe from the actual purchaſer, becauſe he behaved honourably and impartially in his truſt; and we know moreover that he did reject with indignation an offer, from another quarter, to betray it. He had even to reſiſt the diſhoneſt cupidity of the heirs of the younger Linnæus, who, on receiving unlimited offers from the empreſs of Ruſſia, would have left in the lurch the perſon with whom they were in treaty, and who did not heſitate to purchaſe the whole at their own price, and in their own way. S.

MAVILE, in *Geography*, a town of Hindooſtan, in the circar of Cicacole; 27 miles S.W. of Coſſimcotta.

MAVIS, in *Ornithology*, the common name of the ſong-thruſh, or throſtle. See Turdus *muſicus*.

MAUKS, in *Agriculture*, a provincial word applied to maggots.

MAUL, in *Rural Economy*, a provincial term ſignifying a beetle, mallet, &c.

MAULDAH, in *Geography*, a circar of Bengal, of a triangular form, and about 45 miles in circumference; ſituated between Rajemal and Dinagepour.—Alſo, the capital of the ſaid circar, which is a place of conſiderable trade; 52 miles N. of Moorſhedabad. N. lat. 25° 3′. E. long. 88° 16′.

MAULE, a river of Chili, which runs into the Pacific ocean, S. lat. 35° 12′.

MAULEN, a town of Pruſſia, in the province of Natangen; ſeven miles S.W. of Konigſberg.

MAULEON, a town of France, and chief place of a diſtrict, in the department of the Lower Pyrenées, having a caſtle on a rock, formerly deemed impregnable; 12 miles W. of Oleron. The place contains 1010, and the canton 12,497 inhabitants, on a territory of $317\frac{1}{2}$ kiliometres, in 28 communes. N. lat. 43° 13′. W. long. 0° 49′.

MAULEON-*en-Barouſſe*, a town of France, in the department of the Upper Pyrenées, and chief place of a canton, in the diſtrict of Bagnères; nine miles S.E. of La Barthe. The place contains 612, and the canton 6495 inhabitants, on a territory of 185 kiliometres, in 25 communes.

MAULI, a river of Sicily, which runs into the ſea, about eight miles S.S.W. from Raguſa. N. lat. 36° 40′. E. long. 13° 45′.

MAULIAVERAM, or SEVEN PAGODAS, a town of Hindooſtan, in the Carnatic, ſituated on the coaſt; 30 miles S. of Madras.

MAULPOUR, a town of Hindooſtan, in Lahore; 10 miles N. of Rahoon.

MAULSURDA, a town of Bengal; 55 miles S.S.W. of Doeſa.

MAUM, in *Agriculture*, a term provincially ſignifying a certain dry mellow quality in land. A ſort of dry fine loam.

MAUMUSSON, in *Geography*, a channel or narrow ſea between the iſle of Oleron and the continent of France.

MAUNCH, in *Heraldry*, the figure of an ancient ſleeve of a coat, which is borne in many gentlemen's eſcutcheons; as in the earl of Huntingdon's.

MAUNCORE, in *Geography*, a town of Bengal; 20 miles N.W. of Burdwan.

MAUND, in our *Old Writers*, a kind of great baſket or hamper, containing eight bales, or two fats; it is commonly a quantity of eight bales, of unbound books, each bale having one thouſand pounds weight.

MAUND, in *Commerce*, the denomination of a weight in the Eaſt Indies. In Bengal heavy goods are weighed by the maund of 40 ſeers, each ſeer being divided into 16 chittacks. The maund of the Engliſh factory in Bengal weighs 74lb. 10 oz. $10\frac{2}{3}$dr. avoirdupois; ſo that the ſeer is 1lb. 13 oz. $13\frac{7}{8}$dr. and the chittack 1oz. $13\frac{7}{8}$dr. The Bengal Bazar maund is 10 *per cent.* heavier than the maund of the factory, and therefore weighs 82lb. 2oz. $2\frac{2}{15}$dr. avoirdupois; and in this caſe, the ſeer is 2lb. 0 oz. $13\frac{2}{3}$dr., and the chittack, 2oz. $0\frac{5}{6}$dr. Grain is ſold by the Khahoon of 16 ſoallee, which is equal to 40 maunds. Liquids are ſold by the chatack of 5 ſicca weight; 16 chatacks making 1 pouah, 4 pouah 1 ſeer, and 40 ſeers 1 maund. At Madras goods are ſold by the candy of 20 maunds, and the maund is divided into 8 vis, 320 pollams, or 3200 pagodas. The candy of Madras is 500lb. avoirdupois. In the Jaghire, or territory belonging to the Engliſh company round Madras, and in moſt other parts of the Coromandel coaſt, the Malabar weights are uſed, and are as follow: the gurſay, called by the Engliſh garce, contains 20 baruays or candies; the baruay, 20 manungus or maunds; the maund 8 viſay or vis, 320 pollams, or 3200 varahuns; each varahun weighing $52\frac{3}{4}$ Engliſh grains; ſo that the viſay is 3lb. 3dr., the maund, 24lb. 2oz., the baruay, $482\frac{1}{4}$lb., and the gurſay $9645\frac{1}{2}$lb. avoirdupois, or 4 tons 6cwt. nearly. In corn meaſure, the garce is = $17\frac{1}{2}$ Engliſh quarters nearly. When grain is ſold by weight, $9256\frac{1}{2}$lb. are reckoned for 1 garce, being 18 candies $12\frac{4}{5}$ maunds. At Bombay the commercial weight is the candy of 20 maunds, the maund being ſubdivided into 40 ſeers, and the ſeer into 30 pice. The candy is 560lb., the maund 28lb., and the ſeer $11\frac{1}{5}$oz. avoirdupois. Goods are likewiſe ſold by the Surat maund, and the Pucca or Bengal maund, ſo that, in every contract, the particular maund, or candy, ſhould be mentioned. A bag of rice weighs 6 maunds, or 168lb. avoirdupois, and a candy is equal to 25 Wincheſter buſhels nearly. At Calicut, on the Malabar coaſt, the candy weight contains 20 maunds, and the maund 100 pools or paloons. The maund uſed here by the Engliſh weighs 30lb., and the candy, 600lb. But the common weights are thoſe of Malabar, the maund weighing 24lb. 2oz., and the candy $482\frac{1}{2}$lb. avoirdupois. At Carwar, on the Malabar coaſt, the maund is 26lb. avoirdupois, and is divided into 40 ſeers or 1000 pice, and the candy is 20 maunds. At Cochin the maund is 27lb. $2\frac{4}{5}$oz. avoirdupois, and the candy = 20 maunds = 543lb. 8 oz. avoirdupois. At Goa the maund contains 24 rattles, = $24\frac{3}{4}$lb. avoirdupois, ſo that the candy of 20 maunds is equal to 495lb. avoirdupois. Corn and rice are ſold by the candy of 20 maunds, which are equal to 14 Engliſh buſhels nearly. At Mangalore, the mana or maund, by which goods are ſold in the market, contains 46 ſeers, or 28lb. $2\frac{1}{4}$oz. avoirdupois: the maund, by which the merchants buy and ſell, weighs 16 rupees more, that is 28lb. $4\frac{1}{2}$oz. avoirdupois; the baru or candy is 20 maunds. At Maſulipatam the candy is 20 maunds, the maund 8 vis, 40 ſeers, 600 neves, or 900 dabous. This maund weighs $24\frac{1}{2}$lb. avoirdupois nearly. At Pondicherry the commercial weight is the candy of 20 maunds, or 160 vis. The maund is = 24lb. French poids de marc, or 25lb. 14oz. $5\frac{1}{2}$dr. avoirdupois. At Scindy heavy goods are weighed by the maund of 40 ſeers. The cutcha or Surat maund is = 37lb. 5oz. $5\frac{1}{3}$dr. avoirdupois, and is divided into 16 annas, or 32 pice; the Pucca maund is double the former. At Surat, the maund for weighing heavy goods is 40 ſeers, and the ſeer 30 pice: 20 Surat maunds, or 10 Pucca or Bengal factory maunds make 1 candy, or 746lb. 10oz. 10dr. avoirdupois. But theſe weights vary. At Tranquebar the maund weighs 68lb. Daniſh, or $74\frac{4}{5}$lb. avoirdupois. At Acheen, in the iſle of Sumatra, a maund of 75lb. of rice contains 21 bamboes, a bamboe being 4 and ſometimes 5 cauls. Kelly's Cambiſt. vol. i.

MAUNDA, in *Geography*, a town of Bengal; 30 miles N.W. of Nattore.

MAUNDAR, a town of Bengal; 10 miles W. of Midnapour.

MAUNDY, or MAUNDEY *Thurſday*, *Dies Mandati*, the Thurſday before Eaſter; ſo called from the French *mande*, i. e. *ſportula*; it being a cuſtom on that day to give a largeſs or bounty to certain poor men, whoſe feet the king formerly waſhed, as a mark of humility, and in obedience to the command of Chriſt.

MAUNDYGAUT, in *Geography*, a town of Hindooſtan, in the ſoubah of Delhi; 27 miles E.N.E. of Secundara.

MAUNSEE, a town of Auſtria, near a lake of the ſame name; 16 miles S.W. of Voglabruck.

MAUNSI, a river of Bengal, which falls into the Toorſha, and after their confluence they aſſume the name of Neelcoomer, and ſhaping their courſe through Baharbund, fall with their united ſtreams into the Berhampooter.

MAUNTRY, a town of Hindooſtan, in Mohurbunge; 12 miles S. of Harriorpour.

MAUPERTUIS, Peter-Lewis Moreau de, in *Biography*, a celebrated French mathematician and philoſopher, who flouriſhed in the eighteenth century, was born at St. Malo in the year 1698. He was privately educated till he was ſixteen years of age, when he was ſent to the college of La Marche, at Paris. He ſhortly diſcovered a ſtrong inclination to mathematical purſuits, and a conſiderable taſte for inſtrumental muſic, which he practiſed with ſucceſs. At the age of twenty he determined on a military life, and entered among the mouſquetaires, but after remaining two years in that corps, he obtained a company in a regiment of cavalry, which he held about three years. During this time he devoted all his leiſure hours to ſcientific ſtudies, and at length he quitted the profeſſion of arms, and applied his mind entirely to mathematics. In 1723 he was received into the Royal Academy of Sciences, on which occaſion he read his firſt performance, which was "A Memoir upon the Conſtruction and Form of muſical Inſtruments." He now paid a good deal of attention to natural philoſophy, and diſcovered great knowledge and dexterity in obſervations and experiments upon animals. In 1728 he, with all the zeal of a devotee, viſited the country which had given birth to Newton, of whoſe principles he became a zealous admirer and follower; and during his reſidence in London he was honoured with an admiſſion into the Royal Society. Upon his return to France, he made an excurſion to Baſil, where he formed a friendſhip with the celebrated Bernouillis. On his return to Paris from Switzerland, he applied to his favourite ſtudies with redoubled ardour, and enriched the tranſactions of the academy with a vaſt number of his communications, between the years 1724 and 1744. In ſome of theſe the moſt ſublime and intricate queſtions in the mathematical ſciences are diſcuſſed with preciſion, clearneſs, and elegance. In 1736, he was ſent by Lewis XV., at the head of the French mathematicians, into Lapland, for the purpoſe of meaſuring a degree of the meridian within the polar circle, in order to determine the figure of the earth. The reputation which he acquired by this undertaking was ſo great, that he was admitted a member of almoſt every academy in Europe. In 1740 he was invited by the king of Pruſſia to go to Berlin, to be the preſident and director of the Royal Academy of Sciences and Belles Lettres in that place, which he readily accepted. When he arrived, the king was at war with the emperor, and our philoſopher, whoſe love for his firſt profeſſion of arms was not entirely effaced, determined to follow the king to the field. He was preſent at the battle of Molwitz; but before victory declared itſelf for the Pruſſians, his horſe ran away with him into the enemy's ranks, where he was taken priſoner, and very roughly uſed. Being carried to Vienna, he there met with the moſt honourable reception from the emperor. This noble-minded prince, hearing him regret the loſs of a watch by Graham, the celebrated Engliſh artiſt, which had been of great uſe to him in his experiments and aſtronomical obſervations, having another by the ſame maker, but enriched with diamonds, preſented it to him, ſaying, "The huſſars were only in jeſt with you, they have ſent me your watch, and I gladly reſtore it to you." Notwithſtanding his talents as a philoſopher and mathematician, he was capable of paying well turned compliments to perſons of the higheſt rank in life: in the courſe of converſation with the empreſs-queen, her majeſty obſerved to him that ſhe had heard the princeſs Louiſa-Ulrica of Pruſſia was the moſt beautiful princeſs in the world. "Till this moment, madam," replied Maupertuis, "I was entirely of that opinion." He was ſoon afterwards allowed to depart for Berlin, loaded with favours by the emperor and empreſs. From thence Maupertuis went to Paris, and in 1742 was choſen director of the Academy of Sciences: during the following year he was received into the French Academy, and was the firſt inſtance of a perſon's being member of both the academies of Paris at the ſame time. After this he again aſſumed the character of a ſoldier, and was preſent at the ſiege of Fribourg, and, upon the ſurrender of that citadel, was appointed to carry the news of the event to the French king. In 1744 he returned to Berlin, and married a lady of great beauty and merit, to whom he was extremely attached, and his alliance with whom he conſidered as the moſt fortunate event of his life. In 1746, the king of Pruſſia declared our philoſopher preſident of the Royal Academy of Sciences at Berlin, and ſoon afterwards honoured him with the order of Merit; and farther diſtinguiſhed him with his own moſt intimate confidence. Theſe accumulated honours ſerved to ſtimulate him in his application to ſcientific reſearches, not only in mathematics, but in metaphyſics, chemiſtry, botany, and polite literature. His temper was not good, and he was frequently involved in diſputes with perſons of diſtinguiſhed talents: one of theſe was with Koenig, profeſſor of philoſophy at Franeker, in which Voltaire took a decided part againſt him. Maupertuis threatened to take on him perſonal revenge, to which Voltaire replied by reiterating the ſtrokes of the moſt ludicrous ſatire. The conſtitution of the philoſopher had been long impaired by fatigues of various kinds, and particularly by the hardſhips which he had undergone in his Lapland expedition; but the vigour of his mind was unabated, even at a time when, from ſevere illneſs, he was incapable of taking the chair of the academy. He died in 1759, when he was about the age of ſixty-one. He was author of many works, of which the following may be noticed; "An Eſſay on Coſmology:" "A Diſcourſe on the different Figures of the Stars:" "Philoſophical Reflections upon the Origin of Languages, and the Signification of Words:" "An Account of the Expedition to the Polar Circle, for determining the Figure of the Earth, or, the Meaſure of the Earth at the Polar Circle:" "Obſervations on the Comet of 1742:" "The Meaſure of a Degree of the Meridian at the Polar Circle."

MAUPHAZE-Bunder, in *Geography*, a town of Hindooſtan, in the circar of Cicacole; 4 miles S.E. of Cicacole.

MAUPIN, La, in *Biography*, one of the early and moſt extraordinary female ſingers in the operas of Lulli. M. Laborde has aſſigned, in his "Eſſais ſur la Muſ.," a piquant article to moſt of the favourite performers in theſe ſplendid muſical dramas, with which Louis XIV. and the whole French nation were ſo delighted and ſo proud. Almoſt every individual of this ſyren troop is marked by ſome ſingularity of character, or peculiar circumſtances; but none more ſo than La Maupin, the ſucceſſor of La Rochois. She was equally fond of both ſexes: fought and loved like a man, and reſiſted and fell like a woman. Her adventures are of a very romantic kind. Married to a young huſband, who was ſoon obliged to abſent himſelf from her, to enter on an office he had obtained in Provence, ſhe ran away with a fencing-maſter, of whom ſhe learned the ſmall-ſword, and became an excellent fencer; which was afterwards a uſeful qualification to her on ſeveral occaſions. The lovers firſt retreated from perſecution to Marſeilles; but neceſſity ſoon obliged them to ſolicit employment there, at the opera; and, as both had by nature good voices, they were received without difficulty. But ſoon after this ſhe was ſeized with a paſſion for a young perſon of her own ſex, whom ſhe ſeduced; but the object of her whimſical affection, being purſued by her friends and taken, was thrown into a convent at Avignon, where the Maupin ſoon followed her; and having preſented herſelf as a novice, obtained admiſſion. Some time after, ſhe ſet fire to the convent, and, availing herſelf of the confuſion ſhe had occaſioned, carried off her favourite. But being purſued and taken, ſhe was condemned to the flames for contumacy; a ſentence, however, which was not executed, as the young Marſeillaiſe was found, and reſtored to her friends.

She then went to Paris, and made her firſt appearance on the opera ſtage in 1695, when ſhe performed the part of Pallas, in "Cadmus," with the greateſt ſucceſs. The applauſe was ſo violent, that ſhe was obliged, in her car, to take off her caſque to ſalute and thank the public, which redoubled their marks of approbation. From that time her ſucceſs was uninterrupted. Dumeni, the ſinger, having affronted her, ſhe put on men's clothes, watched for him in the Place des Victoires, and inſiſted on his drawing his ſword and fighting her; which he refuſing, ſhe caned him, and took from him his watch and ſnuff-box. Next day Dumeni having boaſted at the opera-houſe, that he had defended himſelf againſt three men who attempted to rob him, ſhe related the whole ſtory, and produced his watch and ſnuff-box in proof of her having caned him for his cowardice. Thevenard was nearly treated in the ſame manner, and had no other way of eſcaping her chaſtiſement than by publicly aſking her pardon, after hiding himſelf at the Palais Royal during three weeks. At a ball given by Monſieur, the brother of Louis XIV., ſhe again put on men's clothes, and having behaved impertinently to a lady, three of her friends, ſuppoſing the Maupin to be a man, called her out. She might eaſily have avoided the combat by diſcovering her ſex, but ſhe inſtantly drew, and killed them all three. Afterwards, returning very coolly to the ball, ſhe told the ſtory to Monſieur, who obtained her pardon. After other adventures, ſhe went to Bruſſels, and there became the miſtreſs of the elector of Bavaria. This prince quitting her for the counteſs of Arcos, ſent her by the count, huſband of that lady, a purſe of 40,000 livres, with an order to quit Bruſſels. This extraordinary heroine threw the purſe at the count's head, telling him, it was a recompence worthy of ſuch a ſcoundrel and —— as himſelf. After this ſhe returned to the opera ſtage, which ſhe quitted in 1705. Being at length ſeized with a fit of devotion, ſhe recalled her huſband, who had remained in Provence, and paſſed with him the laſt years of her life in a very pious manner, dying in 1707, at the age of thirty-four.

MAUR, in *Geography*, a town of Auſtria; 7 miles S. of Mauttern.

Maur, *St.*, a town of France, in the department of the Indre and Loire, and chief place of a canton, in the diſtrict of Chinon; 15 miles S.E. of Chinon. The place contains 2271, and the canton 8357 inhabitants, on a territory of 185 kiliometres, in 12 communes.—Alſo, a town of France, in the department of Paris; 6 miles S.E. of Paris.

Maur, *St.*, *Congregation of*, in *Eccleſiaſtical Hiſtory*, a famous ſociety of Benedictines, which was founded in the year 1620, by the expreſs order of Gregory XV., and enriched by Urban VIII. in 1627, with ſeveral donations and privileges. This ſociety has been diſtinguiſhed by the great number of excellent rules and inſtitutions that are obſerved in it, and by the regular lives and learned labours of its members. Thoſe who have any acquaintance with the hiſtory and progreſs of learning in Europe, well know what ſignal advantages the republic of letters has derived from the eſtabliſhment of this famous congregation, whoſe numerous and admirable productions have caſt a great light upon all the various branches of philology and belles lettres, and whoſe reſearches have taken in the whole circle of ſciences, philoſophy excepted. Theſe Benedictines ſtill maintain their literary fame, by the frequent publication of laborious and learned productions in all the various branches of ſacred and profane literature.

MAURACONDA, in *Geography*, a town of Africa, in the kingdom of Burſali. N. lat. 13° 40′. W. long. 15° 25′.

MAURANDIA, in *Botany*, received its name from Dr. Ortega, the profeſſor of botany at Madrid, in honour of the lady of Dr. Maurandy, the botanical profeſſor at Carthagena, ſaid to be an ardent admirer and proſecutor of the ſame ſtudy with her huſband. Cavanilles had given the generic appellation of *Uſteria* to this plant, not being aware of its having been previouſly beſtowed on another genus by Willdenow; for which reaſon, joined to that of complimenting the above-named lady on her botanical acquirements, Ortega was induced to change it to *Maurandya*. In the Botanical Magazine we perceive that Dr. Sims, though he has adopted the genus, is not perfectly ſatisfied with it, or rather that "he cannot cordially coincide with Dr. Ortega, in the propriety either of his generic or trivial name." We content ourſelves with reforming his orthography. Orteg. Hort. Matrit. dec. 2. 21. Jacq. Hort. Schoenb. v. 3. 20. Willd. Sp. Pl. v. 3. 389. (Uſteria; Cavan. Ic. v. 2. 15.)—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Bignoniæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, permanent, cloven nearly to the baſe into five linear-lanceolate, acute, erect, almoſt equal ſegments. *Cor.* of one petal, two-lipped; tube ſhorter than the calyx; throat twice as long as the calyx, rather depreſſed, broad, with various furrows on each ſide, ſomewhat incurved; limb ringent, in five nearly equal, roundiſh, emarginate ſegments, two above and three below. *Stam.* Filaments four, thickened and hairy at the baſe, not ſo long as the throat of the corolla, two of them ſhorter; anthers oblong. *Piſt.* Germen ſuperior, ovate, with a furrow on each ſide; ſtyle awl-ſhaped, the length of the ſtamens; ſtigma ſimple. *Peric.* Capſule as long as the calyx, of two cells, each opening at the top with five, half-ovate, acute, reflexed valves. *Seeds* numerous, rather ovate, rough, affixed to each ſide of the partition.

Eſſ. Ch. Calyx inferior, in five deep ſegments. Corolla ringent; tube bell-ſhaped, furrowed. Capſule of two cells, opening by five teeth at their ſummit.

1. M. *ſemperflorens*. Climbing Maurandia, or Baſtard Foxglove. Sims in Bot. Mag. t. 460. Jacq. Hort. Schoenb. t. 288. Uſteria ſcandens; Cavan. Ic. t. 116. Andr. Bot. Repoſ. t. 63.

This, the only ſpecies known, is a native of Mexico, and an elegant greenhouſe plant, flowering for months together in the ſummer. *Root* perennial, branched, ſending forth numerous, annual, climbing, round, darkiſh, branched *ſtems*, about the thickneſs of a quill. *Branches* green, about three feet long, ſomewhat divided. *Leaves* alternate, on long twining footſtalks, very numerous, ſpear-ſhaped, three, five, or ſeven-nerved. *Flowers* ſolitary, drooping, on long, twiſted, axillary ſtalks, of a beautiful lilac, or purple and white, colour. They have great affinity to thoſe of the Foxglove. *Seeds* oblong and black.

This truly elegant climber, which is beautifully figured in the works above quoted, from being eaſily propagated by cuttings as well as ſeeds, ſeems in a fair way of becoming common in our greenhouſes, though ſaid to be rather better ſuited to the conſervatory.

MAURBACH, in *Geography*, a town and chartreux of Auſtria; nine miles W.N.W. of Vienna.

MAURE, *Mademoiſelle* CATHERINE-NICOLE LE, in *Biography*, one of the laſt favourite ſingers in the French ſerious opera of the old ſchool. She was born at Paris in 1704, and, according to M. Laborde, gifted with the fineſt voice that nature ever beſtowed on a mortal.' She was admitted, in 1719, only as a chorus-ſinger, and remained in that humble ſtation till 1724, when ſhe appeared in the character of Cephile, in the firſt part of "L'Europe Galante."

From that moment ſhe never ceaſed to delight the audience, even to extacy, in every part that was aſſigned her. Her beautiful voice, manner of ſinging, and embelliſhments, were equally captivating. Mademoiſelle le Maure, diminutive in figure, and ill made, moved on the ſtage with incredible dignity; ſhe penetrated every heart ſo much by what ſhe had to utter, that ſhe drew tears from hearers the moſt frigid; ſhe animated and tranſported them; and though ſhe had neither beauty nor wit, ſhe excited the moſt lively ſenſations.

She quitted the ſtage and returned to it ſeveral times, till 1743, after which period ſhe never performed in public, except in the feſtivals given in celebration of the dauphin's firſt marriage, in 1745.

Her retreat was rather occaſioned by caprice than fading talents; ſhe might have remained on the ſtage ten years longer with her uſual eclat. For after her retirement we have very frequently been preſent (continues M. Laborde) when ſhe has ſung and acted whole operas without appearing fatigued. The undertakers of the Coliſée prevailed upon her to ſing two or three times in 1771, and there never was ſo great a crowd aſſembled at a public place as ſhe attracted to hear her. Mademoiſelle le Maure continued to the end of her life ſuperior to what might be expected from her age.

No one could diſpute the perfection of her voice; and even young people, though a great change was begun in our muſic, found the charms of her vocal organs irreſiſtible.

It would be an intereſting inquiry to inveſtigate the cauſe of that exquiſite pleaſure which the mere tone of a fine voice excites, without the concurrence of any reaſoning faculty. Mademoiſelle le Maure had no impoſing figure, was neither pretty, nor gifted with ſuperior intellects or reflections, without taſte or education; yet, denied all theſe advantages, ſhe had only to open her mouth, and breathe two or three ſounds, to produce every effect reſulting, with great difficulty, from the union of all the advantages of which ſhe was in want. To what are we to aſcribe this prodigy? It is one of thoſe myſteries of nature which philoſophy has not yet unfolded.

Mademoiſelle le Maure, in 1762, was married to M. de Monbruelle; but ſhe ſtill remained beſt known, after her marriage, by her maiden name; ſo true it is that our place in ſociety is determined by talents and uſeful faculties.

MAURE, in *Geography*, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the diſtrict of Rédon; 15 miles N. of Rédon. The place contains 4110, and the canton 8370 inhabitants, on a territory of 205 kiliometres, in nine communes.

MAURE, *St.*, or *Leucadia*, an iſland in the Mediterranean ſea, about 50 miles in circumference, formerly joined to the continent, but now ſeparated from it. (See LEUCADIA.) This iſland produces great plenty of game, wine, oil, citrons, pomegranates, almonds, and other fruits, with fine paſtures. Its inhabitants are Greeks, ſubject to a biſhop. It had formerly three conſiderable towns, with a very magnificent temple of Venus. The town which gives name to the iſland, contains about 6000 inhabitants; as it is ſituated in the water, and defended by walls and towers, it is not eaſy of acceſs either by land or water. Beyond its works, in a moraſs, are two well inhabited iſlands, or ſuburbs; and the little iſlands between this and the continent communicate by bridges. It has repeatedly changed maſter, being ſometimes under the dominion of the Turks, and ſometimes under that of the Venetians. By the treaty of Campo Formio it was ceded to France; but in 1799, it was declared one of the ſeven iſlands formed into a republic. N. lat. 39° 4'. E. long. 20° 39'.

MAUREPAS, JOHN FREDERIC PHILIPPEAUX, *Count des*, in *Biography*, a French ſtateſman, was born in 1701, and in 1715 was appointed ſecretary of ſtate; which, conſidering his youth, muſt have been a ſinecure. In 1723, he was made ſuperintendant of the marine, and, in 1738, miniſter of ſtate. By the intrigues of madame Pompadour he was exiled to Bourges in 1749. He was not recalled till 1774, when Louis XVI. entruſted the public affairs to his management. He attended greatly to the marine department, and was a liberal encourager of the ſciences; but the part he took in aſſiſting America againſt England is a reflection on his political prudence. He died in 1781. His Memoirs, by himſelf, are curious, but careleſsly written; they were printed at Paris in 1792, 2 vols. 8vo. Nouv. Dict. Hiſt.

MAUREPAS, in *Geography*, an iſland on the N.E. coaſt of lake Superior, in Upper Canada, N.E. of Portchartrain iſland, about half way between Elbow iſland and the bay of Michipicoten; 40 miles in circumference. N. lat. 47° 42'. W. long. 85° 30'.—Alſo, an iſland on the coaſt of cape Breton, the ſame as the "Iſle Madame;" which ſee.—Alſo, a lake in Weſt Florida, communicating weſtward with the Miſſiſippi river, through the gut of Ibberville, and eaſtward with lake Portchartrain; ten miles long and ſeven broad.

MAURIAC, a town of France, and chief place of a diſtrict, in the department of the Cantal; 18 miles N.N.W. of Aurillac. The place contains 2572, and the canton 11,337 inhabitants, on a territory of 250 kiliometres, in 11 communes.

MAURICE, (MAURITIUS), in *Biography*, emperor of the Eaſt, was born, about 539, at Arabiſſus, in Cappadocia. He entered at an early age into the army, and was, on account of his prudence and valour, placed by the emperor Tiberius Conſtantine at the head of the army ſent againſt the Perſian king Hormiſdas. He gained two victories over the Perſians, and returning to Conſtantinople, was rewarded with the hand of the emperor's daughter, and the high dignity of Cæſar. At the death of Tiberius, in 582, Maurice ſucceeded to the throne without oppoſition. War was renewed with doubtful ſucceſs, but in the end Hormiſdas was depoſed, and Choſroes, with the aſſiſtance of Maurice, was placed on the Perſian throne. Peace was now reſtored between the two emperors, after which the arms of the emperor were turned againſt the Avars, a barbarian tribe on the Danube, who had made incurſions into Thrace: of theſe it is ſaid that 60,000 were ſlain, and a great number taken priſoners. The enemy, however, in the ſame conteſt, captured 12,000 of the ſoldiers in Maurice's army, which they put to death on the refuſal of their king to pay a ranſom for their lives and liberty. This and other circumſtances rendered him extremely unpopular among the troops; and upon the arrival of an order for them to croſs the Danube into the enemy's country, they broke out into a general mutiny, and marched back to Conſtantinople. The populace in that city, partaking in the diſaffection, roſe in revolt, and aſſaulted the emperor with ſtones. He was now glad to make his eſcape to the Aſiatic ſhore, whence he ſent his eldeſt ſon to implore the protection and aſſiſtance of the Perſian king. Phocas, a centurion, had been inveſted with the purple, and as the emperor quitted the capital he entered it, and was conſecrated by the patriarch. Shortly after this he ſent his executioners to prevent the poſſibility of future rivalſhip. They dragged the unfortunate man from his ſanctuary, and having murdered five of his children before his face, ſlew him in the twentieth year of his reign, A.D. 602. Maurice is highly extolled by eccleſiaſtical hiſtorians for his piety and orthodoxy, and it is generally admitted that he was a virtuous character, poſſeſſed of very good intentions, though certainly unequal to his high ſtation. He was well acquainted with the military art, and compoſed twelve books on the ſubject, which are ſtill extant. They were publiſhed in 1664, at the end of the Tactics of Arrian. Univer. Hiſt. Gibbon.

Maurice, elector of Saxony, ſon of Henry the Pious, of the Albertine branch of the Saxon family, was born in 1521. He came to the poſſeſſion of his territories when he was about twenty years of age, at which time he was diſtinguiſhed by gracefulneſs of perſon, and great dexterity in all martial exerciſes. He had been educated in a zealous attachment to the Proteſtant doctrines, yet, when the princes of that perſuaſion entered into the league of Smalcalde in defence of their civil and religious liberties, he refuſed to join in it, and attached himſelf to the party of Charles V. His couſin, John-Frederick, then elector of Saxony, was one of the chiefs of that league; and the unjuſt deſign of ſupplanting him, with the view of making himſelf the head of the houſe, was probably the ſpring of his conduct from his firſt appearance as a public character. At the diet of Worms, in 1545, he differed from his Proteſtant brethren, by ſhewing an inclination to gratify the emperor, in opening a communication with the council of Trent, and granting an aid towards the Turkiſh war. In the following year, when the Proteſtant confederacy declared war againſt Charles, Maurice made a ſecret treaty with him, by which he engaged to aſſiſt him as a faithful ſubject, ſtipulating that he ſhould be rewarded with the dignity and territories of which his kinſman, the elector, might be deſpoiled. He, nevertheleſs, lulled the ſuſpicions of the other party, till he actually invaded and took poſſeſſion of almoſt the whole electorate of Saxony. For this he was branded with the names of traitor and apoſtate, and became the theme of the bittereſt invectives from the pulpit and the preſs. The elector ſoon after recovered his dominions, and not contented with this, he ſeized upon a part of the hereditary poſſeſſions of Maurice. His ſucceſs was ſhort-lived, for in 1547 he loſt his ſovereignty and his liberty, and his antagoniſt Maurice was, in the ſame year, formally inveſted in the electoral dignity at the diet of Augſburg. He now entered moſt fully into the emperor's views, and joined him in the project to reduce the whole Germanic body to a ſtate of ſubjection; nor was it doubtful that the final ruin of Proteſtantiſm was a part of his determination. Maurice, ſincerely attached to his religion, and feeling his conſequence as its head in Germany, reſolved henceforth to appear in a character ſuited to his ſtation and principles. He enforced throughout Saxony "The Interim," or temporary plan of religion, which was to continue till its final ſettlement, but which was highly obnoxious to the zealous Proteſtants. In this he was ſupported by Melancthon and others of the moderate party. He ſtill profeſſed a full adherence to his alliance with the emperor, but as his own plans approached nearer to execution, he ſtrengthened himſelf by a treaty with the French king, Henry II., the profeſſed object of which was to reſtore the landgrave of Heſſe to liberty, and to preſerve the German conſtitution. At length, in March 1552, Maurice ſuddenly joined in Thuringia a conſiderable army which he had collected, and iſſued a manifeſto containing his reaſons for taking arms. The king of France added one in his own name, and both their forces began to act. Maurice now threw off the maſk very completely, he advanced into Upper Germany, at every place reſtoring the magiſtrates whom the emperor had depoſed, and reinſtating the Proteſtants in the churches from which they had been ejected. By haſty marches, attended with great ſucceſs, he proceeded towards Inſpruck, where the emperor then was. A temporary mutiny among his troops gave that powerful monarch time to eſcape out of the town in a litter by torch-light, before Maurice entered it. He fled acroſs the Alps, having firſt liberated the former elector of Saxony; the council of Trent broke up in confuſion, and the affairs of Germany aſſumed a totally new face. Negociations for peace were opened at Paſſau, where Maurice appeared at the head of the Proteſtants, and Ferdinand, king of the Romans, repreſented his brother the emperor. Maurice's demands were ſupported by the princes of the empire, as well Popiſh as Proteſtant, and the emperor found it neceſſary to enter into terms of accommodation. At length the "Peace of Religion," as it was called, was concluded at Paſſau, in Auguſt 1552, by which the landgrave was to be ſet at liberty, a diet was to be holden within ſix months for ſetling all religious diſſentions, and in the mean time each party was to enjoy equal privileges, and the undiſturbed exerciſe of its religion. Thus Maurice, who, by his conduct, had been ſuſpected of apoſtacy from the Proteſtant cauſe, had the glory of eſtabliſhing the reformation in Germany upon the ſolid baſis on which it has ever ſince ſubſiſted. After this treaty was agreed on, and ſigned, he accompanied Ferdinand into Hungary at the head of 20,000 men, in order to take the command of the Turks, but mutinies among the troops and diſſentions between the generals prevented him from doing any thing worthy of his reputation. In the following year a confederacy was formed againſt Albert of Brandenburg, of which Maurice was appointed commander-in-chief, and on the ninth of June, 1553, the two armies met at Sievenhauſen, when a fierce engagement enſued, which ended in Albert's total defeat. But the victors had to deplore the loſs of many brave officers of diſtinction, among whom was Maurice himſelf, who, on leading a body of cavalry to a ſecond charge, was ſhot in the belly with a piſtol-bullet, of which wound he died two days after, in the thirty-ſecond year of his age, and the ſixth from his poſſeſſion of the electoral dignity. Univer. Hiſt. Robertſon.

Maurice of Naſſau, ſon of William prince of Orange, by his ſecond wife Ann, daughter of the preceding Maurice of Saxony, was about eighteen years of age, and a ſtudent in the univerſity of Leyden, at the time of his father's aſſaſſination in 1584. Upon that fatal event he was appointed by the ſtates of Holland and Zealand their ſtadtholder and captain-general, and ſoon after he took his poſt as an antagoniſt of the prince of Parma, the moſt celebrated general of that age. In 1590 he made himſelf maſter of Breda; and in the following year, being created ſtadtholder of Guelderland, he took ſeveral important places, ending with Nimeguen, by which he acquired a very high degree of popularity and fame. In 1593 he captured the ſtrong fortreſs of Gertruydenberg, which raiſed him to a parity with the ableſt generals of the time, and he appeared to unite with vigour and enterprize of youth all the caution and vigilance that are uſually the reſult of age and experience. Attempts were made to take away his life, but they were unſucceſsful, and he continued for many years in an uninterrupted courſe of military tranſactions, and gradually recovered almoſt all the places within the ſeven provinces which had been taken by the Spaniards. He gained the memorable battle of Nieuport againſt the archduke Albert. Several towns fell into his hands in conſequence of this ſucceſs, though he ever after reflected upon himſelf for putting his country to ſuch a riſk as was incurred by this action. After the death of the prince of Parma, Maurice had next Spinola for his antagoniſt. Every ſtratagem of war was exhauſted in the campaigns between theſe two maſters of the military art, who balanced each other's ſucceſs. The Spaniards now began to be tired of war, and negociations were entered upon for a peace, but Maurice threw obſtacles in the way of an accommodation, while, on the other hand, the conſtitutional republicans, at the head of whom was the grand penſioner of Holland, Barneveldt, were on that account the more ſolicitous to promote it, and in the end they carried their point, and a truce for twelve years was concluded in April, 1609. From this period Maurice appears chiefly in the leſs reſpectable light of head of a party, and aiming at a degree of power and influence not at all compatible with a free conſtitution. Religious diſputes ſucceeded the external tranquillity of Holland: theſe gave Maurice a pretext to interpoſe with a ſtrong hand, by virtue of his office as ſtadtholder. The Arminian doctrine was embraced by Barneveldt, Grotius, and many other illuſtrious characters, who united ſentiments of religious liberty with republican politics. Theſe, however, were the ſmaller number, and Maurice threw all his influence into the ſcale of their enemies, who would not acquieſce in a propoſal for an equal toleration of Calviniſts and Arminians: they demanded a national ſynod to ſettle their diſputes, not doubting that their party would be found to be the majority. To this propoſal Maurice lent his aſſiſtance, and at length, in 1618, the famous ſynod of Dordrecht or Dort was aſſembled. The reſult of its deliberations was the abſolute condemnation of the doctrines of Arminius, and of thoſe who held them. Maurice now exhibited in his own conduct and character the traits of a vile and infamous perſecutor, for every man who lifts his arm againſt the rights of conſcience ought, in right, to be held up as infamous: he ordered the apprehenſion of Barneveldt, Grotius, Hoogenberts, and other heads of that party, who were impriſoned in the caſtle of Louvenſtein. Barneveldt was brought to trial, and though innocent of the charges exhibited againſt him, was condemned to death by a puſillanimous and iniquitous court, and no interceſſions could avert the fate of one whom the prince was ſo much intereſted to remove. He died a martyr to his principles, and his death not only fixed an indelible ſtain on the memory of this prince, but greatly injured his popularity, as ſoon as the nation became cool enough to eſtimate the man they had loſt. The truce between Spain and Holland expired in 1621, and a renewal of war followed, but Maurice's military tranſactions were not now remarkable; they were thought to denote the languor of broken ſpirits and declining health. A conſpiracy was formed againſt his life by the younger ſon of Barneveldt, joined by ſome zealous Arminians: it was, however, diſcovered, and the leaders in it executed. Maurice died at the Hague in 1625, in the fifty-eighth year of his age. He had ſpent the greater part of his life in the ſervice of his country, of which he was, notwithſtanding his defects, conſidered the preſerver, and was unqueſtionably the greateſt ſtateſman and warrior of the period in which he flouriſhed. Vigilant, indefatigable, penetrating, cautious, and ſagacious, he united all the qualities of a general and a hero with the knowledge of a ſcholar. Ambition, ſaid to be the weakneſs of a great mind, was his only foible; this rendered him dangerous to that liberty which he had before nobly aſſerted. There was no part of the ſcience of war with which he was not thoroughly acquainted, but he particularly excelled in the art of fortification, and in the ſelection of ſtrong poſts. He cultivated a taſte for the fine arts, and his temper and talents were calculated to ſupport a tottering cauſe and render it triumphant, and he has been regarded as one of the founders of Batavian independence. Univer. Hiſt.

Maurice, or *Morris*, in *Geography*, a river of New Jerſey, whic runs ſoutherly through Cumberland county, into Delaware bay; navigable for veſſels of 100 tons ten miles, and for ſmaller craft conſiderably further.

Maurice *Bay*, *St.*, a bay on the W. ſide of cape Farewell iſland, or ſouth extremity of Eaſt Greenland, and the principal harbour of that ſea.—Alſo, a bay on the S. coaſt of the iſland of Java. N. lat. 7° 38′. E. long. 109° 3′.

Maurice *Port*, a ſmall cove, which has anchorage before it, in 12½ fathoms, about half a mile from the ſhore, over coral rocks, on the E. coaſt of Terra del Fuego iſland, on the W. ſhore of Le Maire ſtraits, between that iſland and Staten Land, on the E. and N. of the bay of Good Succeſs.

Maurice, *St.*, a town of Switzerland, in the Vallais, ſituated between the two chains of mountains that bound this country in their approach towards the Rhone. The town is built almoſt totally upon the rock, at the foot of ſteep mountains, and at a ſmall diſtance from the river. This was anciently called "Agaunum;" and the name of St. Maurice is derived from an abbey erected in the beginning of the ſixth century, by Sigiſmond, king of Burgundy, in honour of a ſaint who is ſuppoſed to have ſuffered martyrdom in this place: he was, as tradition ſays, the leader of the famous Theban legion, reported to have been maſſacred by the order of Maximin, for not renouncing Chriſtianity. A few Roman inſcriptions, chiefly ſepulchral, and two defaced columns, are the only incontrovertible remains of the antiquity of St. Maurice. It is principally diſtinguiſhed as being the chief entrance from the canton of Bern into the Vallais. This entrance is formed by a narrow paſs, ſo ſtrongly fortified by nature, that a ſmall number of men might defend it againſt a conſiderable army. The ſtone bridge over the Rhone is much admired for its bold projection; it is of a ſingle arch, and the ſpan is 130 feet. The paſs juſt mentioned is a great thoroughfare for all goods and perſons from the lake of Geneva, through the country of Vallais, and over mount St. Bernard; 35 miles E. of Geneva. N. lat. 46° 15′. E. long. 6° 52′.—Alſo, a town of Canada, on a river of the ſame name; 9 miles N.W. of Trois Rivieres.—Alſo, a town of France, in the department of Mont Blanc; 11 miles N.N.W. of Chambery, and another in the ſame department; 24 miles W. of Aoſta.—Alſo, a town of France, in the department of the Orne; 12 miles N.E. of Mortagne.

Maurice, *St.*, and *St. Lazarus*, an order of knights in Savoy. The order of St. Maurice was inſtituted in 1440, by Amadeus VII. duke of Savoy, who was afterwards pope, by the name of Felix V. He aſſigned for its badge a croſs pomettée, made either of white taffeta, or of white linen cloth, placed on the knight's breaſt. In the year 1572 Philibert, duke of Savoy, being made grand-maſter of the order of St. Lazarus, which, in 1565, had been renewed in Savoy by pope Pius IV., obtained permiſſion from Gregory, then pope, for the union of the two orders ; ever ſince which time they have been ſtyled the order of St. Maurice and Lazarus. When this union was effected, the badge was a croſs pomettée argent, upon a croſs of eight points vert ; being the reſpective badges of the two orders before they were united, and to be worn pendent to a green ribband.

MAURICEAU, Francis, in *Biography*, a ſurgeon, eminent in the practice of midwifery, was born at Paris, where he applied, with great induſtry, to the ſtudy and practice of ſurgery, for many years, eſpecially in the great hoſpital of that city, the Hôtel-Dieu. He had already acquired there ſo much experience in the obſtetrical department of practice, before he commenced public practice, that he roſe almoſt at once to the head of his profeſſion. His reputation was farther increaſed by his writings, and maintained by his prudent conduct and acknowledged ſkill during a ſeries of years ; after which he quitted practice entirely, and retired into the country, where he died, in October 1709. He publiſhed the following works, all relative to the particular branch of the art which he practiſed ; they contain a great ſtore of uſeful facts, though ill arranged, and mixed with falſe reaſoning peculiar to his time. 1. "Traité des Maladies des Femmes groſſes, et de celles qui ſont accouchées," Paris 1688, in 4to. which has been often reprinted, and tranſlated into Latin, as well as into moſt of the modern European languages. 2. "Aphoriſmes touchant l'Accouchement, la Groſſeſſe, et les Maladies des Femmes," ibid. 1694, which contains a ſummary of the doctrines of his larger work. 3. "Obſervations ſur la Groſſeſſe et l'Accouchement des Femmes, et ſur leurs Maladies, et celles des Enfans nouveaux nés," ibid. 1695, 4to. This may be conſidered as a ſecond volume of the firſt treatiſe, and contains a great number of caſes and obſervations, in illuſtration of the doctrine there ſtated. 4. "Dernieres Obſervations ſur les Maladies des Femmes groſſes et accouchées," 4to. ibid. 1708 ; which contains an additional collection of caſes. The whole of theſe works were collected, and reprinted together, after his death, in 1712, and ſubſequently with figures. Eloy. Dict. Hiſt. Gen. Biog.

MAURIENNE, or Morienne, *County of*, in *Geography*, was lately a province of Savoy, conſiſting of a long narrow valley ; it now belongs to France, and is included in the department of Mont Blanc.

MAURIPIDA, one of the Laccadive iſlands. N. lat. 10° 58′. E. long. 72° 21′.

MAURITANIA, Mauretania, or, as it is called by Strabo, *Mauruſia*, in *Ancient Geography*, a conſiderable part of the northern region of Africa, extending from Numidia towards the eaſt to the Atlantic ocean on the weſt. Mauritania Propria, or Tingitania, conſidered as unconnected with Mauritania Cæſarienſis, was bounded on the E. by the river Malva or Mulucha ; on the W. by the Atlantic ocean ; on the S. by Gætulia or Libya interior ; and on the N. by the Mediterranean. This kingdom, being reduced to the form of a Roman province in the reign of Claudius, was denominated by that prince Mauritania Tingitana ; and it was called by the Romans at that time, as well as afterwards, Tingitana, from its principal city Tingi or Tingis, and thus diſtinguiſhed from Mauritania Cæſarienſis. The Tingitania of the ancients very nearly correſponds to the kingdoms of Fez and Morocco. As to the extent of Mauritania properly ſo called, it may be eſtimated by conſidering that the Malva or Mullooïah, its eaſtern limit, about 1° 15′ W. of London, is rather more than 240 miles diſtant from the Atlantic ocean. Some modern geographers make the kingdom of Fez to be 270 miles long, and that of Morocco, from cape Non to the mountains which divide it from Segelmeſſa above 370 ; but this computation, with reſpect to the ancient Tingitania, is, without doubt, more erroneous than that of Pliny, which amounts only to 170 miles.

Mauritania and Mauruſia, the names of this country, are derived from the Mauri, an ancient people who inhabited it ; and Bochart conſiders Maurus as equivalent to Mahur ; or as an eliſion of gutturals is very common in the Oriental language, Maur, *i. e.* one from the weſt, or an occidentaliſt, Mauritania being weſt of Carthage and Phœnicia. As to the origin and general hiſtory of the Mauritanians, we may direct our attention to three principal epochas. 1. The period during which the firſt population, derived from Mizraim by his ſons and grandſons, extended from the E. to the W. 2. That in which the Canaanites, expelled from Paleſtine by Joſhua, traverſed ſea and land to eſcape from his victorious and deſtructive arms, eſtabliſhed themſelves along the coaſts of Africa, and partly in the interior of the country. To this purpoſe Procopius ſays, that in his time two pillars of ſtone were to be ſeen in this country, with the following inſcription in the Phœnician language and character upon them : "We are the Canaanites who fled from Joſhua, the ſon of Nun, that notorious robber." 3. The time when the Phœnicians, impelled by the activity of their commercial ſpirit, formed upon theſe coaſts conſiderable eſtabliſhments. We might alſo mention an influx of Arabians, who came here from Arabia Felix, in the firſt century of the Chriſtian era, and the invaſion of the Mahometan Arabs, in the ſeventh and eighth centuries. This country, it is well known, bore the name of Barbary, of which there are ſeveral derivations. To thoſe that occur under Barbary, we ſhall here add, that the name may be formed from the oriental "Bar-Barca," or the ſea of Barca, a town of the Pentapolis, called afterwards Ptolemais.

The Mauritanians, according to Ptolemy, were divided into ſeveral cantons or tribes, which it is needleſs for us now to enumerate. The metropolis of Tingitania was Tingis or Tingi ; which ſee. Some of its other principal towns were, Zelis, ſuppoſed by ſome to be the modern Arzilla :—Lixus, the reſidence of Antæus, who was here vanquiſhed by Hercules, and not far from the gardens of the Heſperides ; conjectured to be the preſent Larache :—the city of Hanno, called Thymiaterion :—Sala, near a river of the ſame name, not far from the Atlantic ocean :—the port and town of Rutubis, 213 miles S. of Lixus :—the Exiliſſa of Ptolemy, ſuppoſed to be the Ceuta of the moderns :—Ruſadir, preſumed to be Melila or Melilla ; and in the interior of the country, the Aſcurum of Hirtius :—Herpis :—Volubilis, ſuppoſed to be the modern Fez :—Gilda, correſponding to Mequinez :—Priſciana :—the Tocoloſida of Ptolemy, perhaps the modern Amergue ; the Triſidis of Ptolemy :—Gontiana, anſwering to a ſmall town between Fez and Mequinez, called Gamaa :—Banaſa :—Chalce :—Calamintha, &c. &c. Among the rivers of Tingitania we may mention the Malva, Molochath, Mulucha, or Mullooïah ; the Thaluda, Taluda, or Tamuda ; the Lixus ; the Subur ; the Sala, &c. &c. The chief capes or promontories of Tingitania were, the Metagonitis of Ptolemy, and Metagonium of Strabo ; the Seſtiarium promontorium of Ptolemy, or the Ruſſadi of the Itinerary ; the promontorium Oleaſtrum ; the Phœbi promontorium ; the cape Cottes or Ampeluſia, now cape Spartel ; Mons Solis ; promontorium Herculis; and Uſadium. Among the principal mountains we may rank Abyle or Abyla or Abenna, called by the ancients one of Hercules's pillars, and by our countrymen Apes hill ; the Septem fratres of Mela, or Heptadelphi of Ptolemy, near Abyla ; mount Cotta not far from the Lixus ; and mount Atlas. The chief ports of this country were Ruſadir, Sinus Emporicus, Cotta, Rutubis, and Myſocaras. The principal iſlands on the coaſt of Tingitania were the Tres Inſulæ of the Itinerary, N.W. of the Mulucha; Gezira or Jezeirah, in the river Lixus, about three leagues from the ſea, where the ancients placed the Heſperides; Ptolemy's Pœne and Erythia, two obſcure iſlands in the Atlantic: the latter of which is now called Mogador; the Inſulæ Purpuraſiæ, ſaid by Hardouin to be Madeira and Porto Santo; and the Inſulæ Beatæ, or Fortunate iſlands, of which ſome reckoned ten, others ſeven, and others three.

The government of Mauritania, from the earlieſt ages, is ſaid to have been an abſolute monarchy. However Appian ſays, that ſeveral tribes of Moors were governed by their own laws, or at leaſt under the direction of their own chiefs and leaders, in oppoſition to that form of government which was eſtabliſhed in the greateſt part of this country. The independent Arabs, mentioned by Dr. Shaw in his Travels, who are ſeated in the kingdom of Algiers and Tunis, and who ſometimes hover about the frontiers of Morocco, may probably be the poſterity of theſe free-born Moors. Whether this be allowed or not, moſt of the provinces of Mauritania, if not the whole country, were ſubject to one prince in the reign of the elder Dionyſius. It appears alſo from Juſtin and Appian, that at ſubſequent periods they had ſovereigns, but it is likely that they exerciſed their ſovereign authority according to fixed laws, or certain political maxims, which directed the conduct of their rulers.

As to their religion, Neptune was one of the principal objects of their adoration. They likewiſe paid religious honours to the ſun and moon, in common with the other Libyan nations. Seneca aſſerts that they offered human ſacrifices to their gods, in imitation of the Phœnicians and Carthaginians, or ſome other ancient people, from whom they derived their origin. Bacchus was alſo worſhipped by the Mauritanians; and, in ſhort, we may form a notion of their religion from that of the Egyptians, Phœnicians, Perſians, and Carthaginians. Their language and character ſcarcely differed from thoſe of the Numidians. As to their cuſtoms and habits, they at firſt uſed only clubs in their military conflicts, till they were taught the uſe of the ſword. All perſons of diſtinction were clad in rich apparel, ornamented with gold and ſilver, and they took great pains in curling their hair, curiouſly and elegantly, cleanſing their teeth, combing their beards, which were long, and paring their nails. In time of action the Mauritanian infantry uſed ſhields made of elephants' ſkins, and they were clad, both night and day, in thoſe of lions, leopards, and bears. The cavalry were armed with broad ſhort lances, and carried targets or bucklers, made of the ſkins of wild beaſts. They uſed no ſaddles. Their horſes were ſmall and ſwift, and ſo much under command, that they would follow them like dogs. Herodotus intimates, that the ſhield and helmet came from them to the Greeks. Notwithſtanding the fertility of their ſoil, the poorer Mauritanians never attended to agriculture, but roved about the country in a wild ſavage manner, like the ancient Scythians or Arabian Scenites. They lived in ſmall and inconvenient tents; their food was corn and herbage, which they frequently ate green, and without any preparation; their habit was the ſame in ſummer and winter, and conſiſted of a tattered, though thick, garment, covered with a coarſe rough tunic; they repoſed on the ground, ſometimes ſpreading their garments under them, as the African Kabyles and Arabs now do. According to a paſſage in Horace, they ſhot poiſoned arrows; in preparing and uſing which they were ſkilful, having acquired the art from ſelf-defence againſt the wild beaſts, to which they were expoſed. With regard to the arts and ſciences, the Mauritanians were rude and barbarous; but if they excelled in any art, it muſt have been in navigation. To magic, ſorcery, and divination, they were much addicted. Strabo differs from Mela in his deſcription of Tingitania; for he repreſents it, not as poor and deſpicable, but as an opulent kingdom.

The hiſtory of the Mauritanians preſents to our notice nothing remarkable, except the defeat of Antæus, till the Roman times. Salluſt informs us that nothing of the Mauri, except their name, was known to the Romans ſo late as the Jugurthine war; and the moſt ancient Greek writers conſidered them merely as a branch of the Libyans. Bogud, king of Mauritania, who was contemporary with Julius Cæſar, contributed very much to his great ſucceſs in Africa; and he aſſiſted him alſo in Spain. After Cæſar's death, he joined Antony againſt Octavius, but when he attempted to make a diverſion in Spain, in favour of the former, the Tingitanians revolted, and being ſupported by Bocchus's troops in the intereſt of Octavius, Bocchus ſucceeded and was put in poſſeſſion of Tingitania, and Octavius granted to the inhabitants of Tingis the privileges of Roman citizens. After Bocchus's death, Tingitania was reduced to the form of a Roman province. Auguſtus gave the younger Juba the two Mauritanias, together with part of Gætulia, ſome time after his marriage with the younger Cleopatra, inſtead of his father's kingdom, *i. e.* Numidia, which ſtill remained a Roman province. The Mauritanians, however, did not quietly ſubmit to the Roman yoke. At the commencement of the reign of Tiberius, Tarfarinas, a Numidian ſoldier, enterpriſing and courageous, famed among the Romans in the art of war, entered into a confederacy with ſome diſcontented Moors, and refuſed to acknowledge the authority of Rome. Tarfarinas was defeated by the proconſul Cornelius Dolabella. In this war Ptolemy, the ſon of Juba II. and grandſon of Juba I. rendered very conſiderable aſſiſtance to the Romans. However, he was put to death under Caligula. Eudemon, his freedman, raiſed an army in order to avenge his death. Claudius, who ſucceeded Caligula, ſent an army againſt the Moors, and they were completely defeated.

In conſequence of a treaty of peace between the two commanders, Mauritania was delivered entirely into the hands of the Romans; for we find it ſoon after divided into two provinces, the one called Tingitania, or Mauritania Tingitana, from the city Tingis, and the other Mauritania Cæſarienſis, from Cæſar, a ſurname which Claudius had in common with the other Roman emperors.

The Mauritanians, being completely ſubjected to the Romans, returned to their cuſtomary occupations, and having abandoned a military life, devoted themſelves to the care of their lands, herds, and flocks. But the diſſentions that occurred on occaſion of the pretenſions of Otho and Vitellius to the empire, put them again in motion. Under the immediately ſucceeding reigns nothing very material occurred; but under the empire of Diocletian, they engaged in a conteſt with Maximin, his aſſociate in the empire. In this conflict they were great ſufferers; being obliged to deliver up their arms and to abandon their country. After the abdication of Diocletian, they were involved in new troubles. The troops of Africa revolted and proclaimed Alexander their lieutenant; upon which they were attacked and defeated by Maxentius.

Conſtantine, after his acceſſion, granted ſingular privileges to the African churches, which ſoon became very numerous. But when the ſeat of government was transferred to Byzantium by Conſtantine, the diſtant provinces were abandoned to the oppreſſion of their governors. The Mauritanians ſuffered, and their country was once and again the ſcene of tumult and of war. When the Vandals were deſtroyed in Africa under the reign of Juſtinian, by the activity of Beliſarius, the Mauritanians found themſelves expoſed to the tyranny and oppreſſion of Greek prefects. The people revolted; and at length, under the empire of Heraclius, the caliphs having conquered Egypt and Syria, ſent an army on their coaſt. The whole country, as far as the columns of Hercules, ſubmitted to their domination, under which it has more or leſs continued. See MOORS.

MAURITANIA *Cæſarienſis*, or *Cæſariana*, a part of Mauritania ſo denominated under the reign of Claudius. This province had been ſeparated from Numidia: it extended from Mauritania Tingitana, from which it was ſeparated by the river Malva on the weſt as far as the Ampſagee. See NUMIDIA.

MAURITANIA *Sitiſenſis*, a part of Mauritania Cæſarienſis on the eaſtern ſide, adjacent to Numidia, ſo called from Sitifi, a town in that territory.

MAURITIA, in *Botany*, a Palm ſo named by the younger Linnæus, after the appellation by which it is known to the Dutch ſettlers in Surinam, *Mauritii-Boom*, or Maurice tree. Whether this appellation originated in any compliment to the memory of their great prince Maurice, or of any other perſon of the ſame name, or whether the tree were thought to have been brought from the iſland of Mauritius, we are not informed.—Linn. Suppl. 70. Schreb. 779. Mart. Mill. Dict. v. 3. Juſſ. 40. Lamarck Dict. v. 3. 739.—Claſs and order, *Dioecia? Hexandria.* Nat. Ord. *Palmæ.*

Gen. Ch. Male an oblong ſeſſile *catkin*, covered entirely with cloſely crowded flowers, having obtuſe ſcales between them. *Cal.* Perianth of one leaf, cup-ſhaped, abrupt, entire, triangular, ſhort. *Cor.* of one petal; tube ſhort, the length of the calyx, with three ſutures, by which the diviſions of the limb are eaſily continued down to the baſe; limb in three deep, equal, ſlightly ſpreading, lanceolate, obtuſe, channelled, rigid, and almoſt woody, ſegments. *Stam.* Filaments ſix, thick and very ſhort, inſerted into the mouth of the tube; anthers linear, angular, the length of the corolla, three of them ſpreading horizontally between its ſegments, the alternate three erect, cloſely preſſed to the channel of each ſegment.

Female unknown.

Eſſ. Ch. Male an oblong ſeſſile catkin. Calyx of one leaf, cup-ſhaped, undivided. Corolla of one petal, with a ſhort tube, and three-cleft limb.

1. M. *flexuoſa*. Linn. Suppl. 454. Syſt. Veg. ed. 14. 986.—Sent, from the woods of Surinam, by Dalberg, being a part of the botanical collection, preſerved in ſpirits of wine, which king Guſtavus III. of Sweden preſented to Linnæus. (See GUSTAVIA.) It is deſcribed as a nearly leafleſs *tree*, with angular, zigzag, ſmooth *branches*, compoſed of ſhort joints ſwelling upwards and ſomewhat recurved, each joint terminating in a cup-like, doubly-pointed *ſheath*. From theſe *ſheaths*, over the whole ſtem, ſpring ſolitary ſeſſile *catkins*, of an ovate-oblong cylindrical figure, rather above an inch in length, widely ſpreading in two ranks, each having at its baſe a pair of larger erect falcate ſcales. The flowers are of a ruſty hue, at leaſt in the preſerved ſpecimens, and cloſely cover the whole catkin, ſtanding at a right angle with its common ſtalk. The *ſcales* which ſeparate the flowers are round and obtuſe, ſmaller than the pair at the bottom of the catkin. The *flowers* fall when faded, leaving the catkin and its ſcales permanent. Linnæus juſtly ſpeaks of this tree as very ſingular, being almoſt deſtitute of foliage, and laments that he knew nothing of the female flowers or fruit. Theſe are preſumed to be borne on a diſtinct individual.

MAURITIA, in *Gardening*, comprehends a plant of the exotic tree kind, of which the ſpecies cultivated is the maidenhair tree, or ginkgo, (M. flexuoſa.)

Method of Culture.—It may be increaſed by laying down the young branches in the ſummer ſeaſon, and when they have ſtricken root fully, taking them off and planting them with earth about their roots in pots filled with light freſh mould, placing them in the greenhouſe, where they muſt be kept.

And the cuttings of the young ſhoots may alſo be planted in pots in the ſame manner, plunging them in a moderate hotbed till they have ſtricken root, when they may be managed as the other plants are directed to be.

This plant affords variety in the greenhouſe, and when trained againſt walls; but in the laſt caſe muſt be ſheltered by mats, in ſevere weather in the winter ſeaſon.

MAURITIO, ST., in *Geography*, a town of France, in the department of the Po; ſeven miles N.N.W. of Turin.

MAURITIUS, or *Iſle of France*, an iſland in the Indian ſea, firſt diſcovered by the Dutch in 1598, and ſo called by them in honour of the prince of Orange. On their firſt arrival the Dutch anchored with a fleet of five ſhips in a ſafe port capable of containing 50 large veſſels, and which, in honour of their vice-admiral, they called Warwick's Haven. The country was found to abound with cattle, fowl, fiſh, and fruits; and afforded a ſeaſonable ſupply of neceſſaries to the crew and of refreſhments to the ſick, who went on ſhore for their recovery. Of the importance of this iſland they were ſufficiently appriſed, inſomuch that they recorded in their journals an obſervation, that it might be commodiouſly viſited by outward bound ſhips, as that of St. Helena might be on their return: nevertheleſs, they made no ſettlement in this iſland for forty years, and they were juſt in time to preclude the French from taking poſſeſſion of it. They had the precaution to build a fort for the defence of the haven and watering place; and in 1640 they had two or three ſmall ſettlements in the iſland, beſides their fort. But as they wanted ſlaves to cultivate their plantations, they applied to the French governor of Madagaſcar, and prevailed upon him to ſteal 50 blacks out of the number of thoſe who were under his protection. This fraudulent act induced the people of Madagaſcar to withdraw their confidence from the French; and as to the negroes that were carried to Mauritius, many of them fled into the woods and mountains, where they became robbers or banditti, or, as they are denominated in the Weſt Indies, maroons. Theſe were joined by other perſons of a ſimilar deſcription, and became ſo powerful, that the Dutch, notwithſtanding their garriſon of 50 men in the fort, could not ſecure themſelves againſt their inſults and depredations. About the beginning of the laſt century, the Dutch Eaſt India company in Holland determined to abandon it; and actually withdrew their colony from it in 1712, and removed it to the Cape of Good Hope. The iſland, ſays the Abbé Raynal, was uninhabited when the French landed there in 1720, and changed its name from Mauritius to the Iſle of France, which name it ſtill bears. Its firſt inhabitants, he ſays, came over from the Iſle of Bourbon; but it remained in a neglected ſtate for almoſt fifteen years. At length, in 1734, the French company reſolved to make ſome important ſettlement here, and the project was entruſted to the execution of Mahe de la Bourdonnais. As ſoon as he arrived he was indefatigably active in executing every plan for the improvement of the iſland, which his ſagacity deviſed: and to him the French were afterwards indebted for aqueducts, bridges, hoſpitals, and ſtorehouſes. Exciting by his example a ſpirit of emulation and induſtry in the coloniſts, he changed the whole aſpect of the iſland and the condition of its inhabitants, during the twelve years of his adminiſtration. By his recommendation the French made choice of the harbour to the N.W. of this iſland, in preference to that which is more ſpacious and more commodious to the S.E.; a harbour to the leeward poſſeſſing many advantages in latitudes where the general winds prevail. The ſpirit which he excited led the inhabitants to the cultivation of corn, which became the moſt proſperous of all the branches of agriculture practiſed at this iſland; where the fields yield annually in regular ſucceſſion a crop of wheat and another of maize or Indian corn. The manioc or caſſava, which was brought from Brazil by M. la Bourdonnais, ſerved as common food to the blacks. In conſequence of the improvements of this governor, ſhips going to India found all the refreſhments and conveniences they wanted after a tedious paſſage. The continual ſupplies afforded to ſhips and ſquadrons have contributed to check the increaſe of cattle, which it was the object of La Bourdonnais to multiply. However, the iſland produces excellent paſture, which ſprings up in the beginning of the rainy ſeaſon. It completes the whole courſe of its vegetation in the courſe of three months, during which interval the inhabitants feed their herds. This iſland has occaſionally ſuffered much from hurricanes, ſo that the colony has been preſerved by the attention of the governor in procuring ſupplies from the Cape of Good Hope. The cultivation of corn in this iſland has been much promoted by M. Poivre; and in a variety of other ways, particularly by introducing the nutmeg and clove, and the rice of Cochinchina, he contributed to enrich the colony entruſted to his care. M. Cerè procured from Ceylon, and planted in this iſland, of which he was governor, a great number of cinnamon, clove, and nutmeg trees, which have been very proſperous. But in 1786, the Dutch, actuated by the true ſpirit of monopoly, ſent a vagabond to the iſland in order to deſtroy theſe plantations; but the plot was diſcovered in time, and the vagabond eſcaped merited puniſhment.

The ſoil of this iſland is, generally ſpeaking, red and ſtony; towards the ſea-coaſts it is mountainous, but within land there are many ſpots both level and fertile. Some of the mountains are high, but none exceed 426 fathoms in elevation: it is ſaid, however, that their ſummits are covered with ſnow throughout the year. The whole iſland is well watered; and it produces all the trees, fruits, and herbs, which grow in this part of the globe, in great plenty; groves of oranges as well as citrons; and the pine-apple grows ſpontaneouſly in great perfection. The chief produce is ſugar. When this iſland was firſt diſcovered, the ground was covered with wood up to the ſummits of the mountains, ſo that it was one immenſe foreſt full of beautiful trees. M. Rochon obſerved in it different kinds of the palm-tree, bamboos, ebony, mat-wood, tacamaca, ſtinking wood, and many other kinds of valuable trees. No venomous animals, except ſcorpions and millepedes, are known here. For fineneſs of climate, and ſalubrity of air, this iſland, as well as that of Bourbon, may be compared with the Fortunate iſlands. The whole extent of the iſland is about 150 miles, and its form is nearly circular. The population, in the year 1790, excluſive of the military, was eſtimated at 8000 whites and 12,000 blacks. This iſland, the laſt remains of the French poſſeſſions in the Indian ſeas, was taken by the Engliſh, December 2, 1810. S. lat. 20° 12′. E. long. 58° 27′.

MAURO, St., a town of Naples, in Lavora; 4 miles S.E. of Capua.—Alſo, a town of Naples, in Baſilicata; 22 miles S.E. of Acerenza.—Alſo, a town of the county of Tyrol; 12 miles N.N.E. of Trent.—Alſo, a town of Naples, in Calabria Citra; 3 miles W.S.W. of Roſſano.

MAUROCENIA, in *Botany*, Linn. Hort. Cliff. 108. Gen. ed. 1. 85, was named by Linnæus in honour of Giovanni Franceſco Mauroceno, a Venetian ſenator, who had a very fine and rich garden at Padua, of which a catalogue was publiſhed there by Antonio Tita in 1713, being an 8vo. of 183 pages, beſides 13 pages deſcribing a journey of the author's over the mountains of Trent. This genus was ſubſequently ſunk in *Caſſine*, the only ſpecies of which it conſiſted being *Caſſine Maurocenia*, Linn. Sp. Pl. 385. See Cassine.

MAUROLICO, or Maurolicus, Francis, in *Biography*, who flouriſhed in the ſixteenth century, deſcended from a noble Greek family, (but driven to ſeek an aſylum in Sicily from the perſecution of the Turks,) was born at Meſſina in the year 1494. He was, at a very early period, diſtinguiſhed by his proficiency in polite literature, the learned languages, and, above all, in mathematical learning. He devoted himſelf to theology as a profeſſion; but his favourite ſtudies were thoſe of the belles lettres, and the ſciences properly ſo called. For a conſiderable time he was profeſſor of mathematics in his native city, and was much followed and admired on account of the great perſpicuity with which he explained and illuſtrated the moſt difficult queſtions. His fame, as a mathematician, extended over the whole of Europe. He excelled in geometry, aſtronomy, optics, and architecture; and he enjoyed the eſteem and friendſhip of the moſt illuſtrious perſons of his time. He was by his countrymen regarded as their ſecond Archimedes. He reſtored the fifth book of Apollonius, which had been loſt; and he diſcovered a new method of demonſtrating the properties of the conic ſections, in which he has been followed by many modern geometers. He made diſcoveries in the art of dialling, of which he publiſhed an account in his "De Lineis Horariis." He wrote on optics, and is mentioned by Dr. Prieſtley and others as the perſon who diſcovered that it is the cryſtalline humour which collects and unites on the retina the rays which it receives from external objects, and brings every pencil to its proper focus; and by means of it, he was able to explain the phenomena of long and ſhort-ſightedneſs, which had been till then inexplicable. He is ſaid alſo to have given the firſt ſolution of the problem concerning the image of the ſun appearing round, though the rays that form it are tranſmitted into a dark room through an angular aperture. He died at the advanced age of eighty, leaving behind him numerous works, that atteſt to the greatneſs of his talents, and his unceaſing induſtry and perſeverance, though he was for many years an invalid. His biographers have given the titles of the following as his principal works: "The Spherics of Theodoſius;" "Emendatio et Reſtitutio Conicorum Apollonii Pergæi;" "Archimedis Monumenta omnia;" "Euclidis Phænomena;" "Opuſcula Mathematica;" "Arithmeticorum Libri duo;" "Photiſmus de Lumine et Umbra;" "Problemata Mechanica ad Magnetem et ad Pyxidem nauticam Pertinentia." Prieſtley's Light and Colours. Moreri.

MAURON, in *Geography*, a town of France, in the department of the Morbihan, and chief place of a canton, in the diſtrict of Ploermel; 10 miles N. of Ploermel. The place contains 4212, and the canton 9035 inhabitants, on a territory of 192½ kiliometres, in 7 communes.

MAUROUSE, the name of a creature of the deer kind, mentioned by Joſſelyn. It ſeems to be the ſame with the *dama Virginiana* of Mr. Ray, one of which creatures was, in his time, kept alive in St. James's park.

This is not certain, however; for Joſſelyn's deſcription is very imperfect: he only ſays it is like the mooſe-deer, but is ſmall, and has ſmall horns.

MAURS, in *Geography*, a town of France, in the department of the Cantal, and chief place of a canton, in the diſtrict of Aurillac; 18 miles S.S.W. of Aurillac. The place contains 2045, and the canton 11,029 inhabitants, on a territory of 262½ kiliometres, in 13 communes.

MAURSEE, a conſiderable lake of Pruſſia, in the province of Culm; 10 miles E. of Raſtenburg.

MAURUA, or Maurooa, one of the Society iſlands, in the South Pacific ocean, of ſmall ſize, wholly ſurrounded by a reef, and deſtitute of harbour for ſhipping. It is inhabited, and bears the ſame produce as the neighbouring iſlands. Its middle riſes in a high round hill, that may be ſeen at the diſtance of 10 leagues. S. lat. 16° 26′. W. long. 152°.

MAURUCA, a kingdom on the eaſt coaſt of Africa, ſituated in about S. lat. 14° 30′. E. long. 37° 14′.

MAUSAHEID, or Mesek, a town of Arabia; 35 miles N. of Mocha.

MAU-SIDS, a town of Arabia, in the province of Yemen; 24 miles N. of Mocha.

MAUSOLEUM, a magnificent tomb, or funeral monument, decorated with architecture and ſculpture, and inſcribed with an epitaph; erected in honour of ſome emperor, prince, or other illuſtrious perſon.

The word comes from *Mauſolus*, the name of a king of Caria, to whom Artemiſia, his widow, erected a moſt ſtately monument, that has ſince been numbered among the ſeven wonders of the world; calling it, from his name, Mauſoleum. It was ſixty-three feet long, almoſt four hundred and eleven feet in compaſs, and about thirty-five feet high, ſurrounded with thirty-ſix columns, that were beautified in a wonderful manner. Pliny has deſcribed it, lib. xxxvi. cap. 5. Afterwards the ſame name was given to all coſtly monuments. Thus the ſtately monument was called, which Auguſtus built, during his ſixth conſulſhip, between the Flaminia Via and the Tiber, to be a burial-place for him and his family, and which Strabo has deſcribed in his fifth book. It is alſo the name which Florus, lib. iv. cap. 11. gives to the monuments of the kings of Egypt, wherein Cleopatra ſhut herſelf up, and put herſelf to death. Many authorities teſtify, that the Romans gave this name to thoſe ſepulchres whoſe ſtructure was magnificent.

Mausoleum is alſo uſed to ſignify the decoration of a fictitious tomb, or catafalca, in funeral pomp.

MAUSSAC, Philip-James, in *Biography*, a learned critic, was born at Toulouſe in the year 1590, where his father was a counſellor of parliament. He was educated for the profeſſion of the law, and became preſident of the court of aides at Montpellier, where he died in 1650. He was accounted one of the beſt Greek ſcholars of his time. He wrote "Notes and Corrections on Harpocration," "Remarks on the Treatiſe on Mountains and Rivers aſcribed to Plutarch," and various other works. Moreri.

MAUTCHONG-Counsan, in *Geography*, a mountain of Thibet. N. lat. 31° 38′. E. long. 83° 44′.

MAUTEN, a town of Carinthia, at the conflux of the Moledin and the Geil; 18 miles S.W. of Saxenburg.

MAUTERN, a town of the duchy of Stiria; 8 miles N. of Windiſch Gratz.

MAUTH, a town of Bohemia, in the circle of Beraun; 18 miles S.E. of Beraun.

MAUTHAUSEN, a town of Auſtria, on the left bank of the Danube; 7 miles E. of Steyregg.

MAUTOUR, Philibert Bernard Moreau de, in *Biography*, auditor of the chamber of accompts at Paris, and member of the academy of inſcriptions. He was born at Beaune in 1654, and died in 1737. He wrote ſome papers in the Memoirs of the Academy of Belles Lettres, and poems. He was alſo the editor of an abridgment of Petavius's Chronology, 4 vols. 12mo. Moreri.

MAUTTERN, in *Geography*, a town of Auſtria, on the ſouth ſide of the Danube, oppoſite to Stein; 32 miles W.N.W. of Vienna. N. lat. 48° 23′. E. long. 15° 38′.

MAUTTERNDORF, a town of the principality of Salzburg; 11 miles S. of Radſtadt.

MAUVEZIN, a town of France, in the department of the Gers, and chief place of a canton, in the diſtrict of Lectoure; 17 miles S.S.E. of Lectoure. The place contains 2005, and the canton 9083 inhabitants, on a territory of 192½ kiliometres, in 26 communes.

MAUVILLON, James, in *Biography*, profeſſor of the military ſciences in the Caroline college at Brunſwick, was deſcended from a French family, and born at Leipſic in 1743. His father being profeſſor of the French language in the Caroline college, he had an opportunity of proſecuting his ſtudies under the celebrated men who, at that time, were an ornament to the ſciences which they taught. The favourite purſuits of the ſon were the languages, drawing, and mathematics. He ſoon diſplayed a ſtrong attachment to a military life; but as this was oppoſed by his father, who wiſhed him to ſtudy the law, he went privately and offered to inliſt himſelf with general Wallmoden. Though his ardour was great, his ſtature was ſo ſmall and diminutive, that the general refuſed to admit him into the ſervice. At length, however, he was received into the corps of engineers; but, at the concluſion of the war, he was, at the perſuaſion of his father, induced to repair to Leipſic to ſtudy the law. His mind was not at all formed for legal ſtudies, and he preferred to theſe the drudgery of aſſiſting in a ſchool. Here he improved himſelf in the Latin language, and ſoon after, on the recommendation of the general, was appointed engineer of bridges and highways at Caſſel, and teacher of the military ſciences. About this period he became a contributor to ſome periodical works, and wrote his "Letters on the Merits of the German Poets," which, on account of the ſeverity of his animadverſions, excited againſt him many enemies. In 1775 he gave proofs of his diligence, as well as his talents, by tranſlating Raynal's "Hiſtory of the Indies," a work of Turgot's, and Arioſto; beſides being engaged in ſeveral journals. In 1777 he was appointed captain of a corps of cadets, and obtained the friendſhip of profeſſor Dohm, afterwards the Pruſſian miniſter. To this perſon he addreſſed his "Phyſiocratie Letters," which were publiſhed in 1780; and in the ſame year he was elected a member of the Society of Antiquaries at Caſſel, and wrote ſeveral papers, which were inſerted in its tranſactions. In 1781 he publiſhed his "Introduction to the Military Sciences," with an Eſſay on the thirty years' war, and another on the influence which the invention of gunpowder has had in modern wars. Theſe were all publiſhed in the French language. His ſituation in the corps of cadets ſubjected him to much uneaſineſs; and about this time he repaired to Potzdam, and ſolicited an appointment from Frederic II., which would have been readily granted; but he found his wife ſo averſe from ſettling in Pruſſia, that he gave up the idea, and returned to his former ſituation at Caſſel. He ſtudied religion as well as military tactics, and in 1787 publiſhed what he entitled a "Syſtem of Religion." He had, previouſly to this, formed an acquaintance, which ripened into friendſhip, with the celebrated Mirabeau. An account of the joint purſuits of theſe friends may be found in Mirabeau's "Lettres du Compte de Mirabeau à un de ſes Amis en Allemagne, ècrites durant les Anneès 1786-90." Mauvillon died in 1792. The laſt work which he publiſhed was entitled "Man and Woman," written in oppoſition to a book by Brandes, in which the female ſex had not been treated with that degree of juſtice which Mauvillon thought due to them. He began a "Life of Prince Ferdinand of Brunſwic," which is ſaid to be the beſt of all his productions. Mauvillon was fond of company; and in the early part of life, the whole object of his labour was that he might gratify his taſte without running into debt. In his manners and dreſs he was exceedingly ſimple; he had no attachment to wine, but was exceſſively fond of coffee; he was a zealous advocate for the principles of toleration, and in all kinds of company avowed his ſentiments with the greateſt freedom. He was friendly to the French revolution, but diſapproved of the horrid ſcenes which attended it. Gen. Biog.

MAUZAT, in *Geography*, a town of France, in the department of the Puy-de-Dôme, and chief place of a canton, in the diſtrict of Riom. The place contains 1565, and the canton 9072 inhabitants, on a territory of 242½ kiliometres, in 10 communes.

MAUZE', a town of France, in the department of the Two Sevres, and chief place of a canton, in the diſtrict of Niort. The place contains 1600, and the canton 6876 inhabitants, on a territory of 145 kiliometres, in 8 communes.

MAW, a ſea-port of Ceylon, at the mouth of a river on the weſt coaſt; 50 miles W. of Candy. N. lat. 7° 45'. E. long. 75° 55'.

Maw. See Abomasus.

Maw-*Skin*, in *Rural Economy*, a provincial word uſed to ſignify the ſtomach of the calf prepared for cheeſe-making.

MAWAR-UL-NERE, denoting "the country beyond the river, or "Tranſoxiana," in *Geography*, a country of Independent Tartary, lying beyond the Oxus, or modern Gihon or Jihon; and beyond the lower parts of the courſes of that river, and the Sihon, or ancient Iaxartes.

MAWHELLIPOUR, a town of Hindooſtan, in Bahar; 3 miles S.W. of Bahar. N. lat. 25° 21'. E. long. 84° 55'.

MAWRI, a ſea-port town of Africa, in the country of Sabu, on the Gold coaſt, inhabited chiefly by fiſhermen. In the middle of the town is Fort Naſſau, built by the Dutch, with a ſmall garriſon.

MAWS, St., a borough town in the pariſh of St. Juſt, hundred of Powder, and county of Cornwall, England, is ſituated on the eaſt ſide of Falmouth harbour; one mile diſtant from Falmouth, and 270 from London. It conſiſts only of one ſtreet, containing about twenty houſes, inhabited chiefly by fiſhermen. A fair is held annually, but the town has never been incorporated, and has neither church, chapel, nor meeting-houſe; yet it ſends two repreſentatives to parliament, and has done ſo ever ſince the fourth year of queen Elizabeth. It is governed by a portreeve, who has the title of mayor. The principal influence and property of the borough are now poſſeſſed by the marquis of Buckingham. King Henry VIII. erected a caſtle here, oppoſite to that of Pendennis, to which it is very inferior both in ſize and ſituation, though built nearly at the ſame time, by the ſame monarch, and for the ſame purpoſe, *i. e.* the ſecurity of Falmouth harbour. The works are completely commanded by a hill, which riſes immediately behind them. Beauties of England and Wales, vol. ii.

MAXANTELLA, an iſland near the port of Matanchel, on the weſt coaſt of New Mexico, in the North Pacific ocean.

MAXDORF, a town of Bohemia, in the circle of Leitmeritz; 10 miles W. of Kamnitz.

MAXEN, a town of Saxony, famous for a victory obtained by the Auſtrians, commanded by count Daun, over the Pruſſians, in 1759, when 20,000 Pruſſians laid down their arms and ſurrendered priſoners of war; 80 miles S. of Dreſden.

MAXENTIUS, Marcus Aurelius Valerius, in *Biography*, a Roman emperor, was the ſon of Maximian, and married the daughter of Galerius. The abdication of Maximian and Diocleſian, in 305, made room for the elevation of Galerius and Conſtantius to the rank of Auguſtus: of courſe, two new Cæſars were to be appointed; but Maxentius, on account of his vicious propenſities, was paſſed over, though, from his birth and rank in the ſtate, he ſeemed beſt entitled to that honour. Deprived of what he thought was his natural right, he waited only for an opportunity of aſſerting his claims; and in 306 he declared himſelf independent emperor, and, without remorſe or compunction, put to death the prefect, and other magiſtrates who adhered to Galerius. His abdicated father, by this time, weary of retirement, reſuming his dignity, joined him; and Severus, the newly-made Cæſar, who marched againſt them, finding himſelf deſerted by his army, ſurrendered himſelf priſoner to the victorious emperors. He was at firſt received with great humanity, and treated with a reſpect due to his rank. Maximian himſelf conducted the captive emperor to Rome, and gave him the moſt ſolemn aſſurances that he had ſecured his life and happineſs, by the reſignation of the purple. But, in ſpite of the honour of an emperor, Severus could only obtain an eaſy death, and an imperial funeral. In February 307, the ſentence was ſignified to him, but the manner of executing it was left to his own choice. He preferred the favourite mode of the ancients, that of opening his veins; and as ſoon as he expired, his body was carried to the ſepulchre which had been conſtructed for the family of Gallienus. Galerius, at this time, entered Italy with a powerful army, for the purpoſe of dethroning Maxentius; but he found the new emperor ſo ſtrongly defended, and his own troops ſo wavering in their fidelity, that he thought it beſt to conſult his ſafety by a retreat. Maximian alſo became his rival, and attempted to depoſe him; but the ſoldiers decided in favour of the younger claimant, and Maximian, who aimed at all, loſt all, and was obliged to retire with ſhame and humiliation. Maxentius was now the undiſputed maſter of Italy. He paſſed into Africa, where he rendered himſelf odious by his cruelty and oppreſſions. His ſuſpicions frequently endangered the lives of perſons of rank; and the honour and chaſtity of their wives and daughters were daily expoſed to violation from his brutal deſires. The heroic conduct of a Chriſtian lady, who plunged a dagger into her breaſt, in order that ſhe might eſcape his impure embraces, has been recorded by ſome writers to her honour, though others have queſtioned the lawfulneſs of the act; but none have heſitated to hold up the conduct of the tyrant to that contempt and infamy which it ſo juſtly merited. Upon the return of

Maxentius to Rome, he was informed that Conſtantine was come to dethrone him. The reſources of Maxentius, both in men and money, were ſtill conſiderable. The Prætorian guards felt how ſtrongly their own intereſt and ſafety were connected with his cauſe, and an army was ſpeedily collected. It was far from the intention of the emperor to lead his troops in perſon. "A ſtranger," ſays the hiſtorian, "to the exerciſes of war, he trembled at the apprehenſion of ſo dangerous a conteſt; and as fear is commonly ſuperſtitious, he liſtened with melancholy attention to the rumours of omens and preſages, which ſeemed to menace his life and empire. Shame at length ſupplied the place of courage, and forced him to take the field, being unable to ſuſtain the contempt of the Roman people. The circus reſounded with their indignant clamours, and they tumultuouſly beſieged the gates of the palace, reproaching the puſillanimity of their indolent ſovereign, and celebrating the heroic ſpirit of Conſtantine. Before Maxentius left Rome, he conſulted the Sibylline books. The guardians of thoſe ſacred oracles were as well verſed in the arts of this world, as they were ignorant of the ſecrets of fate; and they returned him a very prudent anſwer, which might adapt itſelf to the event, and ſecure their reputation, whatever ſhould be the chance of arms." At length he aſſembled his forces, and gave his enemy battle; but loſt the day, and fled with the utmoſt precipitation to the city. The bridge, over which he was to croſs the Tiber, was in a decayed ſituation, and he fell into the river, and was drowned. This happened on the 24th of September, A.D. 312. The cowardice and luxuries of Maxentius were as conſpicuous as his cruelties. He oppreſſed his ſubjects with heavy taxes, to gratify the cravings of his pleaſure, or the avarice of his favourites; and he was ſo debauched in his manners, that neither virtue nor innocence was ſafe, if within his reach. He was naturally deformed, of an unwieldy body, and the ſmalleſt exertions to him were as Herculean labours. Gibbon, vol. ii. 8vo. Univer. Hiſt.

MAXILLA, in *Anatomy*, the jaw. The term is uſually applied to the bones. The maxilla ſuperior contains ſix pairs of bones, and one ſingle bone; the maxilla inferior is a ſingle bone. See CRANIUM.

MAXILLA, *Fractures* and *Diſlocations of*, in *Surgery*. See FRACTURE and LUXATION.

MAXILLARIS, MAXILLARY, in *Anatomy*, an epithet applied to various parts about the jaws. There is an external, an internal, and an inferior maxillary artery (ſee ARTERY); one inferior and two ſuperior maxillary bones (ſee CRANIUM); a maxillary gland, which is a mucous gland of the cheek, placed near the back upper teeth; a ſuperior and inferior maxillary nerve, branches of the fifth pair (ſee NERVE); a maxillary ſinus or antrum maxillare, which is a large hollow of the ſuperior maxillary bone. See CRANIUM and NOSE.

MAXILLARY SINUS, *Abſceſs of*, in *Surgery*. See ABSCESS.

MAXILLARY *Sinus*, *Fungus of*. See FUNGUS.

MAXIM denotes an eſtabliſhed propoſition or principle; in which ſenſe it amounts to much the ſame with axiom.

Maxims are a kind of propoſitions, which have paſſed for principles of ſcience; and which, being ſelf-evident, have been by ſome ſuppoſed innate.

A maxim in law is ſaid to be a propoſition, of all men confeſſed and granted without argument or diſcourſe.

Maxims of the law are holden for law; and all other caſes that may be applied to them, ſhall be taken for granted. (1 Inſt. 11. 67. 4 Rep.) The maxims in our law-books, which are many and various, are ſuch as the following, *viz.* It is a maxim, that land ſhall deſcend from the father to the ſon, &c. That if a man have two ſons, by divers venters, and the one purchaſe lands and die without iſſue, the other ſhall never be his heir, &c. That as no eſtate can be veſted in the king, without matter of record, ſo none can be diveſted out of him but by matter of record. That an obligation, or matter in writing, cannot be diſſolved by an agreement by word, without writing. Co. Litt. 11. 141. See LAW.

MAXIMA CÆSARIENSIS, in *Ancient Geography*, one of the five provinces into which Britain was divided by the Romans; but the reaſon of the name, and the time when this province was erected, are not certainly known. It was bounded on the ſouth by the Humber, on the eaſt by the German ocean, on the weſt by the Iriſh ſea, and on the north by the wall of Severus; and contained the countries of the Pariſi and the Brigantes, which are now the counties of York, Durham, Lancaſter, Cumberland, and Northumberland. For the other four provinces, ſee FLAVIA *Cæſarienſis* and VALENTIA.

MAXIMA, *Lat.*, *Maxime*, *Fr.* See MASSIMA and TIME-*Table*.

MAXIMA *et Minima*, in *Analyſis and Geometry*, are the greateſt and leaſt values of a variable quantity; and the method of finding theſe greateſt and leaſt values is called the *method de maximis et minimis*, which forms one of the moſt intereſting inquiries in the modern analyſis. This ſubject was conſidered geometrically by ſome of the moſt ancient mathematicians, particularly by Apollonius, in the fifth book of his Conics; and there are ſtill a few problems of this kind, which ſucceed better by the geometrical than by the analytical method: their number, however, is very limited, compared with thoſe which may be elegantly performed by analyſis. To the latter, therefore, we ſhall principally direct our attention, only ſhewing, in a few caſes, how the ſame may be accompliſhed by means of the pure elements of geometry.

The method de maximis et minimis, according to the analytical doctrine, firſt aroſe at the beginning of the ſeventeenth century, after the invention of Deſcartes for expreſſing the properties of curve lines by means of algebraical equations, and claſſing them into different orders, according to the degree of the equation which expreſſed the relation between the abſciſs and ordinate. Beſides the method of Deſcartes, we have alſo thoſe of Fermat, Hudde, Huygens, Sluſe, and ſome others, which are now all ſupplanted by the general and elegant method of fluxions; yet as theſe ſeveral methods may be conſidered as ſo many ſteps towards the diſcovery of the latter, it will be intereſting to have a brief abſtract of them, in order to ſhew how ſlow and progreſſive are the ſteps to knowledge, and by what imperceptible degrees we arrive towards perfection.

Fermat's Method de Maximis et Minimis.—The principle upon which Fermat formed his operation conſiſted in this: that when the ordinate of a curve was the greateſt poſſible, if we augmented the variable quantity x, which repreſents the abſciſs, by an indefinitely ſmall quantity e, the ordinate correſponding to this abſciſs will be equal to the former, or will approach towards equality indefinitely near; or, which is the ſame, the increaſe or decreaſe of an ordinate, when it approaches indefinitely near its maximum or minimum, is nothing; and, therefore, theſe two ordinates may be conſidered as equal, whence an equation is obtained, from which cancelling the like quantities, and all thoſe powers of e beyond the firſt, becauſe they are indefinitely ſmall with regard to the others, and dividing the other terms by e, the value of x will be obtained, that renders the function a maximum or a minimum.

For example: let it be propoſed to find that value of x, in the equation $y^2 = 2ax - x^2$, which renders y a maximum.

Increaſe the variable quantity by e; then,

$$y^2 = 2a(x + e) - (x + e)^2,$$

$$\text{or, } 2ax - x^2 = 2ax - x^2 + 2ae - 2ex + e^2,$$

$$\text{or, } 0 = 2ae - 2ex;$$

by rejecting e^2, which is indefinitely ſmall: whence again,

$$2ae = 2ex, \text{ or } x = a.$$

Again: required the value of x, in the equation $y^3 = ax^2 - x^3$, which renders the whole function a maximum.

Making, as before, $x = x + e$, we have

$$ax^2 - x^3 = ax^2 - x^3 + 2axe + ae^2 - 3ex^2 - 3e^2x - e^3,$$

$$\text{or, } 0 = +2axe - 3ex^2;$$

by ſuppreſſing thoſe powers of e above the firſt: whence,

$$3ex^2 = 2axe, \text{ or } x = \tfrac{2}{3}a.$$

Theſe examples will be ſufficient to ſhew the ſpirit of Fermat's rule, which is in principle much the ſame as the fluxional method; only that it wants that generality and elegance which conſtitute the diſtinguiſhing characteriſtics of the latter.

Deſcartes' Method.—This conſiſted in making two of the roots of the equation equal to each other; in which caſe, two of the ordinates of the curve became equal, and thus indicated the maximum or minimum ſtate. This, however, being much leſs eligible than the preceding, we will not enter into farther explanation, but proceed to Hudde's method, which is in principle the ſame as Deſcartes's, but more elegant and conciſe.

Hudde's Method.—This, as we have obſerved, conſiſted, like that of Deſcartes, in making two of the roots of the propoſed equation equal to each other, and for which he gave the following rule: *viz*, multiply each term of the equation, arranged according to the power of x, by the terms of an arithmetical progreſſion, *viz.* the firſt by the firſt, the ſecond by the ſecond, &c.; and the equation thus obtained will indicate the maximum or minimum required.

Let us take, for example, the equation above, $ax^2 - x^3 = y^3$.

Arranging this equation according to the powers of x, and ſupplying the deficient term, we have

$$x^3 - ax^2 \pm 0x - y^3 = 0.$$

Arith. prog. $\underline{3, \qquad 2, \qquad 1, \qquad 0.}$

$$3x^3 - 2ax^2 = 0$$

$$3x^3 = 2ax^2, \text{ or } x = \tfrac{2}{3}a, \text{ as above.}$$

Again: let $x^2 - ax + y^2 - 2by + b^2$, be propoſed.

Writing this, $x^2 - ax + (y^2 - 2by + b^2) = 0.$

Arith. prog. $\underline{2, \qquad 1, \qquad 0.}$

$$2x^2 - ax = 0, \text{ or } x = \tfrac{1}{2}a.$$

This rule, though not ſo general as could be wiſhed, is ſtill extremely ſimple and ingenious; and, conſidering the ſtate of analyſis at the period it was diſcovered, it is highly creditable to its author, to whom we are alſo indebted for ſeveral other analytical and geometrical improvements.

Huygens' Method.—As the rule of Hudde, deſcribed above, was a ſimplification of that of Deſcartes, ſo the following one is founded on the principle of Fermat, and can only be conſidered as a ſimplification of his method. Inſtead of ſubſtituting $x + e$ for x, and then cancelling the like terms, ſuppreſſing thoſe in which e riſes to a higher power than the firſt, and finally dividing by e; Huygens, as alſo Sluſe, arrive at the final equation at once by the following ſimple rule: multiply each of the terms in which x is found by its exponent, rejecting all thoſe into which it does not enter; divide the reſult by x, and make the whole equal to zero; and the equation thus ariſing will give the value of x required.

For example: required the value of x in the equation $3ax^2 - x^3 = y^3$.

Multiplying each of thoſe terms by the exponent of x in them, we have $6ax^2 - 3x^3$; then dividing by x,

$$6ax^2 - 3x^2 = 0, \text{ or } 3x^3 - 6ax = 0,$$

$$\text{or, } x^2 - 2ax + a^2 = a^2, \text{ or } x = a \pm a;$$

that is, $x = 0$, or $2a$.

This rule differs in no reſpect from our fluxional operation, except that we divide by $\dot{x}$ inſtead of x; yet the generality of the latter is ſuch, that the rules above deſcribed have long been forgotten, and are only given here as preſenting an hiſtorical view of the methods employed by our predeceſſors; and in this reſpect they are entitled to particular notice; for in them is evidently contained the germ of the modern analyſis. Farther advances were made in theſe kinds of operations in the method of tangents, but they are foreign to our preſent enquiry; of theſe the *differential triangle* of Barrow is particularly intereſting. See TANGENTS.

Of the method de maximis et minimis according to the fluxional or differential calculus.

1. The fluxion of a quantity, when it is a maximum or a minimum, is equal to zero, or 0. This is obvious from the definition of a fluxion, for this being the meaſures or rates of increaſe or decreaſe of a variable quantity; when this quantity becomes a maximum, or a minimum, its fluxion muſt be $= 0$, becauſe at that point it admits of no farther increaſe or decreaſe.

2. If a quantity be a maximum or minimum, any power or root of that quantity muſt then evidently be a maximum or minimum. For the power or root of a quantity will increaſe or decreaſe as long as the quantity itſelf increaſes or decreaſes, and no longer.

3. Any conſtant multiple, or part, of a quantity, which is a maximum or a minimum, muſt alſo be a maximum or a minimum. For the multiple or part of a quantity will increaſe or decreaſe as long as the quantity itſelf increaſes or decreaſes, and no longer; therefore, when its fluxion is made equal to zero, the conſtant multiplier may be neglected.

4. The fluxion of a conſtant quantity $= 0$. For this admitting of no increaſe or decreaſe has no fluxion, or its fluxion $= 0$.

1. To divide a given number (a) into two ſuch parts x and y, that $x^m y^n$ may be a maximum.

Since $x + y = a$, and $x^m y^n =$ a maximum, the fluxions of each $= 0$; the former becauſe it is conſtant, and the latter becauſe it is a maximum, whence

$$\dot{x} + \dot{y} = 0$$

$$my^n x^{m-1}\dot{x} + nx^m y^{n-1}\dot{y} = 0:$$

from the firſt we have $\dot{x} = -\dot{y}$; and ſubſtituting this in the ſecond, gives

$$my^n x^{m-1}\dot{x} - nx^m y^{n-1}\dot{x} = 0, \text{ or}$$

$$my^n x^{m-1} = nx^m y^{n-1}, \text{ or}$$

$$my = nx; \text{ whence}$$

$y =$

$$y = \frac{n}{m} x$$

Conſequently, $x + \frac{n}{m} x = a$, or

$$x = \frac{m\,a}{m+n}, \text{ and } y = \frac{n\,a}{m+n}.$$

If $m = n$, then the two parts are equal.

Hence, to divide a quantity (a) into three parts, x, y, z, ſo that $x\,y\,z$ may be a maximum, the three parts muſt be all equal amongſt themſelves. For whatever one of the parts may be, if it be conſtant, the product of the other two will be the greateſt when they are equal to each other; and in the ſame manner, if we conſider any one of the parts as conſtant, the rectangle of the other two will be the greateſt when they are equal to each other; whence it is obvious, that the product will be the greateſt when the three parts are equal to each other. And in the ſame manner, if the given quantity be divided into any number of parts, the product of them, or the product of any equal powers of them, will be the greateſt when the ſeveral parts are all equal amongſt themſelves.

2. To divide a given number (a) into two ſuch parts, x and y, that the ſum of their alternate quotients may be a maximum.

Here we muſt have $x + y = a$,

$$\text{and } \frac{x}{y} + \frac{y}{x} = \text{a maximum.}$$

Now ſince the firſt is conſtant, and the latter a maximum, we have $\dot{x} = -\dot{y}$, and

$$\frac{\dot{x}\,y - \dot{y}\,x}{y^2} + \frac{\dot{y}\,x - \dot{x}\,y}{x^2} = 0;$$

or, ſubſtituting for $\dot{x}$ its equal $-\dot{y}$, this becomes

$$-\frac{y\,\dot{y} + x\,\dot{y}}{y^2} + \frac{x\,\dot{y} + y\,\dot{y}}{x^2} = 0, \text{ or}$$

$$\frac{x\,\dot{y} + y\,\dot{y}}{x^2} = \frac{y\,\dot{y} + x\,\dot{y}}{y^2}:$$

whence we have $\frac{1}{x^2} = \frac{1}{y^2}$, or $y^2 = x^2$, or $x = y$; that is, each of the required quantities is equal to $\frac{1}{2}\,a$.

3. Of all right-angled triangles, having the ſame hypothenuſe; to determine that which ſhall have the greateſt area.

Let the given hypothenuſe be repreſented by h, and the required ſides by x and y; then we have theſe two equations;

$$x^2 + y^2 = h^2$$
$$x\,y = \text{a maximum.}$$

In the firſt we have $2\,x\,\dot{x} + 2\,y\,\dot{y} = 0$, or $\dot{x} = -\frac{y\,\dot{y}}{x}$: in the ſecond $\dot{x}\,y + \dot{y}\,x = 0$.

Subſtitute for $\dot{x}$, and we obtain

$$-\frac{y^2\,\dot{y}}{x} + \dot{y}\,x = 0, \text{ or } y^2 = x^2, \text{ or } y = x;$$

and, conſequently, both x and $y = \frac{a\sqrt{2}}{2}$.

This reſult is alſo readily obtained from the pure elements of geometry; for the hypothenuſe being given, let there be deſcribed upon it a ſemicircle; then it is obvious, that the area of that triangle will be the greateſt whoſe perpendicular, let fall upon the hypothenuſe from the right angle, is the greateſt; and this evidently is the caſe when that perpendicular is equal to the radius, or when the right-angled triangle is alſo iſoſceles.

4. To find the greateſt cylinder that can be inſcribed in a given cone.

Let the altitude of the cone be repreſented by a, the diameter of its baſe by b, the altitude of the cylinder by x, and the diameter of its baſe by y: alſo put $.7854 = p$.

Now by ſimilar triangles, as

$$a : b :: b - x : \frac{b}{a}(b - x) = y;$$

and by the queſtion $p\,y^2\,x$ = a maximum, or ſubſtituting for y, and ſuppreſſing $\frac{b\,p}{a^2}$, becauſe it is a conſtant multiplier, we have

$$b^2\,x - 2\,b\,x^2 + x^3 = \text{a maximum, or}$$
$$b^2\,\dot{x} - 4\,b\,x\,\dot{x} + 3\,x^2\,\dot{x} = 0; \text{ whence}$$
$$3\,x^2 - 4\,b\,x = -b^2,$$

which reduced, gives $x = \frac{1}{3}\,b$.

5. To divide a given arc A into two parts ſuch, that the mth power of the ſine of one part, into the nth power of the ſine of the other, may be a maximum.

Let P and Q repreſent the two arcs, x and y their ſines, radius being unity, then we muſt have

$$x^m \times y^n = \text{a maximum,}$$

and conſequently, $m\,y^n\,x^{m-1}\,\dot{x} + n\,x^m\,y^{n-1}\,\dot{y} = 0$; whence we find $m\,y\,\dot{x} = -n\,x\,\dot{y}$.

$$\text{Now } \dot{P} = \frac{\dot{x}}{\sqrt{(1 - x^2)}}, \text{ and } \dot{Q} = \frac{\dot{y}}{\sqrt{(1 - y^2)}}$$

from the known doctrine of fluxions; alſo

$\dot{P} + \dot{Q} = 0$, becauſe $P + Q = A$, whence $\dot{P} = -\dot{Q}$;

$$\text{or, } \frac{\dot{y}}{\sqrt{(1 - y^2)}} = \frac{-\dot{x}}{\sqrt{(1 - x^2)}}.$$

Multiply this equation by the equation

$$m\,y\,\dot{x} = -n\,x\,\dot{y},$$

and we obtain

$$m \times \frac{y}{\sqrt{(1 - y^2)}} = n \times \frac{x}{\sqrt{(1 - x^2)}}$$

or, which is the ſame,

m . tan. P = n . tan. Q,

whence

$m : n$ :: tan. Q : tan. P

$(m + n) : (m - n)$ :: (tan. Q + tan. P) : (tan. Q − tan. P)

But

(tan. Q + tan. P) : (tan. Q − tan. P) :: ſin. (Q + P) : ſin. (Q − P);

or, $(m + n) : (m - n)$ :: ſin. A : ſin. (Q − P);

whence, ſin. (Q − P) = ſin. A $\times \frac{m - n}{m + n}$.

Now, therefore, knowing the ſine of the difference, we know alſo the difference of the arcs, whence the ſum being alſo given, the arcs themſelves are readily determined. We might have obtained the ſame reſult from the known trigonometrical formula; *viz.*

ſin. (P + Q) = ſin. P . coſ. Q + ſin. Q . coſ. P,

that is, the above notation remaining, and making

ſin. (P + Q), or ſin. A = a.

$$x \surd (1 - y^2) + y \surd (1 - x^2) = a,$$

and we have alſo $x^m y^n$ = a maximum: from which two equations the values of x and y may be determined; and, conſequently, the arcs of which they are the ſines.

6. To find the value of x in the equation x^x = a minimum. Make $x^x = z$, then x log. x = log. z, and

$$\dot{x} \text{ log. } x + x \times \frac{\dot{x}}{x} = \frac{\dot{z}}{z} = 0,$$

becauſe, x^x, or z, is to be a minimum,

whence log. $x = -1$,

that is, x is that number of which the hyperbolic logarithm is -1.

Application of Maxima et Minima to phyſical Problems.

7. Given two elaſtic bodies A and C to find an intermediate body x, ſo that the motion communicated from A to C, through x, may be a maximum.

Put a = the given velocity of A, w the velocity communicated to C, and z the velocity communicated to x; then by the known theory of elaſtic bodies

$$A + x : 2A :: a : w$$
$$x + C : 2x :: w : z$$

taking the product of correſponding terms

$$(Ax + x^2 + AC + Cx) : 4Ax :: a : z, \text{ or}$$

$$A + x + \frac{AC}{x} + C : 4A :: a : z$$

Now as the two mean terms are conſtant, the laſt term varies inverſely as the firſt; and, therefore, as the laſt is to be a maximum, the firſt term muſt be a minimum; and, conſequently, its fluxion = 0; that is,

$$\dot{x} - \frac{AC\dot{x}}{x^2} = 0; \text{ whence } x = \surd AC;$$

that is, x muſt be a mean proportional between the two given bodies.

8. To determine at what angle the wind ought to ſtrike againſt the ſails of a windmill, ſo that the effect to put it in motion may be the greateſt poſſible.

Let x = the coſine of the required angle, then the ſin.$^2 = 1 - x^2$, radius being unity; hence by the principles of hydroſtatics, the effect being as the product of the coſine into the ſquare of the ſine, we muſt have

$$x \times (1 - x^2) = x - x^3 = \text{a maximum},$$

whence $\dot{x} - 3x^2\dot{x} = 0$, or $x = \surd\frac{1}{3}$ = coſ. $54^\circ\ 44'$,

which is the required angle.

9. Given the ſolidity of a cone to find the baſe and height, when the time of its vibration ſhall be a minimum, the point of ſuſpenſion being at the vertex.

Let x = the radius of the baſe, y = the altitude, p = 3.1416; then $\frac{1}{3}pxy^2 = s$, the given ſolidity.

Now the diſtance of the point of ſuſpenſion from the centre of oſcillation, in a cone ſuſpended at its vertex, $= \frac{4x^2 + y^2}{5x}$. See Oscillation. And this, from the nature of the problem, muſt be a minimum.

But $y^2 = \frac{3s}{px}$, whence $\frac{4x^2 + y^2}{5x} = \frac{4px^3 + 3s}{5px^2}$.

This being put into fluxions gives

$$\frac{60p^2x^4\dot{x} - 40p^2x^4\dot{x} - 30psx\dot{x}}{25p^2x^4} = 0,$$

or, $6px^3 - 4px^3 - 3s = 0$,

whence $x = \sqrt[3]{\frac{3s}{2p}}$, and $y = \surd 2 \times \sqrt[3]{\frac{3s}{2p}}$,

conſequently, $x : y :: 1 : \surd 2$.

10. To find the poſition of the planet Venus, when it gives the greateſt quantity of light to the earth.

Let S be the ſun, (*fig.* 1. *Plate* XIII. *Analyſis*,) E, the earth, V, Venus, produce E V, on which let fall the perpendicular S B, and with the centre V, and diſtance V S, deſcribe the circular arc S A. Put S E = a, S V = A V = b, E V = x, B V = y; then A B = $b - y$, the verſed ſine of the angle S V A; and by the known aſtronomical theory, the quantity of light received by the earth from Venus varies as $\frac{b - y}{x^2} = \frac{b}{x^2} - \frac{y}{x^2}$ = a maximum.

Again, (Euclid, b. ii. p. 12.) $a^2 = b^2 + x^2 + 2xy$; therefore, $y = \frac{a^2 - b^2 - x^2}{2x} = \frac{m^2 - x^2}{2x}$ (by making $m^2 = a^2 - b$).

Hence, the quantity of light varies as

$$\frac{b}{x^2} - \frac{m^2 - x^2}{2x^3} = \frac{2bx - m^2 + x^2}{2x^3} = \text{a maximum};$$

hence its fluxion

$$\frac{(2b\dot{x} + 2x\dot{x})\,2x^3 - 6x^2\dot{x}\,(2bx - m^2 + x^2)}{4x^6} = 0,$$

or, $(2b + 2x)\,2x^3 - 6x^2\,(2bx - m^2 + x^2) = 0$,

whence by reduction, &c.

$$-x^2 - 4bx + 3m^2 = 0,$$

therefore, $x^2 + 4bx = 3m^2$,

and hence, $x = -2b \pm \surd(4b^2 + 3m^2)$

Since then, we know the three ſides of the triangle E S V, the angle E of elongation is readily found = 39 44′.

We might have extended theſe kinds of problems to a much greater length, had the limits of our article admitted of it; but it is preſumed that the above will throw conſiderable light on the ſubject; and render the application of theſe principles eaſy and familiar in moſt other caſes. The reader who is deſirous of farther information relating to the method of maxima et minima, as applicable to mechanical and aſtronomical ſubjects, may conſult Dealtry's Principles of Fluxions, or Vince's Treatiſe on the ſame ſubject: ſee alſo Simpſon's and Maclaurin's Treatiſes on Fluxions, to the former of which works we are indebted for the following article.

Application of Maxima et Minima to curve Lines.—Having already conſidered this ſubject at conſiderable length under the article Isoperimetrical *Problems*, we ſhall, therefore, be very brief in our obſervations with regard to them in this place; but as there are certain problems of this kind, which eaſily yield to the ordinary method of maxima et minima, we thought it right to touch ſlightly on this ſubject in the preſent article.

To find the nature of curves, in which ſome conditions being invariable, others become the greateſt or the leaſt poſſible.

1. Given the length of a curve to find the area a maximum.

It is evident, that by merely putting the fluent $y\dot{x}$ a maximum, no ſolution can be obtained; for no limitation is expreſſed, and the fluent will admit of increaſe or decreaſe without limit. But as the length is given, the $f . \dot{z}$, ſo far as concerns the $f y \dot{x}$, is a given quantity; therefore, the

$$f . y \dot{x} \pm f . \dot{z} \text{ muſt be a maximum :}$$

or, rendering the terms homogeneous, in order that they may admit of compariſon,

$$f . y \dot{x} \pm f . a \dot{z} = \text{a maximum.}$$

Now if for every individual value of y, this flowing quantity be always a maximum, the whole fluent will be ſo likewiſe; but for every ſuch value of y, the flowing quantity is $y \dot{x} \pm a \dot{z}$. Hence the nature of the curve will be determined by aſcertaining what relations of $\dot{x}$ and $\dot{z}$ will render $y \dot{x} \pm a \dot{z}$ a maximum for any given value of y; or the fluxion of $y \dot{x} \pm a \dot{z} = 0$, whilſt y is conſtant; and this muſt be the caſe for every ſucceſſive value of y throughout; ſo that in each limiting portion of the area, for every value of y, the ratio of $\dot{x} : \dot{z}$ muſt be ſuch as to make $y \dot{x} \pm a \dot{z}$ a maximum,

therefore $\quad y \ddot{x} \pm a \ddot{z} = 0$; but $\dot{z}^2 = \dot{y}^2 + \dot{x}^2$;

whence $\quad \dot{z} \ddot{z} = \dot{x} \ddot{x}$, and $\ddot{z} = \dfrac{\dot{x} \ddot{x}}{\dot{z}}$;

conſequently, $\quad y \dot{x} = \mp \dfrac{a \dot{x} \ddot{x}}{\dot{z}}$, and $y \dot{z} = \mp a \ddot{x}$.

But from the nature of the problem $y \dot{z}$ muſt be poſitive, and, therefore, the true reſult is $y \dot{z} = a \dot{x}$.

Now, in the circle $a : y :: \dot{z} : \dot{x}$; whence $a \dot{x} = y \dot{z}$. Hence the curve required is a circle; in which the length being given, the area is a maximum.

Therefore, if A and B denote any functions of x and y, and $\dot{x} = \sqrt{(c^2 + \dot{y}^2)}$, where c is conſtant, the expreſſion $A \dot{x} \mp B \dot{y}$ is a maximum, or a minimum, when $A \dot{y} = \mp B \dot{x}$, or the functions of x and y are reciprocal.

2. To determine the nature of a curve, which generates a ſurface, ſo that the ſurface being given, the ſolid may be a maximum.

Here $f . 2 p y \dot{z}$, or $f . y \dot{z}$ is given; and $f . y^2 \dot{x}$ is a maximum: hence the fluent of $a y \dot{z} \pm$ fluent of $y^2 \dot{x}$ a maximum;

or, $\quad f . a y \dot{z} \pm f . y^2 \dot{x} = \text{a maximum}$;

therefore, $\quad a y \dot{x} = y^2 \dot{z}$, or $a \dot{x} = y \dot{z}$,

which is a property of the circle, and the body is a ſphere.

3. To determine the nature of the generating curve, that the ſolidity being given, the ſurface may be a minimum.

Here $f . y^2 \dot{x}$ is given, and $f . a y \dot{z}$ is a minimum; therefore, $y^2 \dot{z} = a y \dot{x}$, and $y \dot{z} = a \dot{x}$: the required curve, therefore, is a circle, and the body a ſphere.

The ſame principles are employed in the work above quoted, to the finding of the ſolid of leaſt reſiſtance, and a few other problems of the ſame kind; but as we have already conſidered theſe under a more general form in the article Isoperimetry, we ſhall not purſue the ſubject any farther in this place.

To aſcertain the number of maxima or minima that appertain to any variable function.

In the preceding problems it has generally happened, that the equations from which we have derived our maximum or minimum have been of the firſt degree; and, therefore, admitted of only one rational value; but it may happen that the final equation is of a higher dimenſion, and, conſequently, admitting of ſeveral roots, each of which may be employed, at leaſt ſo far as we have conſidered the ſubject at preſent: alſo, as our operation is preciſely the ſame, whether we are ſeeking a maximum or a minimum, it is neceſſary to have ſome means of determining, *à priori*, which root gives the maximum, and which the minimum, as well as to aſcertain the number of each.

In our former definition, we ſtated a maximum, or minimum, to be the greateſt or leaſt ſtate of a variable function; which was done in order to ſimplify the idea, being in fact the real import of the word; and in any queſtion of a phyſical nature, the term muſt be ſtill underſtood in this light. That is, if the fluxional equation be of ſuch a degree as to admit of ſeveral roots, that one muſt be found which makes the reſult the greateſt, or leaſt poſſible; but analytically, we muſt underſtand this term to ſignify that ſtate of a variable function, which, if the variable upon which it depends be either increaſed or decreaſed, the whole function will decreaſe or increaſe, according as it is in its maximum or minimum ſtate; but this increaſe or decreaſe is frequently limited, and being carried beyond a certain point, the whole function will again increaſe or decreaſe. This will be more obvious, from (*fig.* 2. *Plate* XIII. *Analyſis*,) where the ſeveral ordinates A B, E F, I K, are maxima, and C D, G H, are minima, any one of which, as for example E F, will be obſerved to recede from its maximum towards a minimum, as it approaches towards C or D; but beyond thoſe points, it again approaches towards its other maximum value. The object, therefore, of our preſent enquiry, is to aſcertain the number of maxima or minima that a function may have, and which root of the final equation gives the one, and which the other.

In order to this, let y be any function of x, and ſuppoſe that x has attained that particular value which renders the function y a maximum or a minimum; it follows then, if x be either increaſed or diminiſhed by any quantity h, that we ought to obtain for the whole function a reſult leſs or greater than the preceding, according as it was in its maximum or minimum ſtate. Now, if we repreſent by y'' the function anſwering to $x + h$, and by y' the function anſwering to $x - h$, we ſhall have from Taylor's theorem

$$y' = y - \frac{h \dot{y}}{1 . \dot{x}} + \frac{h^2 \ddot{y}}{1 . 2 \dot{x}^2} - \frac{h^3 \dddot{y}}{1 . 2 . 3 \dot{x}^3} + \&c.$$

$$y'' = y + \frac{h \dot{y}}{1 . \dot{x}} + \frac{h^2 \ddot{y}}{1 . 2 \dot{x}^2} + \frac{h^3 \dddot{y}}{1 . 2 . 3 \dot{x}^3} + \&c.$$

And ſince the powers of a quantity which is leſs than unity become leſs and leſs as the exponent is greater, it may be readily conceived, that h may be taken ſo ſmall, that each of the terms of the preceding ſeries may be greater than the ſum of all the following ones; and, conſequently, the ſign of the whole ſeries, beginning at any term, will always be the ſame as that of the firſt term, as to poſitive or negative.

Therefore, if $\dfrac{h \dot{y}}{\dot{x}}$ be any thing but zero, y will be greater than y', and leſs than y''; and, conſequently, is neither a maximum nor minimum; therefore, when it is either the one or the other, $\dfrac{h \dot{y}}{\dot{x}} = 0$. In this caſe, we have

$$y' = y + \frac{h^2 \ddot{y}}{1 . 2 \dot{x}^2} - \frac{h^3 \dddot{y}}{1 . 2 . 3 \dot{x}^3} + \&c.$$

$$y'' = y + \frac{h^2 \ddot{y}}{1 . 2 \dot{x}^2} + \frac{h^3 \dddot{y}}{1 . 2 . 3 \dot{x}^3} + \&c.$$

where it is obvious that $y > y'$, and $> y''$; or $y < y'$, $< y''$, according as $\dfrac{h^2 \ddot{y}}{1 . 2 \dot{x}^2}$ is negative or poſitive; and is, therefore, neceſſarily a maximum or a minimum.

But if $\frac{h^2 \ddot{y}}{1 . 2 \dot{x}^2} = 0$, then again y is neither a maximum nor a minimum; for in this caſe, y is $> y'$, and $< y''$. We have, therefore, the following rule for aſcertaining the maxima et minima of any propoſed function. Find the value of x in the equation $\frac{\dot{y}}{\dot{x}} = 0$, and ſubſtitute it for x in the expreſſion $\frac{\ddot{y}}{\dot{x}^2}$; then if the reſult is negative, y is a maximum, if poſitive, a minimum; and if it be zero, then y is neither a maximum nor a minimum, unleſs alſo $\frac{\dddot{y}}{\dot{x}^3}$ be equal to zero; and then it will depend upon the ſign of $\frac{\ddddot{y}}{\dot{x}^4}$; and ſo on, and the ſame proceſs being obſerved, with regard to each of the roots of the fluxional equation, the number of maxima et minima will be obtained.

Let us illuſtrate the preceding rule by an example.

1. Find $y = x^4 - 8 x^3 + 22 x^2 - 24 x + 10$, a maximum or minimum. Here

$$\frac{\dot{y}}{\dot{x}} = 4 x^3 - 24 x^2 + 44 x - 24 = 0;$$

where $x = 1, 2,$ and 3.

And it is required to find which of theſe roots anſwers to the maxima, and which to the minima. Now

$$\frac{\ddot{y}}{\dot{x}^2} = 12 x^2 - 48 x + 44.$$

And here, making $x = 1, 2, 3$, the reſults are reſpectively $+, -, +$; therefore the root 2 anſwers to the maximum, and the other two to the minima.

2. Let there now be propoſed the function

$$y = x^5 - 7 x^4 + 19 x^3 - 25 x^2 + 16 x + 10.$$

Here $\frac{\dot{y}}{\dot{x}} = 5 x^4 - 28 x^3 + 57 x^2 - 50 x + 16 = 0.$

And the roots of this equation are $1, 1, 2, 1\frac{3}{5}$. Now

$$\frac{\ddot{y}}{\dot{x}^2} = 20 x^3 - 84 x^2 + 114 x - 50,$$

which $= 0$, when $x = 1$; therefore the root 1 gives neither a maximum nor a minimum, unleſs $\frac{\dddot{y}}{\dot{x}^3} = 0$; which upon trial does not obtain.

But by aſſuming $x = 2$ in this equation, the reſult is $- 4$; and, conſequently, this value of x anſwers to a maximum.

And by ſubmitting the other root $1\frac{3}{5}$ to the ſame teſt, a ſimilar reſult will be obtained.

We will add another example, with which we muſt conclude this article.

3. To find when the function

$$y = x^3 - 18 x^2 + 96 x - 20$$

becomes a maximum or a minimum.

Here $\frac{\dot{y}}{\dot{x}} = 3 x^2 - 36 x + 96 = 0,$

in which equation the roots are $x = 4$, $x = 8$.

Now $\frac{\ddot{y}}{\dot{x}^2} = 6 x - 36.$

Here the root 8 gives $\frac{\ddot{y}}{\dot{x}^2}$ *poſitive.*

And the root 4 gives $\frac{\ddot{y}}{\dot{x}^2}$ *negative.*

Therefore the former anſwers to the minimum, and the latter to the maximum.

If the fluxional equation has no real root, then it follows that the propoſed function admits of neither a maximum nor a minimum; but increaſes or decreaſes *ad infinitum.*

MAXIMENE, in *Geography*, a town of Walachia; 18 miles N. of Galacz.

MAXIMIANOPOLI, a town of European Turkey, in Romania, founded by the emperor Maximian; formerly the ſee of a biſhop, in the province of Rhodope, but now a ſmall place 60 miles S.W. of Adrianople.

MAXIMIANOPOLIS, in *Ancient Geography*, a town of Paleſtine, the ſame as Hadad-Rimmon, in the valley of Jezreel, and in the plain of Megiddo. An ancient traveller places it 17 miles from Cæſarea, and 10 from Jezreel.—Alſo, a town of Thrace, in Media, upon the northern bank of the Marſh Buton; called alſo Myxæ. See MAXIMIANOPOLI.

MAXIMIANUS, HERCULIUS MARCUS AURELIUS VALERIUS, in *Biography*, a native of Sirmium, in Pannonia, was the ſon of parents who gained their daily ſubſiſtence by the labour of their hands. Brought up in ruſtic manners, and deſtitute of every advantage of education, he early embraced that way of life which alone preſented the proſpect of advancement, and enliſted as a common ſoldier in the Roman armies. Aſpiring to ſomething better than the ſervile character which he then held, he gradually roſe through the ſeveral ſtages of command, diſtinguiſhed by ſtrength and hardineſs of body, and the military virtues of courage and obedience. He fought under the emperors Aurelian and Probus on the banks of the Danube, Rhine, Euphrates, and borders of the ocean, acquiring the talents of an experienced ſoldier, if not of a great general. His manners were not changed in his progreſs, but he remained rude and ferocious, with a propenſity to the groſſeſt debauchery. In the courſe of his ſervice, he contracted an intimacy with his fellow-ſoldier Diocleſian, who, when elevated to the imperial dignity, remembered the valour, courage, and hardihood of Maximianus, and rewarded his fidelity by making him his colleague in the empire, and by ceding to him the command of the provinces of Italy, Africa, and Spain, and the reſt of the weſtern territories of Rome. The perſonal ſuperiority of Diocleſian was, however, recognized in the aſſumed epithet of *Jovius,* while Maximian took that of *Herculius.* Maximianus ſhewed the juſtneſs of the choice of Diocleſian by his victories over the Barbarian tribes with whom he was called to contend. As ſoon as Diocleſian entered into the twentieth year of his reign, he celebrated, in conjunction with Maximian, that memorable era, as well as his own great ſucceſſes, by the pomp of a Roman triumph. (See DIOCLESIAN.) This triumph was dignified by ſeveral circumſtances of ſuperior celebrity and good fortune. Africa and Britain, the Rhine, the Danube, and the Nile, furniſhed their reſpective trophies; but the moſt diſtinguiſhed ornament was of a more ſingular nature, a Perſian victory, followed by an important conqueſt. The repreſentation of rivers, mountains, and provinces were carried before the Imperial car. The images of captive wives, the ſiſters and the children of the great king, afforded a new and grateful ſpectacle to the vanity of the people. Not long after this, a ſevere illneſs inſpired Diocleſian with the deſign of abdicating his power, which reſolution he carried into effect in the month of April or May, 305. Maximian was induced by his authority to follow his example, and on the ſame day diveſted himſelf of the purple at Milan, and retired to a delightful villa in Lucania. In the courſe of a few months, as we have ſeen in the article Maxentius, he, at the deſire of his ſon, re-aſſumed the imperial dignity, and was now anxious that this ſon ſhould yield all authority into his hands. This ſingular conteſt for empire between father and ſon, and its deciſion, have already been noticed. Maximian retired in confuſion into Illyricum, and endeavoured to engage Galerius in his cauſe. Diſappointed in his expectations, he returned to the court of his ſon-in-law, Conſtantine, apparently contented with his lot, but in truth watching an opportunity for recovering his power; and while Conſtantine, in 309, was engaged on the banks of the Rhine in repelling an invaſion of the Franks, he ſpread the report of Maxentius' death, and haſtily reſumed once more the enſigns of office. The intelligence of this event cauſed Conſtantine to return ſpeedily into Gaul, who ſeized upon Maximian, and confined him to the palace under ſtrict watch; but without intending to inflict a ſeverer puniſhment. The clemency of Conſtantine inſpired Maximian with the dark deſign of murdering him; and he had the wickedneſs and temerity to ſolicit his daughter Fauſta to join him in the conſpiracy. She informed her huſband of the plot, and through their contrivance, a ſlave, who was an eunuch, was placed in the emperor's bed, whom Maximian ſtabbed to the heart, on the ſuppoſition that it was his maſter. Upon this detection he was judged unworthy to live, and being permitted to chooſe his death, he ſtrangled himſelf. Such is the generally accredited account; but Gibbon repreſents the matter differently: he ſays, that Maximian was delivered into the hands of his ſon-in-law by the treachery of his army, in conſequence of which, a ſecret and irrevocable ſentence of death was pronounced againſt the uſurper, and he obtained the ſame favour which he granted to Severus, and it was publiſhed to the world, that, oppreſſed by the remorſe of his repeated crimes, he ſtrangled himſelf with his own hands. "After he had loſt the aſſiſtance, and diſdained the moderate counſels of Diocleſian, the ſecond period of his active life was a ſeries of public calamities and perſonal mortifications, which were terminated in about three years by an ignominious death. He deſerved his fate; but we ſhould find more reaſon to applaud the humanity of Conſtantine, if he had ſpared an old man, the benefactor of his father, and the father of his wife. During the whole of this melancholy tranſaction, it appears that Fauſta ſacrificed the ſentiments of nature to her conjugal duties." Gibbon. Univer. Hiſt.

MAXIMILLIAN I., emperor of Germany, born in 1459, was ſon of the emperor Frederic IV. In early life he was ſo dull and apparently deficient, that he was for ſeveral years conſidered rather in the light of an ideot. About ten years of age he became remarkably addicted to learning, and acquired, with ſurpriſing quickneſs, the Latin, French, and Italian languages. In his twentieth year his father effected a marriage between him and Mary, the heireſs of the great houſe of Burgundy. Lewis XI. of France having ſeized part of her inheritance in the Low Countries, Maximillian made war againſt him, defeated his troops, and recovered great part of the uſurped territories. He alſo ſuppreſſed the revolts which broke out in various parts of the Low Countries. As he was proceeding in a career of ſucceſs, he had the misfortune to loſe his wife, a circumſtance that gave a ſhock to his authority, and the guardianſhip of his children was immediately conteſted by the ſtates. A civil war enſued, which at length was accommodated on the condition that he ſhould continue tutor to his ſon Philip, under reſtrictions. In 1486, Maximillian was elected king of the Romans, and crowned at Aix-la-Chapelle: upon his arrival at Bruges to meet the ſtates-general in 1488, the inhabitants ran to arms to ſecure his perſon, being ſuſpicious that he was inimical to their rights and liberties; at the ſame time they impriſoned ſome of his counſellors, four of whom they beheaded. The people of Ghent followed their example; but, after ſuffering a kind of impriſonment for ten months, he was liberated. In 1493, he ſucceeded, by the death of his father, without oppoſition, to the imperial dignity. He marched at the head of an army againſt the Turks, who had invaded Croatia, but they retreated before he could reach them. In 1494, he took for his ſecond wife Blanche, the ſiſter of John Galeazzo, duke of Milan, an alliance which engaged him in the affairs of Italy; and when Charles VIII. of France had made himſelf maſter of the kingdom of Naples, Maximillian joined in the confederacy of the pope, the king of Spain, and ſeveral Italian powers to oppoſe his arms. He alſo effected a marriage between his ſon Philip and the infanta Jane, daughter of Ferdinand and Iſabella, by which the Low Countries eventually fell under the dominion of Spain. After the retreat of Charles from Italy, Maximillian, in 1496, engaged in an expedition into that country, and laid ſiege to Leghorn; but, failing in his attempts, he returned with diſgrace. He next attempted to reduce the Swiſs; but ſeven defeats, within ſix months, made him glad to terminate the war in 1500 by a treaty. After the death of his ſon Philip, in 1507, he obtained the regency of the Low Countries, of which he conſtituted his daughter Margaret gouvernante. The famous league of Cambray againſt the Venetians took place in 1509, to which Maximillian was one of the contracting parties. His troops took poſſeſſion of Friuli and Iſtria, and he, at the head of a great army, laid ſiege to Padua, but was obliged to abandon the enterprize. When pope Julius deſerted the league and declared war againſt the French, Maximillian endeavoured to get him depoſed, in order that he himſelf might ſucceed to the papacy; but his ſcheme entirely failed. For a large ſubſidy he engaged to aſſiſt Henry VIII. in his invaſion of France; but failing in his engagement, he came in perſon with a few German troops, and flattered the vanity of the Engliſh monarch, as well as gratified his own avarice, by ſerving under him for the pay of a hundred crowns a day. On the acceſſion of Francis I. he made peace with that monarch, who thereby regained the Milaneſe. He took little or no part on the ſubject of the Reformation at its commencement; but at the ſolicitation of the monks he applied to Leo X. to terminate the religious diſputes by his own deciſion, and he ſummoned Luther to appear, with the promiſe of a ſafe conduct, before the diet of Augſburg. He was particularly anxious to ſecure the ſucceſſion to the imperial crown for his grandſon Charles; but in the midſt of his cares on this ſubject he died in January, 1519. In his private character he was amiable and reſpectable; but as a public man he wanted that deciſion which conſtitutes true dignity in a prince. He was beneficent and humane, and his memory is ſtill cheriſhed in Germany for aboliſhing the famous ſecret tribunal of Weſtphalia. He was author of ſome poems, and compoſed memoirs of his life. Univer. Hiſt.

Maximillian II., emperor of Germany, ſon of Ferdinand, was born at Vienna in 1527. He was educated in Spain under his uncle, Charles V., whoſe daughter he married, and he governed that country three years in the name of his father-in-law. After his father had aſcended the imperial throne, he conferred on Maximillian, in 1562, the crowns of Hungary and Bohemia, and cauſed him to be elected king of the Romans: and upon the death of Ferdinand, in 1564, he ſucceeded to the empire without any oppoſition. He was already diſtinguiſhed for prudence and moderation, and well acquainted with the languages and diſpoſitions of the various people under his ſway. The ſpirit of his adminiſtration was pacific, and his reign, for the moſt part, tranquil. The Proteſtants of Auſtria, who had been very uſeful to the emperor in lending him money to carry on the Turkiſh war, and afterwards cancelled the debt, requeſted to be indulged in the free exerciſe of their religion, which he readily granted. He was not contented to do good himſelf, but endeavoured, by all the means in his power, and by ſtrong remonſtrances to his couſin, Philip king of Spain, to put a ſtop to the cruelties exerciſed by Alva in the Low Countries; but that bigot refuſed to liſten to his advice, or to follow his example. Actuated by the ſame principles, he forbad Charles IX. to make levies in Germany for the purpoſe of exterminating the French Hugonots, though he could not prevent the Proteſtant princes of Germany from ſending ſuccours to their perſecuted brethren in France. Twice he ſolicited the crown of Poland, with the intention of conveying it to his ſecond ſon, but want of activity prevented him from attaining his object: he had, however, been ſucceſsful in ſecuring to his eldeſt ſon Rodolph the reverſion of the empire, and of the kingdoms of Bohemia and Hungary, and avowed his intention of ſupporting his claim to the kingdom of Poland by force of arms; but this purpoſe, if real, was defeated by his death, which happened in 1576. He had, it was ſaid, for ſome time previouſly to the event, devoted many of his leiſure hours to the contemplation of a future ſtate; and had been accuſtomed to diſcourſe, in his familiar parties, upon the immortality of the ſoul, which he looked to not only without terror and diſmay, but with hope and Chriſtian confidence. Maximilian II., ſays the hiſtorian, "appears to have been one of the moſt amiable princes that ever ſwayed the imperial ſceptre. No individual ever complained of having heard a harſh expreſſion from his lips, none ever departed diſſatisfied from his audience. So regular were his economical arrangements, that to every act of his life its appropriate hour was allotted; and every day after dinner the meaneſt of his ſubjects was at liberty to approach him. A faithful huſband, an affectionate parent, and a paſſionate lover of truth, his example had conſiderable influence on the manners of his people, and the empire flouriſhed in a peculiar manner under his adminiſtration." Univer. Hiſt.

MAXIMILLIAN, duke of Bavaria in the 17th century, was called, on account of his courage and ſucceſs, the Defender of Germany; and, for his ſingular prudence, he acquired the name of Solomon. He zealouſly oppoſed the Proteſtants, and was conſidered as one of the principal ſupporters of the Catholic religion. In 1620, he gained the battle of Prague againſt Frederic, prince palatine, who had been elected king of Bohemia. For theſe ſervices Maximillian was named an elector of the empire. He died in 1651, aged 70. Moreri.

MAXIMIN, St., in *Geography*, a town of France, in the department of the Var, and chief place of a canton, in the diſtrict of Brignolles; 20 miles N. of Toulon. The place contains 3717, and the canton 9778 inhabitants, on a territory of 412½ kiliometres, in nine communes. N. lat. 43° 28′. E. long. 5° 55′.

MAXIMINUS, CAIUS JULIUS VERUS, in *Biography*, a Roman emperor, raiſed to this high rank from almoſt the loweſt claſs of ſociety, was born in Thrace, A.D. 183. His father was a barbarian of the Gothic nation, his mother an Alan, and he himſelf was brought up to attend the herds and flocks. In this ſtation he had frequent opportunities of exhibiting his proweſs in combating the bands of robbers who overran the country. He is ſaid to have attained to a gigantic ſtature, and a correſpondent ſtrength of body, which produced, in an uncultivated mind, a ſavage and ferocious character. He was both the pride and the dread of his diſtrict, at the time when the emperor Severus, returning from the Eaſt, halted in Thrace, to celebrate the birthday of his ſon Geta. "The country," ſays Gibbon, "flocked in crowds to behold their ſovereign, and a young barbarian of gigantic ſtature earneſtly ſolicited, in his rude dialect, that he might be allowed to contend for the prize of wreſtling. As the pride of diſcipline would have been diſgraced in the overthrow of a Roman ſoldier by a Thracian peaſant, he was matched by the ſtouteſt followers of the camp, ſixteen of whom he ſucceſſively laid on the ground. His victory was rewarded by ſome trifling gifts, and a permiſſion to enliſt in the troops. The next day, the happy barbarian was diſtinguiſhed above a crowd of recruits, dancing and exulting after the faſhion of his country. As ſoon as he perceived that he attracted the emperor's notice, he inſtantly ran up to his horſe, and followed him on foot, without the leaſt appearance of fatigue, in a long and rapid career. "Thracian," ſaid Severus, with aſtoniſhment, "art thou diſpoſed to wreſtle after thy race?" Moſt willingly, ſir, replied the unwearied youth; and, almoſt in a breath, overthrew ſeven of the ſtrongeſt ſoldiers in the army. A gold collar was the prize of his matchleſs activity, and he was immediately appointed to ſerve in the horſe-guards who always attended on the perſon of the ſovereign." As a ſoldier he diſtinguiſhed himſelf no leſs by his attention to military diſcipline than by his valour, and his ferocity bent to the ſpirit of obedience and ſubordination. Under Caracalla he roſe to the rank of centurion, but he nobly refuſed to ſerve under the aſſaſſin of that prince, and retiring to his native place he purchaſed property, and carried on a commerce with the barbarous tribes from which he derived his origin. During the reign of the monſter Heliogabalus he kept at a diſtance from the court, notwithſtanding the ſolicitations of his friends to take a military tribuneſhip. Alexander Severus knew the worth of Maximinus, and committed to his care a legion of new recruits; the duties of which ſtation he fulfilled with the utmoſt aſſiduity, beſtowing the minuteſt attention upon their exerciſe, arms, health, and apparel. When he was told by a perſon of conſiderable rank, that in ſuch a career of promotion he need not trouble himſelf, he indignantly replied, "I am of a different opinion, the higher I riſe the more I ſhall labour." Though, as an officer, he was a ſtrict diſciplinarian, his manners, and the figure of his perſon, rendered him extremely popular among the ſoldiery, who gave him the appellations of Ajax and Hercules. His elevation began to inſpire him with ambitious views, which effaced the ſentiments of affection, gratitude, and duty: he aſpired to the throne, and was proclaimed, by the army, emperor, in the year 235. The decree of the ſoldiery was confirmed by an always complying ſenate, and one of his firſt acts was to confer on his ſon, a youth of fine talents, the title of Cæſar. His heart now became callous to the feelings of honour and humanity; he not only removed from his preſence the friends and adviſers of the late emperor, but put many of them to death upon the ſlighteſt and moſt frivolous grounds. A conſpiracy againſt his perſon afforded him a better pretext for the moſt ſanguinary cruelty, and a vaſt number of perſons of rank loſt their lives on the occaſion, with various circumſtances of barbarity. He now became the object of univerſal dread and deteſtation, and was, in a ſhort time, ſuch is the progreſs of vice and cruelty, grounded on ambition, ranked among the moſt bloody tyrants that ever diſgraced the Roman purple. He ſtill had the art to retain the attachment of his army, in whom he confided, and croſſing the Rhine into Germany with numerous and well diſciplined battalions, he laid waſte a wide tract of country with fire and ſword, and deſtroyed a great number of natives who oppoſed him. In theſe actions he diſplayed the ſkill of a general, with the bravery of a private ſoldier, and made it ſufficiently evident that war was the true theatre of his glory. After two campaigns, he paſſed the winter of the year 236 at Sirmium, occupied in raiſing money by the ſevereſt exactions, which, by means of his officers, were extended to all the provinces of the empire. The procurator of Africa carried his extortions to ſuch an intolerable exceſs that a conſpiracy was formed againſt him, to which his life fell a ſacrifice; and in the year 238, Maximinus and his ſon were diſpatched by an indignant and ſuffering people, who, fixing their heads upon ſpears, diſplayed them as trophies through the army, who received the intelligence with joy, and united in declarations of fidelity to the ſenate and its deciſions. Maximinus has been reckoned, by eccleſiaſtical writers, among the perſecutors of the Chriſtians, but the candid hiſtorian does not readily admit the title of "the ſixth perſecution" to be juſtly applied to the reign of this emperor. He is deſcribed, by Gibbon, as a brutal ſavage, deſtitute of every ſentiment that diſtinguiſhes a civilized, or even a human being. "The body," ſays he, "was ſuited to the ſoul." The ſtature of Maximinus exceeded the meaſure of eight feet, and circumſtances almoſt incredible are related of his matchleſs ſtrength and appetite. Had he lived in a leſs enlightened age, tradition and poetry might well have deſcribed him as one of thoſe monſtrous giants, whoſe ſupernatural power was conſtantly exerted for the deſtruction of mankind. Gibbon. Univer. Hiſt.

Maximinus, C. Galerius Valerius, a Roman emperor, ſon of the ſiſter of the emperor Galerius, was in the year 305, upon the abdication of Diocleſian and Maximinian, raiſed, by the influence of his uncle, to the rank of Cæſar, and, in the diviſion of the empire, the provinces of Egypt and Syria were placed under his government. When Licinius, in 307, was raiſed by Galerius to the rank of Auguſtus, Maximinus, diſdaining an inferior title, inſiſted on the ſame elevation, and upon ſome reluctance on the part of Galerius to grant it, he cauſed himſelf to be nominated to that dignity by his aſſembled troops: thus at one and the ſame time, the Roman world, in the year 308, witneſſed ſix Auguſti or emperors. On the death of Galerius, in 311, Maximinus ſhared his dominions with Licinius, and added Aſiatic provinces to his former poſſeſſions. In the conteſt between Maxentius and Conſtantine, Maximinus ſecretly allied himſelf with the former, though he took no open part in the war. When Galerius iſſued his edict in favour of the Chriſtians, Maximinus, though an enemy to them, thought proper to concur. Still he had a great deſire to re-eſtabliſh the Pagan worſhip, with all its impoſtures of magic and divination. He was preparing to renew the perſecution, and, in the mean time, he not only gave to the ancient religion a ſyſtem of church government copied from the Chriſtians, and threw about it all the luſtre of the ſtate, but employed every art to diſcourage and vilify Chriſtianity. He is alſo charged with having publiſhed and carefully diſſeminated a falſe narrative of the death of Jeſus Chriſt, filled with the moſt injurious repreſentations. The principal cities of his dominions, as Nicomedia, Antioch, and Tyre, were inſtigated to ſend addreſſes to him, expreſſing their abhorrence of the Chriſtians, and imploring that they might be expelled. Theſe, however obtained, led to the infliction of cruel and ignominious puniſhments and to the deſtruction of ſome lives. The dangers that menaced Chriſtianity in Aſia were averted by the war, which, in 313, took place between Maximinus and Licinius. The latter had made an alliance with Conſtantine, and the apprehenſion of its conſequences ſeems to have been the chief motive of Maximinus, who begun the attack. He was entirely defeated, and was obliged to ſeek his ſafety in a rapid flight; and it is ſaid he reached Nicomedia, a diſtance of 160 miles, in the ſpace of twenty-four hours from the concluſion of the battle. He retreated to Tarſus, where, in a few months, death put an end to his diſgrace. His whole family was ſacrificed to the vindictive rage of the conqueror. Gibbon. Univer. Hiſt.

MAXIMUS, M. Claudius Pupienus, a Roman emperor, was the ſon of a mechanic, but having a deſire to enrol himſelf in the army, he enliſted at an early age, and became diſtinguiſhed firſt as a ſoldier, and afterwards in ſome of the public offices of ſtate. In 227 he obtained the conſulate, and was afterwards proconſul of Bithynia, Greece, and Narbonnenſian Gaul, and was appointed to military commands in various parts of the Roman empire. As prefect of Rome, he diſplayed intelligence, firmneſs, and ſeverity, ſo that he acquired a general reſpect, accompanied with an awe, approaching almoſt to terror. In 237, when the murder of the Gordians deprived Rome of the emperors it had choſen in the place of the tyrant Maximinus, the merit of Maximus cauſed him to be inveſted with the purple together with Balbinus. Some oppoſition was firſt made to his acceſſion, and it was reſolved to add the younger Gordian, then a child, to the emperors already choſen. At length Maximus was received with joyful acclamations as the deliverer of his country, and the conduct of the three emperors ſeemed to promiſe the reſtoration of an equitable and wiſe government to the Roman world. The various nature of their talents ſeemed to appropriate to each his peculiar department of peace and war, without leaving room for a jealous emulation. Juſtice was regularly adminiſtered, wholeſome laws were enacted, and oppreſſive taxes were repealed or moderated. Diſcipline was revived, and with the advice of the ſenate many excellent regulations were introduced into the ſeveral departments of government. The pretorian bands, accuſtomed to depoſe and to make emperors at their pleaſure, ſoon ſhewed ſymptoms of diſcontent under a ſovereignty which they had not eſtabliſhed, and apprehended that the reign of law and order would be deſtructive of their power. They accordingly ſeized upon the opportunity when the citizens were occupied in the Capitoline games, roſe in mutiny, and marched towards the palace: laid hold of the two emperors, treated them with every mark of inſult, and, to prevent the poſſibility of a reſcue, took away their lives, leaving their bodies, mangled with a thouſand wounds, expoſed to the inſults or the pity of the populace. Gibbon. Univer. Hiſt.

Maximus, Petronius, an emperor of the Weſt in the fifth century, was a Roman of noble birth. Poſſeſſed of an ample patrimony, and adorned with liberal arts and elegant manners, he obtained the favour of the prince and the ſenate, and of courſe roſe to high and important offices in the ſtate. In March 455, Maximus was elected emperor, in the room of Valentinian, who had, on account of his vices and tyranny, been aſſaſſinated. In a few hours he was convinced that happineſs and ſovereignty were generally at variance, and he was heard to exclaim, "Happy Damocles, whoſe reign began and ended with a dinner!" His own power was very ſhort-lived; when attacked by Genſeric, king of the Vandals, in Africa, he was deprived of all courage and preſence of mind, and thought of nothing but how to make his eſcape. Cowardice in a prince is always hateful and contemptible, and as ſoon as his intentions were known, the people, who would probably have rallied round him, had he been inclined to defend his country, roſe upon him, and a ſoldier gave him a fatal blow. His body was ignominiouſly dragged through the ſtreets and thrown into the Tiber. Such was his end, after a reign of leſs than three months. Gibbon. Univer. Hiſt.

Maximus Magnus, an imperial uſurper of the fourth century, a native of Spain, and probably of low origin, ſerved in Britain with Theodoſius, afterwards emperor, and eſtabliſhed a character for valour and abilities, though it does not appear that he roſe to any important rank, either civil or military. He was inveſted with the imperial purple in the year 383, by the army among whom he had excited diſcontent and diſaffection againſt Gratian, emperor of the Weſt. This took place while he was in Britain, but he determined to carry his arms to the continent, and contend with the lawful emperor upon his own ground. He tranſported into Gaul ſo great a number of Britons, that the emigration at that period weakened the population of the iſland, and they afterwards ſettled in Bretagne. As he advanced he was joined by the Gallic armies, and even the houſhold troops deſerted Gratian, then reſident at Paris. He fled before the uſurper, and was put to death at Lyons. Maximus was now acknowledged as emperor by all the provinces of the Weſt, and he declared his infant ſon Victor his colleague, and propoſed an alliance to Theodoſius, emperor of the Eaſt, which was accepted, on condition that he ſhould not paſs the Alps, beyond which Valentinian, the brother of Gratian, reigned over Italy, Illyrium, and Africa. The ambition of Maximus, however, would not permit him to reſt; in 387 he invaded Italy, and took poſſeſſion of Milan, without oppoſition. Valentinian fled to implore the aſſiſtance of Theodoſius, who, while the uſurper was employed in reducing the towns of Italy, levied an army to oppoſe him. A battle decided the fate of Maximus; as ſoon as he was defeated, his own ſoldiers roſe upon him, dragged him away and ſtruck off his head. His ſon Victor met with a ſimilar fate in Gaul. Theſe events took place in the year 388. Maximus is ſtigmatized as the firſt Chriſtian prince who ſhed the blood of his Chriſtian ſubjects, on account of their religious opinions. Gibbon. Univer. Hiſt.

Maximus Tyrius, a celebrated philoſopher, and elegant writer in the ſecond century, was a native of Tyre in Phœnicia, whence he derived his name. He probably came to Rome in the year 146, where he received from the emperor Marcus Aurelius many tokens of eſteem and regard. This emperor is ſaid to have placed himſelf under the inſtructions of the philoſopher, though ſome writers imagine that this high honour belonged to another Maximus of the Stoical ſect. Maximus adopted the principles of Plato, but with an evident leaning to ſcepticiſm. There are forty-one of his "Diſſertations," on philoſophical topics, ſtill extant, which diſplay much ſound argument, and real eloquence. Theſe have been very frequently printed. The firſt Latin verſion was publiſhed at Baſil in 1519, and the original Greek was printed for the firſt time by Henry Stevens, in 1557. In 1607, Daniel Heinſius publiſhed an edition of them at Leyden, in Greek and Latin, illuſtrated with notes. A new impreſſion of this edition was printed at Cambridge in 1703, with corrections, additional notes and indexes, by Dr. John Davies. Enfield. Hiſt. Phil. Harwood.

Maximus, named "The Cynic," a native of Epheſus, who ſtudied under Œdeſius of Cappadocia, a philoſopher of the Eclectic ſchool, and immediate ſucceſſor of Jamblichus. He was probably appointed by the emperor Conſtantius preceptor to Julian, ſurnamed afterwards "The Apoſtate." Some writers, however, maintain that he introduced himſelf to that emperor at Nicomedia, either while he was purſuing his ſtudies, or during his expedition into the Eaſt. Whichever account be true, it is certain he was a great favourite with Julian, and had ſuch an influence over his mind, as to excite in him the moſt determined hatred to Chriſtianity, while he inſpired him with an ardent attachment and enthuſiaſm in favour of Heathen ſuperſtitions, and the practice of pretended magical arts. Such, at length, was the folly of the deluded emperor, that he ſeemed to place an entire confidence in the predictions of Maximus. When the emperor intended to make war againſt Perſia, he had recourſe to his divinations, which flattered him with the idea, that he was born to rival Alexander in the glory of conqueſt. The event ſhewed the vanity of the prophet, and the emperor fell a ſacrifice to his credulity. During the reign of Jovian, Maximus was treated with reſpect; but under the government of Valentinian and Valens he was ſeized and proſecuted for the crime of magic, of which he was convicted and ſentenced to a long impriſonment. In 373, he was put to death by the proconſul Feſtus, the diſtinguiſhed miniſter of the emperor Valens' cruelties. Enfield. Hiſt. Phil.

MAXINO, in *Geography*, a town of Sweden, in the government of Waſa; 12 miles N.N.E. of Waſa.

MAXULA, Mo-raisah, in *Ancient Geography*, an ancient town of Africa, ſituated on the ſea-coaſt, S.E. of Carthage. It is mentioned by Ptolemy, Pliny, and Antonine in his Itinerary.

MAXY, in *Mineralogy*, a name given by ſome to mundic, a ſulphureous mineral, common in the tin-mines of Cornwall, and elſewhere.

MAXYES, in *Ancient Geography*, a people of Africa, in Libya, W. of the river Triton. According to Herodotus, they permitted their hair to grow on the right ſide of the head, ſhaved the left ſide, and painted their bodies with vermilion. They are ſaid to have been deſcended from the Trojans, and to have inhabited a very mountainous country, covered with wood and full of wild beaſts.

MAY, Maius, the fifth month in the year, reckoning from our firſt, or January; and the third, counting the year to begin with March, as the Romans anciently did. It was called *Maius* by Romulus, in reſpect to the ſenators and nobles of his city, who were named *majores*, as the following month was called *Junius*, in honour of the youth of Rome, *in honorem juniorum*, who ſerved him in the war; though ſome will have it to have been thus called from *Maia*, the mother of Mercury, to whom they offered ſacrifice on the firſt day of it; and Papias derives it from *Madius*, *eo quod tunc terra madeat*.

In this month the ſun enters Gemini, and the plants o the earth in general begin to flower.

The month of May was under the protection of Apollo; and in it alſo they kept the feſtival of Bona Dea, that of the goblins, called *lemuria*; and the ceremony of *regifugium*, or the expulſion of the kings.

The vulgar have a great opinion of the virtues of May-dew, and May-butter.

The month of May has ever been eſteemed favourable to love; and yet the ancients, as well as many of the moderns, look on it as an unhappy month for marriage. The original reaſon may perhaps be referred to the feaſt of the Lemures,

mures, which was held in it. Ovid alludes to this in the fifth of his Faſti, when he ſays,

> "Nec viduæ tædis eadem, nec virginis apta
> Tempora; quæ nupſit, non diuturna fuit:
> Hac quoque de cauſa, ſi te proverbia tangunt,
> Menſe malum Maio nubere vulgus ait."

May-*apple*, in *Botany*. See PODOPHYLLUM.

May-*buſh*. See CRATÆGUS.

May-*dew*. See DEW.

May-*duke*, a ſpecies of cherry.

May-*lily*. See CONVALLARIA.

May-*weed*. See ANTHEMIS and MATRICARIA.

May-*weed*, in *Agriculture*, the common name of a troubleſome kind of field weed, which reſembles wild chamomile, and is a trailing perennial plant, which puts out roots from its branches as they lie on the ground. By theſe means, and by ſcattering its ſeeds long before the corn is ripe, it ſpreads and multiplies greatly. It flowers in May, whence its name . With regard to the beſt means of extirpating it, they are thoſe of ſummer fallowing, repeated good harrowing, and burning the collected roots. What eſcapes theſe clearings ſhould be very carefully pulled up by hand; for the common weeding-hook will not go deep enough to take out the whole of the long ſlender tap root of this plant, of which every remaining bit that has a knot in it will produce new ſhoots. The farmer ſhould not regret this ſmall additional expence, to get rid of one of the moſt fatal enemies his corn can have. Mr. Liſle obſerves, that a "good crop of wheat in the winter time, was ſo deſtroyed by the coming up of May-weed and poppies in the ſpring and ſummer, that it did not at laſt yield ſo much as the ſeed." Where proper tillage is practiſed, this can never be the caſe.

May-*wort*, in *Botany*. See ARTEMISIA.

May, Thomas, in *Biography*, eldeſt ſon of ſir Thomas May, knight, of Mayfield in Suſſex, was born in 1595. He purſued his ſtudies in Sidney college Cambridge, where he took his degree of B.A.; after which he entered himſelf a member of Gray's Inn, with the view of ſtudying the law, though he probably never purſued it as a profeſſion. He was much attached to literature, and became acquainted with the poets and men of wit who flouriſhed in that period. Owing to the extravagance of his father, he had only a ſmall annuity to depend upon. Some of his firſt compoſitions were of the dramatic claſs, and three tragedies and two comedies are extant in his name. He tranſlated "Virgil's Georgics," "Selected Epigrams of Martial," and "Lucan's Pharſalia," with a continuation of the poem to the death of Julius Cæſar, in ſeven books, of his own compoſition; which have been ſo much admired, as to be given with ſeveral of the beſt editions of Lucan. This has rendered his name famous among claſſical ſcholars. He was author of many original poems, ſuch as "The Reign of Henry II.," "The victorious Reign of Edward III.," "The Deſcription of Henry II. with a ſhort Survey of the Changes of his Reign," and "The ſingle and comparative Character of Henry and Richard his Sons." He was in high eſtimation with king Charles I., who deſignated him as his poet; but the monarch was not ſufficiently liberal to ſecure the poet's attachment. He even quitted the royal party, upon the breaking out of the civil wars, and entered into the ſervice of the parliament. He was appointed ſecretary to the parliament, and wrote a hiſtory of its tranſactions; which work became famous, and was extremely obnoxious to the royal party. Clarendon ſpeaks with great contempt of his performance, but Granger affirms that it is a very reſpectable work. It was his laſt literary labour. He died in November 1650. His conſideration with his party was ſhewn by a ſplendid public funeral in Weſtminſter Abbey, with a marble monument and a laudatory epitaph. After the reſtoration, the royaliſts took their revenge, dug up his body, which they treated with ignominy, and tore down the monument intended to perpetuate his fame. Biog. Brit.

May, in *Geography*, a river of America, in South Carolina, which runs into the Atlantic, N. lat. 32° 15′. W. long. 80° 55′.—Alſo, a river of Chiampa, which runs into the Chineſe ſea, N. lat. 10° 42′. E. long. 107° 14′.—Alſo, a town of Perſia, in the province of Farſiſtan; 120 miles S. of Schiras.—Alſo, a ſmall iſland of Scotland, at the entrance of the Frith of Forth, formerly dedicated to St. Adrian, who was murdered by the Danes. On it is a lighthouſe; five miles S. of Fifeneſs. N. lat. 56° 10′. W. long. 2° 38′.

May. See MAYO.

May, *Cape*, the moſt ſoutherly point of land of New Jerſey, and the N. point of the entrance into Delaware bay and river in N. lat. 39°. W. long. 74° 51′.

May, *Cape*, *County*, extends northward round the forementioned cape, and is a healthy, ſandy tract of country, 34 miles long, and 19 broad. This county is divided into Upper, Middle, and Lower precincts. The number of inhabitants is 3066, of whom 98 are ſlaves.

May *Point*, a point of the peninſula, between Fortune and Placentia bays, on the S. ſide of Newfoundland iſland.

MAYA, a town of Spain, in Navarre; 21 miles N. of Pamplona.

Maya, in *Metaphyſics*, is a term of vague import among the Brahmans and other Hindoo philoſophers. It means *illuſion* or *deception*, and is variouſly applied in caſes beyond the reach of demonſtration or comprehenſion. For inſtance, although their moſt ſacred books give the title of god to the ſun, and they confeſs generally that the ſun is an emblem or image of their three great deities, jointly and individually, that is of Brahm, or the Supreme Being, who alone exiſts really and abſolutely, yet the *three forms*, or *trimurti*, are conſidered as maya, or deluſion, as well as the body of the ſun; but ſince the latter is the moſt glorious and active emblem of God, that luminary is reſpected as an object of high veneration. This is ſufficiently myſterious; but it flows from the principal tenet of the Vedanti ſchool (ſee VEDANTA): "That the only being which has abſolute and real exiſtence is the Divine Spirit, infinitely wiſe, infinitely benign, and infinitely powerful, expanded through the univerſe; not merely as the *ſoul of the world*, but as the ruler of it, ſending forth rays or emanations from his own eſſence, which are the pure vital ſouls of all animated creatures, whether *moveable* or *immoveable;* or, as we ſhould expreſs it, both *animals* and *vegetables*, and which he calls back to himſelf, according to certain laws eſtabliſhed by his unlimited wiſdom." Brahm, as the Moſt High One, is neuter; in the character of Supreme Ruler he is named Parameſwara; but, through the infinite veneration to which he is entitled, the Hindoos meditate on him with ſilent adoration, and offer prayers and ſacrifices only to the higher emanations from him. This ſilent adoration is by ſome called Jap, (ſee that article,) in which deſcription of worſhip the holy gayatri and the ſacred monoſyllable O'M is mentally recited. (See O'M.) In a mode, incomprehenſible to inferior creatures, they are involved at firſt in the gloom of maya, and ſubject to various taints from attachment to worldly affections; but they can never be reunited to their ſource, until they diſpel the illuſion by ſelf-denial, renunciation of the world, and intellectual abſtraction, and have removed the impurities of their nature by repentance, mortification, and ſucceſſive tranſmigratory paſſages through the forms of animals or vegetables, according to their demerits. In ſuch a reunion conſiſts their final beatitude; and to effect it by the beſt poſſible means is the object of their ſupreme ruler, who, in order to reclaim the vicious, to puniſh the incorrigible, to protect the oppreſſed, to deſtroy the oppreſſor, to encourage and reward the good, and to ſhew all ſpirits the path to their ultimate happineſs, has been pleaſed (ſay the Brahmans) to manifeſt himſelf in a variety of ways, from age to age, in all parts of the habitable world. When he acts immediately without aſſuming a ſhape, or ſending forth a new emanation; or when a divine ſound is heard from the ſky, that manifeſtation of himſelf is called *Akaſavani*, or an ethereal voice: when the ſound proceeds from a meteor, or a flame, it is ſaid to be *Agnipuri*, or formed of fire: a deſcent of the deity in the ſhape of a mortal, is an avatara. Of this laſt deſcription there have been many; but the chief of them as detailed in the Puranas, and to which the word is generally applied, are the ten, or *daſavatara*, of Viſhnu; as enumerated under the article VISHNU, and deſcribed briefly under the references therefrom. A ſimilar incarnation of an inferior kind, intended to anſwer ſome purpoſe of leſs moment, is called *Avantara*. Of this deſcription is that noticed under KANDEH RAO; though in common language called alſo *avatara*. The ſupreme being, and the celeſtial emanations from him, are *nirakara*, or bodileſs, in which ſtate they muſt be inviſible to mortals; but when they are *pratyakſha*, or viſible, they become *ſakara*, or embodied, and expreſſive of the divine attributes; thus Kriſhna revealed himſelf to Arjun, as deſcribed in an extract from the Gita under the article KRISHNA, or in a human form, which Kriſhna uſually bore. And in that mode of appearing, the deities are generally ſuppoſed to be born of a woman, but without any carnal intercourſe. The exceſſive libertiniſm of Kriſhna, his ſectaries declare to be apparent only; he was chaſte and pure in reality; ſuch appearances were maya, or deluſion.

Theſe doctrines, however, are by no means received by all Hindoos, though they be very popular with certain ſects. A reformation of the above, called Purva mimanſa, was introduced by Jaimini, who denies the incarnations of deities. See JAIMINI.

Although not particularly in its place, we will here inſert four verſes tranſlated by ſir William Jones from the Bhagavat, one of the Hindoo Puranas, as connecting ſome of their philoſophical tenets. The tranſlation we are aſſured is "moſt ſcrupulouſly literal."

"Even I was at firſt, not any other thing; that which exiſts unperceived, ſupreme; afterwards *I am that which is*; and he who muſt remain, am I.

"Except the *Firſt Cauſe*, whatever may appear, and may not appear, in the mind, know that to be the mind's *maya*, or deluſion, as light, as darkneſs.

"As the great elements are in various beings, entering, yet not entering, (that is, pervading, not deſtroying,) thus am I in them, yet not in them.

"Even thus far may enquiry be made by him who ſeeks to know the principle of mind, in union and ſeparation, which muſt be *every where always*." Aſiatic Ref. vol. i.

The above verſes are ſtated to have been ſpoken by the ſupreme being to Brahma, and wild and obſcure as they are, the learned tranſlator doubts if the poetry or mythology of Greece and Italy afford conceptions more awfully magnificent; the brevity and ſimplicity of the Moſaic diction is, however, unrivalled.

The firſt of the four verſes above quoted will ſtrongly remind the reader of the inſcription in a temple at Sais in Lower Egypt; ſee the article EGYPT; where farther traces of reſemblance will be found between the theogony and philoſophy of that country and of India, as exhibited in this, and the other articles connected with Hindoo mythology.

"As the ſoul of the world, or the pervading mind, ſo finely deſcribed by Virgil, we ſee Jove repreſented by ſeveral Roman poets; and with great ſublimity by Lucan, in the ſpeech of Cato concerning the Ammonian oracle: "Jupiter is wherever we look, wherever we move." This is preciſely the Indian idea of Viſhnu, according to the four verſes above exhibited—not that the Brahmans imagine their male divinity to be the *divine eſſence* of the Great One, which they declare to be wholly incomprehenſible; but, ſince the power of *pervading* created things, by a ſuperintending providence, belongs eminently to the Godhead, they hold that power to exiſt tranſcendently in the preſerving member of the Triad, whom they ſuppoſe to be *every where always*, not in ſubſtance, but in ſpirit and energy. Here, however I ſpeak of the Vaiſhnavas, for the Saivas aſcribe a ſort, of pre-eminence to Siva." Jones, ib. See VAISHNAVA and SAIVA.

The accompliſhed writer above quoted addreſſed a ſpirited hymn to Narayana, and in the argument prefixed ſays, "that a complete introduction to it would be no leſs than a full comment on the Vedas and Puranas of the Hindoos, the remains of Egyptian and Perſian theology, and the tenets of the Ionic and Italic ſchools: but this is not the place for ſo vaſt a diſquiſition. It will be ſufficient here to notice, that the inextricable difficulties attending the *vulgar notion of material ſubſtances*, concerning which 'we know this only, that we nothing know,' induced many of the wiſeſt among the ancients, and ſome of the moſt intelligent among the moderns, to believe that the whole creation was rather an *energy* than a *work*, by which the infinite Being, who is preſent at all times in all places, exhibits to the minds of his creatures a ſet of perceptions like a wonderful picture, or piece of muſic, always varied, yet always uniform; ſo that all bodies and their qualities exiſt, indeed, to every wiſe and uſeful purpoſe, but exiſt only as they are *perceived*: a theory no leſs pious than ſublime, and as different from any principle of atheiſm as the brighteſt ſunſhine differs from the blackeſt night. This *illuſive operation* of the Deity the Hindoo philoſophers call *maya*, or *deception*." The Berkelyan theory of immaterialiſm ſeems to coincide with theſe doctrines. See BERKELEY.

Maya, in a more mythological view, is deſcribed as the mother of Kama, the god of love. Under this perſonification ſhe repreſents the general *attracting* power; and ſome Hindoo ſcholars explain the word to mean the 'firſt inclination of the Godhead to diverſify himſelf,' ſuch is their phraſe, 'by creating worlds.' She is thus feigned to be the mother of univerſal nature and of all the inferior gods. Lakſhmi, the bounteous giver of all good, is alſo repreſented to be the mother of Kama, and one of her appellations is Maya, or Ada-maya, as noticed under LAKSHMI.

MAYA, in *Ornithology*, a name given by the people of the Philippine iſlands to a ſmall ſpecies of ſparrow, much leſs than our's, and very common among them. It feeds on rice, and is very deſtructive of it.

MAYACA, in *Botany*, a name of which no explanation is given. Aubl. Guian. 42. t. 15. Juſſ. 45. Lamarck Illuſtr. t. 36. Michaux Boreal-Amer. v. 1. 26. See SYENA; Schreb. 36. Willd. Sp. Pl. v. 1. 254.

MAYACARI, in *Geography*, a river of Guiana, which runs into the Atlantic, N. lat. 2° 11′. W. long. 51° 46′.

MAYAGUANA, one of the Bahama iſlands; 24 miles in length. N. lat. 22° 32′ to 22° 44′. W. long. 72° 15′ to 72° 30′.

MAYAHOUN, a town of the Birman empire, on the Irawaddy, which formerly belonged to Pegu, and was called "Loonzey" or "Lundſey." It is large, and contains many temples and convents, beſides granaries filled with rice, produced in the environs, and belonging to the king; 120 miles N.N.W. of Rangoon.

MAYALS, a town of Spain, in Catalonia; 16 miles S. of Lerida.

MAYAMBA, a town of Africa, and capital of a province of the ſame name, in the kingdom of Loango, near the Atlantic ocean. Within its territory, which extends far eaſtward, is a ſalt lake, above 15 miles in compaſs, which empties itſelf by ſome rivulets into the ſea, about half a league N. of cape Negro. The town ſtretches along the coaſt, but lies ſo low that the inhabitants are frequently under a neceſſity of removing at high water to ſome of the neighbouring high lands. The river Banna, which runs near the town, is ſaltiſh, and has at its mouth a good fiſhery for oyſters. By means of this river, logwood is brought to the port in canoes from the province of Sette, where it abounds; the river extends 150 miles within land. The ſoil of Mayamba is dry and ſandy, and produces little or no grain, but furniſhes plenty of bananas and palm-trees, and of the latter a wine is made, and alſo roots of maxondo, which they uſe inſtead of bread. The lakes and rivers ſupply abundance of fiſh, on which the inhabitants chiefly ſubſiſt. The oyſters are opened and ſmoked, and are thus preſerved in an eatable ſtate for ſeveral months. The country abounds with game, which is caught by dogs, with wooden clappers to their necks, by the noiſe of which they follow them, as they are not able to bark. The government of this province is commonly conferred on a counſellor of ſtate, who is alſo prince of Loangiri, and gives no account to the king of Loango of any commodities, except of the logwood, which pays a duty of 10 *per cent.* The people are rude and ſavage, and their governor is an abſolute tyrant. The commerce of elephants was formerly conſiderable and lucrative, but has lately been almoſt annihilated. S. lat. 3° 20′. E. long. 13° 4′.

MAYAPARA, the proper name of Point Palmiras; which ſee.

MAYAPIL, a town of Mexico, in New Biſcay; 75 miles S.S.E. of Parral.

MAYAPOUR, a town of Bengal; eight miles S.W. of Palamow.—Alſo, a town of Bengal; 12 miles S.W. of Calcutta.

MAYAR, a town of Perſia, in the province of Irak, containing about 300 houſes, and a caravanſera; 24 miles S. of Iſpahan.

MAYASQUER, a town of South America, in the audience of Quito; 70 miles N. of Quito.

MAYBACA, a river of Guiana, which runs into the Atlantic, N. lat. 6° 40′. W. long. 58° 26′.

MAYBOLE, or MINNEBOIL, a town of Scotland, in the county of Ayr, which has manufactures of woollen and cotton. The population returned to parliament in 1791 was 3162, of whom 1626 were employed in manufactures, chiefly of blankets. At this time here were ten perſons, whoſe ages amounted together to upwards of 900 years; 18 miles S. of Ayr.

MAYCAWINI, a river of Guiana, which runs into the Atlantic, N. lat. 6° 35′. W. long. 58° 26′.

MAYCOCK BAY, a bay on the W. coaſt of Barbadoes; three miles N. of Speight's town.

MAYDOOH, a town of the Birman empire; 42 miles S.W. of Monchaboo.

MAYEM, a town of Hindooſtan, in Baglana; 20 miles N. of Baſſeen.

MAYEN, a town of France, in the department of the Rhine and Moſelle, and chief place of a canton, in the diſtrict of Coblentz; 15 miles W. of Coblentz. The place contains 2200, and the canton 5358 inhabitants, in 15 communes. N. lat. 50° 26′. E. long. 7° 8′.

MAYEN'S *Iſland*, an iſland lying S.W. of Spitzbergen; formerly reſorted to for the whales which frequented its coaſt, but now forſaken, as theſe fiſhes have removed farther north. A very high mountain, called Beerenbergen, or Bear mountain, extends quite acroſs the iſland, which may be ſeen from the ſea, at the diſtance of 30 miles. This iſland has many good bays, and the land abounding with deer, and the coaſt with fiſh, render it habitable; but the floats of ice, towards the E. eſpecially, make it inacceſſible in ſpring. N. lat. 71° 13′.

MAYENCE. See MENTZ.

MAYENNE, CHARLES *of Lorraine, Duke of*, in *Biography*, ſecond ſon of Francis of Lorraine, duke of Guiſe, was born in 1554. He diſplayed great courage at the ſieges of Poictiers and Rochelle, and at the battle of Montcontour. He alſo defeated the Proteſtants in Guienne, Dauphiny, and Saintonge. When his brothers were killed at the meeting of the ſtates at Blois, he declared himſelf head of the league, and aſſumed the title of lieutenant-general of France. He proclaimed the cardinal of Bourbon king, by the name of Charles X.; but was defeated by Henry IV. at the battle of Arques, and again at Ivry. In 1599 he was reconciled to the king, who made him governor of the Iſle of France. He died in 1611. Moreri.

MAYENNE, in *Geography*, a town of France, and capital of a department of the ſame name, and principal place of a diſtrict, near the river Mayenne, defended by a caſtle on a rock: the river riſes near Linieres in the department of the Charente, and paſſing by Ambrieres, Mayenne, Laval, &c. joins the Sarthe, about three miles N. from Angers, and forms the Mayne, which joins the Loire, about four miles below. The town contains 7575 inhabitants; one of its cantons contains 14,834, on a territory of 162½ kiliometres, in eight communes, and the other contains 14,946 inhabitants, on a territory of 200 kiliometres, in twelve communes.

MAYENNE, one of the nine departments of the N.W. region of France, formerly Lower Maine, lies in N. lat. 48° 15′, and is bounded on the N. by the departments of the Channel and the Orne, on the E. by the department of the Sarthe, on the S. by the Mayne and Loire, and on the W. by that of the Ille and Vilaine. Its length is about 22 French leagues, and breadth 16; its extent is 5452½ kiliometres, or about 266 ſquare leagues, and the number of its inhabitants is computed at 328,397. It is divided into three circles, 27 cantons, and 288 communes. Its circles are Mayenne, including 157,256 inhabitants in 116 communes; Laval, containing 106,141 inhabitants in 93 communes; and Chateau-Gontheir, having 65,000 inhabitants in 79 communes. According to M. Haſſenfratz, this department comprehends ſeven circles, 68 cantons, and 323,607 inhabitants. Its contributions in the 11th year of the French era amounted to 3,111,618 fr., and its expences for adminiſtration, juſtice, and public inſtruction, were 234,804 fr. Its capital is Laval. A great proportion of this department is hilly and covered with foreſts; it has many ſandy tracts, and few cultivated plains. The borders of the rivers Sarthe and Mayenne yield ſome grain, fruits, and paſtures in abundance.

Here are mines of iron, quarries of marble and ſtone, mineral ſprings, &c.

MAYENNE, or MAYNE, *and Loire*, ſo called from the union of two rivers, formerly Anjou, is one of the nine departments of the weſtern region of France, lying in N. lat. 47° 20′, and bounded on the N. by the departments of the Mayenne and Sarthe; on the E. by the department of the Indre and Loire; on the S. by the departments of the Vendée, the Two Sevres, and the Vienne; and on the W. by the department of the Lower Loire. Its length is 26 French leagues, and breadth 21 leagues; and its territorial extent is 7637½ kiliometres, or about 370 ſquare leagues; and its number of inhabitants is 376,033. It is divided into five circles or diſtricts, 34 cantons, and 385 communes. The circles are Segré, comprehending 58,176 inhabitants in 77 communes; Baugé, including 60,669 in 61 communes; Saumur, having 90,104 in 115 communes; Beaupreau, with 74,650 in 73 communes; and Angers, having 92,434 in 59 communes. According to M. Haſſenfratz, the circles are eight, the cantons 99, and the number of inhabitants 445,500. Its contributions in the 11th year of the French era amounted to 4,182,024 fr. and its expences for adminiſtration, juſtice, and public inſtruction, were 348,331 fr. 99 cents. Its capital is Angers. This department, diverſified with hills and plains, yields grain, flax, hemp, fruits, abundant paſtures, conſiderable foreſts, mines of coal, &c. and quarries of marble, ſtone, and ſlate.

MAYEPEA, in *Botany*. See CERANTHUS, and CHIONANTHUS *Incraſſata*. Notwithſtanding the doubts of our learned predeceſſor in the place laſt cited, we are convinced that this genus of Aublet and Schreber is rightly referred by Swartz and Vahl to *Chionanthus*, and that Juſſieu was widely miſtaken in ranking it among his *Rhamni*.

MAYER, JOHN FREDERIC, in *Biography*, a learned German divine in the ſeventeenth century, was born at Leipſic in 1650; he acquired a profound knowledge of the ancient languages, and became profeſſor at ſeveral of the univerſities of his country. He died in 1712 with a high character for learning. He was author of "Bibliotheca Biblica," which treats of the moſt celebrated commentators of the ſcriptures; a treatiſe "On the beſt Method of ſtudying the Sacred Scriptures;" "The Hiſtory of Martin Luther's German Verſion of the Bible, with a ſhort Account of the Tranſlations of the Sacred Books before his Time;" and other pieces. Moreri.

MAYER, TOBIAS, a German aſtronomer and mechanician, was born at Marpach, in Wirtemburg, in the year 1723. At the very early age of four years he ſhewed a ſtrong attachment to the mechanical arts, and actually began to deſign and conſtruct little machines with dexterity and accuracy. His father was a civil engineer, and encouraged him in his purſuits; but upon his death the ſon was left almoſt deſtitute, and was obliged to depend on his own energies for future ſupport. By theſe he made himſelf acquainted with mathematical learning, and qualified himſelf in a ſhort period to be an able inſtructor of others. He acquired, at the ſame time, a conſiderable ſhare of claſſical knowledge, ſo as to be able to write the Latin tongue with elegance. At the age of twenty-eight, he was nominated mathematical profeſſor at the univerſity of Gottingen, and ſoon after was admitted a member of the Royal Society in that town. From this time every year of his life was diſtinguiſhed by diſcoveries in geometry or aſtronomy. He invented many uſeful inſtruments for the meaſurement of angles: he applied himſelf to ſtudy the theory of the moon: he extended his obſervations to the planet Mars, and the fixed ſtars, determining the places of the latter, and aſcertaining that they poſſeſs a certain degree of motion relative to their reſpective ſyſtems. Towards the cloſe of his ſhort life the magnetic needle engaged his attention, to which he aſſigned more certain laws than thoſe before received. To all his purſuits he applied with ſuch indefatigable aſſiduity, that he died literally worn out with labour in 1762, at the age of thirty-nine. The principal works which he gave to the public were, "A New and General Method of reſolving all geometrical Problems, by means of geometrical Lines;" "A mathematical Atlas, in which all the mathematical Sciences are compriſed in ſixty Tables;" "A Deſcription of a Lunar Globe, conſtructed by the Coſmographical Society of Nuremberg, from New Obſervations;" "Maps;" and ſeveral valuable papers in the Memoirs of the Royal Society of Gottingen. His table of refractions, deduced from aſtronomical obſervations, agrees with that of Dr. Bradley; and his theory of the moon, and aſtronomical tables and precepts, were ſo well received, that they were rewarded by the Engliſh Board of Longitude with the premium of three thouſand pounds, which ſum was paid to his widow after his deceaſe. Theſe tables and precepts were publiſhed in 1770.

MAYERGA, in *Geography*, a town of Spain, in the province of Leon; 23 miles S.S.E. of Leon.

MAYERNE, *Sir* THEODORE TURQUET DE, BARON D'AUBONNE, in *Biography*, an eminent phyſician, was born at Geneva in the year 1573. His father, Lewis de Mayerne, author of "A General Hiſtory of Spain," and of "The Monarchie ariſto-democratique," and a Calviniſt, had removed thither the preceding year, on account of religious perſecution, from Lyons. After being inſtructed in the rudiments of literature in his native city, Theodore was ſent to the univerſity of Heidelberg, where he remained ſome years; after which, as he had made choice of the profeſſion of medicine, he removed to Montpellier, where he received the degree of doctor in 1597. He then went to Paris, where he became acquainted with Riverius, firſt phyſician to king Henry IV., through whoſe influence he was, in the year 1600, appointed to attend the duke de Rohan, as phyſician, in his embaſſy to the diet at Spire; and alſo nominated one of the phyſicians in ordinary to the king. On his return, he availed himſelf of the privilege which the latter office afforded him, and practiſed in the metropolis, where he alſo gave public lectures in anatomy and in pharmacy to the young ſurgeons and apothecaries. The latter of theſe ſubjects led him to treat of chemiſtry, to the practice of which he had paid peculiar attention; and his recommendation of chemical remedies drew upon him a conſiderable degree of enmity from the faculty of Paris, who manifeſted their attachment to Galen, by an indiſcriminate abuſe of all who ventured to employ any mode of treatment not mentioned in his works. Quercetanus was joined with Mayerne in this attack; and one of the faculty, in 1603, publiſhed a book againſt theſe heterodox brethren, entitled "Apologia pro Hippocratis et Galeni Medicina, contra Mayernium et Quercetanum." To this Mayerne replied immediately in another "Apologia, in qua videre eſt, inviolatis Hippocratis et Galeni legibus, Remedia chemicè præparata tutò uſurpari poſſe," in which he made ſome ſevere ſtrictures on the Pariſian phyſicians. The Galeniſts, however, not only replied, but proceeded to iſſue a decree of the faculty againſt conſulting with him, conceived in very bitter and abuſive terms. But the eſteem of Henry IV., which he had fully obtained, ſo far ſupported him, that he continued to practiſe in Paris, and would have been appointed firſt phyſician to the king, provided he would have embraced the Catholic religion. Even in ſpite of his unyielding adherence to Proteſtantiſm, the king would have given him that appointment, had not the Jeſuits influenced queen Mary de Medicis to interpoſe and prevent it. In 1607, an Engliſhman of rank, who had been his patient, carried him over to England, and introduced him to the royal family. He returned to Paris, and remained there till after the aſſaſſination of Henry IV., which took place in May, 1610. In the following year, he received an expreſs invitation from king James I. to come and take the office of his firſt phyſician, which he accepted, and paſſed the reſt of his life in England, where he appears to have been conſidered as the firſt perſon in the profeſſion. He was admitted to the degree of doctor in both univerſities, and into the College of Phyſicians, and treated with the greateſt reſpect by theſe learned bodies. He incurred ſome obloquy on account of the fatal ſickneſs of Henry prince of Wales, in October 1612; in the treatment of which he differed in opinion from the other phyſicians, with reſpect to the uſe of blood-letting. But his conduct obtained the approbation of the king and council, of which certificates, couched in the moſt ſatisfactory terms, were given him. He received the honour of knighthood from James, in 1624; and on the acceſſion of Charles I. he was appointed firſt phyſician to him and his queen, and roſe to high favour, particularly with the latter. During the civil commotions he ſtill adhered to the royal party, for he was appointed firſt phyſician to Charles II. after the death of his father, although the office was now merely nominal. Thus he enjoyed the extraordinary honour of ſerving four kings ſucceſſively in his medical capacity; and during all this period he was moſt extenſively employed by perſons of the firſt rank in this kingdom, by which he accumulated a large fortune. He died at Chelſea, March 15, 1655, in the eighty-ſecond year of his age, and was buried in the church of St. Martin's-in-the-Fields. Sir Theodore was twice married; but left only one daughter, who was married to the marquis de Cugnac, grandſon of marſhal de la Force. He bequeathed his library to the College of Phyſicians.

The only work which ſir Theodore Mayerne publiſhed himſelf, was the "Apologia," before-mentioned. But in Germany a letter of his was printed in 1619, "De Gonorrheæ inveteratæ, et Carunculæ et Ulceris in meatu urinario curatione ad Geo. Mat. Koningium." After his death were publiſhed "Medical Counſels and Advices," and "A Treatiſe on the Gout," which had been written in French, tranſlated into Latin by Theoph. Bonetus, and thence into Engliſh by Dr. Thomas Sherley, in 1676. Alſo, "Praxeos Mayernianæ in Morbis internis gravioribus et chronicis Syntagma," publiſhed in 1690, by his godſon, ſir Theodore de Vaux, who alſo communicated to the Royal Society, in 1687, "Mayerne's Account of the Diſeaſes of Dogs, with ſeveral Receipts for Canine Madneſs," printed in the Philoſophical Tranſactions for that year. "Tractatus de cura Gravidarum," added to an edition of the "Praxis." Moſt of theſe were included in Dr. Joſeph. Browne's publication, entitled "Mayernii Opera Medica, complectentia Conſilia, Epiſtolas, et Obſervationes, Pharmacopeiam variaſque Medicamentorum formulas," folio, 1701. The firſt book in this volume conſiſts of medical caſes treated by the author, to moſt of which the names of the patients are prefixed, who are in general perſons of the firſt quality in France and England. They comprehend a ſeries from 1605 to 1640. The deſcriptions are generally diſtinct, minute, and judicious, and the reaſonings, though commonly founded upon the erroneous doctrines of that time, are yet acute and learned. His preſcriptions are moſtly of the compound form of the Galenical ſchool; yet his Pharmacopeia exhibits a number of chemical preparations, and he, doubtleſs, contributed much to their introduction. Nor did he confine his chemical knowledge to medicinal ſubjects; for he is ſaid to have diſcovered, by a courſe of experiments, the principal colours to be uſed in enamelling, and to have communicated them to Petitot, the famous painter in that branch. He was, likewiſe, converſant with natural hiſtory, and edited Mouffet's poſthumous "Theatrum Inſectorum." Aikin's Biog. Memoirs of Med. Gen. Biog.

MAYET, in *Geography*, a town of France, in the department of the Sarthe, and chief place of a canton, in the diſtrict of La Flèche; 15 miles S. of Le Mans. The place contains 3165, and the canton 10,049 inhabitants, on a territory of 210 kiliometres, in ſeven communes.

MAYET-*de-Montagne*, *Le*, a town of France, in the department of the Allier, and chief place of a canton, in the diſtrict of La Paliſſe; 10 miles S.E. of Cuſſet. The place contains 3945, and the canton 14,443 inhabitants, on a territory of 180 kiliometres, in 12 communes.

MAYETA, in *Botany*, Aubl. Guian. 443. t. 176. Juſſ. 330; is *Melaſtoma Maieta*, Lamarck Dict. v. 4. 34. Willd. Sp. Pl. v. 2. 589. See MELASTOMA.

MAYFIELD, in *Geography*, a townſhip of America, in Montgomery county, New York, incorporated in 1793, and containing 876 inhabitants.

MAYHEM. See MAHIM.

MAYHEM, *Appeal of.* See APPEAL.

MAYL, in *Falconry*, ſignifies to pinion the wings of a hawk.

MAYLLO, in *Geography*, a town of Spain, in the province of Leon; 14 miles E.S.E. of Ciudad Rodrigo.

MAYNA, in *Botany*, (why ſo called does not appear,) Aubl. Guian. 921. t. 352, a diœcious ſhrub, of which the male only was obſerved in Cayenne by Aublet. He deſcribes it by the name of *M. odorata*, as having ſeveral upright, ſimple, flexible, brittle *ſtems*, about ſix feet high. *Leaves* alternate, ſtalked, ten inches long, and three wide, lanceolate inclining to obovate, pointed, entire, ſomewhat wavy, of a fine ſhining green, and a firm texture, with a prominent rib and numerous veins beneath. *Stipulas* lanceolate, deciduous. *Flowers* axillary, ſeveral together, on ſhort ſtalks, white, and very agreeably ſcented, produced in the month of December. The *calyx* is in three deep concave ſegments, externally hairy. *Petals* eight, roundiſh, with ſhort erect claws. *Stamens* 28 or 30, diſpoſed upon a conical receptacle; their filaments ſhort, anthers long and quadrangular, opening at the top. Aublet could find no traces of a piſtil, nor could he diſcover the female plant, though he carefully ſought for it. Juſſieu has juſtly referred this genus to his order of *Magnoliæ*; ſee that article.

MAYNARD, FRANCIS, in *Biography*, a French poet, born in 1582, was ſon of a counſellor in the parliament of Toulouſe. He was introduced, while very young, to court, and was appointed ſecretary to queen Margaret. In 1634, the duke de Noailles, being appointed ambaſſador to the court of Rome, took Maynard with him. He was member of the French Academy from its firſt inſtitution, and endeavoured to ingratiate himſelf with the cardinal Richelieu, but failing in his object, he gave him the appellation of tyrant, and wrote ſatires upon him. At length, weary in the purſuit of fortune, he retired to his native province, where he died in 1646, at the age of ſixty-four. His works conſiſt of Songs, Epigrams, Odes, Miſcellaneous Poems, and Letters in proſe. They muſt be read with caution, for though eſteemed as a man of honour and a ſincere friend, his principles were very licentious. Moreri.

MAYNARD, *Sir* JOHN, an eminent Engliſh lawyer, who diſtinguiſhed himſelf by his patriotiſm, as well as his knowledge of juriſprudence, and integrity in his profeſſion. When the prince of Orange was declared king after the abdication of James II., ſir John waited upon the new monarch with an addreſs; and William having obſerved to him that from his age he muſt have outlived moſt of the judges and eminent lawyers of his ſtanding; he replied, "and I ſhould have outlived the law too had it not been for the arrival of your majeſty." He died in 1690, aged 88. Biog. Brit.

MAYNAS, in *Geography*, a government of South America, in the eaſtern limit of the audience of Quito, lying contiguous to thoſe of Quixos and Jaen de Bracamoros towards the eaſt. In the territories of this juriſdiction are the ſources of thoſe rivers, which form by their conflux the Maranon. The ſtreams of theſe rivers environ and pervade the government of Maynas. Its limits, both towards the N. and S., are little known. Eaſtward it joins the poſſeſſions of the Portugueſe, from which it is ſeparated by the line of demarcation that forms a boundary between the Spaniſh and Portugueſe poſſeſſions. Santiago de la Laguna, which is the reſidence of the governor, is properly the capital of Maynas; though San Franciſco de Borja has been uſually conſidered as ſuch. (See COCAMA.) The miſſionary villages of this juriſdiction are numerous; and they trade with each other, and alſo with Quito and Lamas, in ſalted fiſh, chocolate, of which the arroba (25 lbs.) is ſold for two rials, wax, yuca, and vegetable candles, called by the natives "paſtas," being the fruit of a tree, which, when lighted, preſents at once wax and wick. Whether this tree be the "croton ſebifera" of Linnæus has not been aſcertained. There are alſo ſome poor manufactures, chiefly cloaks and hats, made of the rich plumage of the birds, with which they are formed after any pattern. The manners and cuſtoms of the inhabitants of Maynas differ little from the other nations of the Pampas del Sacramento, except where they are tinged with a faint dye of Chriſtianity.

MAYNBERNHEIM, a town of Germany, in the margraviate of Anſpach, near the Maine; 12 miles S.E. of Wurzburg.

MAYNE. See MAYENNE.

MAYNE, a river of Ireland, in the county of Antrim, which, riſing towards the centre of the county, flows into lough Neagh, a little below Randalſtown.

MAYNOOTH, a poſt-town of Ireland, in the county of Kildare, and province of Leinſter. In this town is the Royal College of St. Patrick, for the education of perſons profeſſing the Roman Catholic religion, inſtituted by act of parliament in the year 1795. The building conſiſts of lodging-rooms, ſchools, a church, library, hall, and different offices ſuitable to the accommodation of 200 eccleſiaſtical ſtudents, beſides profeſſors, officers, and ſervants. There is alſo a Lay College, eſtabliſhed by private ſubſcription in 1802. When the evils attendant on a foreign education, eſpecially under the circumſtances in which the Roman Catholic clergy of Ireland were educated, at the expence of foreign powers, are conſidered, it muſt be admitted to have been a wiſe ſtep in the parliament of Ireland to provide a place of education for them at home; and it is ſurpriſing that the expence thus incurred ſhould ever be objected to by Proteſtants. The queſtion is not, whether the tenets of popery are deſerving of ſupport? but whether the population of Ireland is to be ſupplied with prieſts educated at the expence, and of courſe attached to the intereſt, of foreign powers, or ſupplied with them from a college ſupported at the national expence? Maynooth had formerly a college, founded in 1518 by an earl of Kildare, whoſe deſcendent, the duke of Leinſter, has a princely reſidence in the neighbourhood. It has alſo a charter-ſchool for fifty girls. Maynooth is 12 miles W. by N. from Dublin.

MAYO, a county of Ireland, in the province of Connaught, the third in ſize, but one of the leaſt populous in proportion to its extent. It is bounded on the N. and W. by the Atlantic ocean, on the E. by Sligo and Roſcommon, and on the S. by Galway. Its length, from N. to S., is 49 Iriſh or 62 Engliſh miles; and its breadth 45 Iriſh or 57 Engliſh miles. It contains 790,600 acres, or 1235 ſquare miles Iriſh, equal to 1,270,144 acres, or 1984 ſquare miles Engliſh. Its population was eſtimated, when Dr. Beaufort wrote, at 140,000, but there muſt have been ſince that time a conſiderable increaſe in this as well as every other county. There are 68 pariſhes, but theſe are combined into eighteen benefices, having about as many churches, which would be a dreadful grievance, if the great maſs of the people were not Roman Catholics. The ſoil of the county of Mayo varies prodigiouſly, from the bleak and rugged mountain to the fertile and chearful plain. The eaſtern and ſouthern parts are arable and champaign, and though not arrived at a high degree of cultivation, they produce a ſufficiency of corn and flax for home conſumption, and ſupply other counties with abundance of fat and ſtore cattle. In the mountainous diſtrict of Burriſhoole there are ſome fruitful grounds along the coaſt and in the vallies. But a large extent in the N.W. is overſpread with an immenſe maſs of uninhabited mountains, and tractleſs bogs without roads, and very difficult of acceſs to the few farmers and fiſhermen who dwell upon the coaſt, and to the inhabitants of the Mullet; a peninſula, which is ſaid to be fertile, pleaſant, and well inhabited. Among the mountains in the S.W. Croagh-Patrick claims the pre-eminence, the conic ſummit of which is diſtinguiſhed at a vaſt diſtance riſing 2666 feet above the level of the ſea, and being by ſome eſteemed the higheſt mountain in Ireland, but others conſider the Reeks in Kerry to ſurpaſs it. On the top of Croagh-Patrick is a very large and remarkable cairn. M'Nephin, though little inferior to it in height and ſublimity, being 2640 feet high, is of a very different character, for it ſtands almoſt inſulated, and appears rounded on all ſides, and at top like a huge rath or barrow. There are, in the flat country that borders upon the lakes of Maſk and Carrah, many miles of rocky ground, which, at a diſtance, appear like one immenſe ſheet of white ſtone. But upon a nearer inſpection of theſe ſingular rocks, they are perceived to ſtand in parallel lines, from one to three feet above the ſurface, like flag-ſtones pitched in the ground upon their edges; and however they may vary in ſhape, ſize, and diſtance, they are all calcareous, and have all the ſame direction. Fiſſures of a great depth are found in ſome of the narroweſt interſtices; but, in general, the verdure between them is beautiful, and the paſture excellent for ſheep. Large caverns and ſubterraneous waters are alſo frequent in this part of the country, eſpecially near Cong. At the back of that ſmall village, a very broad river ruſhes at once from beneath a gently-ſloping bank, and after a rapid courſe of about a mile, loſes itſelf in lough Corrib. It is ſuppoſed to be the outlet of a ſubterraneous channel, through which the ſuperfluous waters of lough Maſk and lough Carra are diſcharged into Corrib. This rocky part of Mayo abounds alſo with *turlachs*, as they are called in Iriſh. Theſe are plains, ſome of them very extenſive, which having no viſible communication with any brooks or rivers, in the winter are covered with water, and become in the ſummer a rich and firm paſture, the waters riſing and retiring through rocky clefts in the bottoms. There are many fine lakes in this county. Lough Conn, at the foot of M'Nephin, is nine miles long; lough Maſk is longer by two miles, and conſiderably broader. There are ſome fine harbours, and many iſlands, the moſt remarkable of which are noticed in diſtinct articles. Caſtlebar is the county town. The only members of parliament returned from this county are the two knights of the ſhire. Beaufort's Memoir.

Mayo, or *May*, one of the Cape de Verd iſlands, about 21 miles in circumference, of an oval form, with a variety of rocks and points projecting into the ſea. Its elevation above the ſea is conſiderable; nevertheleſs its ſurface is level and plain, if we except two mountains of conſiderable height. The ſhore, according to the deſcription of Dampier, preſents ſandy bays between the promontories, which afford good anchorage. On the W. ſide of the iſland, are a bay of this kind, where ſhips drop anchor, and a ſand bank, forty paces wide, and extending nearly three miles along the ſhore, within which is a large ſalt pond, two miles long, and half a mile broad, from the N. end of which ſalt is obtained in the whole dry ſeaſon, that is, from November to the month of May. The ſoil of the iſland is dry, with little moiſture from rivulets or ſprings, its humidity being occaſioned by the nightly dews, or the ſhowers that fall in the wet ſeaſon. In the whole iſland there is only one ſpring, near its centre, the water of which runs off in a ſmall ſtream through a valley confined by the hills. The iſland of courſe muſt be in a very conſiderable degree barren and unproductive. It has three ſmall towns, which contain all the inhabitants of the iſland. The chief fruits are figs, water-melons, citrons and oranges of a very indifferent quality, and pumpions, which, together with calwanas, a ſort of bean, furniſh the natives with their ordinary diet. The ſea ſupplies great variety and plenty of fiſh. The number of inhabitants is eſtimated at 7000. N. lat 15° 10'. W. long. 23° 8'.

Mayo, a river of New Mexico, which runs into the gulf of California, N. lat. 27° 40'.—Alſo, a town of South America, in the government of Caraccas; 35 miles W. of Caraccas.—Alſo, a province of New Mexico, bounded on the N. by the province of Hiſqui, on the E. by New Biſcay, on the S. by Cinaloa, and on the W. by the gulf of California.

MAYOBAMBA, a town of Peru, in the dioceſe of Truxillo. S. lat. 6° 58'.

MAYOMBA, or Jambo, a town of Africa, in Loango, on the coaſt. S. lat. 3° 45'. E. long. 10° 24'.

MAYOMBO, a town of Congo; eight miles S.S.W. of Bombi.

MAYOR, a ſmall iſland in the South Pacific ocean, near the coaſt of New Zealand. S. lat. 36° 57'. E. long. 183° 31'. Near this is a cluſter of ſmall iſlands and rocks, to which Cook gave the name of "The Court of Aldermen."

Mayor, *Cape*, a cape on the N. coaſt of Spain. N. lat. 43° 29'. W. long. 3° 46'.

Mayor, or *Maior*, the chief magiſtrate or governor in the cities, and moſt corporation towns of England; choſen annually by his peers out of the number of the aldermen. See Alderman.

The word, according to Verſtegan, comes from the ancient Engliſh *maier, able, potent*, of the verb *may*, or *can*. The mayor of the place is the king's lieutenant, and, with the aldermen and common-council, can make laws, called *bye-laws*, for the government of the place. He has alſo the authority of a kind of judge, to determine matters, and to mitigate the rigour of the law. King Richard I., A.D. 1189, firſt changed the bailiffs of London into mayors; by whoſe example others were afterwards appointed. See London.

Mayors of corporations are juſtices of peace *pro tempore*, and they are mentioned in ſeveral ſtatutes; but no perſon ſhall bear any office of magiſtracy concerning the government of any town, corporation, &c. that hath not received the ſacrament, according to the church of England, within one year before his election; and who ſhall not take the oaths of ſupremacy, &c. ſtat. 13 Car. II. cap. i.

Mayor's-*Court*. See Court.

MAYORGA, in *Geography*, a town of Portugal, in Eſtramadura, on the W. coaſt, near the Atlantic; 50 miles N. of Liſbon.—Alſo, a cluſter of ſmall iſlands in the South Pacific ocean, diſcovered in 1780 by don Franciſco Antonio Maurelle. S. lat. 18° 38'. E. long. 179° 52'.

Mayorga *Iſland*. See Majorca.

MAYOTTA, the moſt ſoutherly of the Comorra iſlands, about 240 miles from the coaſt of Africa, and 150 from the iſland of Madagaſcar. Although this iſland is cold, low, and damp, and not inhabited near the coaſt, it abounds with proviſions and fruits. S. lat. 13°. E. long. 45° 16'.

MAYOW, John, in *Biography*, an ingenious phyſician and phyſiologiſt, was born in Cornwall in 1645. He was educated at Oxford, where he became a probationer fellow of All-Souls' college, having firſt been entered a ſtudent of Wadham. He took a degree in civil law, but afterwards ſtudied medicine, and entered upon the practice of that profeſſion. He ſeems to have reſided chiefly at Bath; but died at the houſe of an apothecary in York-ſtreet, Covent-garden, in the year 1679.

Theſe are all the brief memoirs that are recorded of a man, who went before his age in his views of chemical phyſiology, and in ſome meaſure anticipated, darkly and imperfectly it is true, ſome of the moſt remarkable diſcoveries in pneumatic chemiſtry, which the preſent age has produced. He publiſhed at Oxford, in 1699, "Tractatus duo, quorum prior agit de Reſpiratione, alter de Rachitide." Theſe were afterwards reprinted, in 1674, with three additional diſſertations, under the title of "Tractatus quinque Phyſico-Medici, quorum primus agit de Sale Nitro, et Spiritu Nitro-äereo, ſecundus de Reſpiratione, tertius de Reſpiratione fœtûs in utero et ovo, quartus de motu muſculari et ſpiritibus animalibus, ultimus de Rachitide." It is from the firſt of theſe treatiſes, on nitre and nitro-aërial ſpirit, that Mayow derives his claim to the originality of diſcovery juſt alluded to. His nitro-aërial or igneo-aërial ſpirit, the exiſtence of which he proves by many ingenious and deciſive experiments, is a conſtituent part of the atmoſpherical air, and the food of life and flame, and is the ſame with the oxygen, or vital air, of the modern chemiſts, which has become ſo important an object in chemical philoſophy. His ſpeculations about it are indeed mixed with much of the abſurd hypotheſis of the times; but ſome of his ideas relative to its agency nearly accord with the more recent doctrines; eſpecially that of its abſorption by the blood in the lungs, during reſpiration, and the production of animal heat by its means. He alſo anticipated the mode of operating with aërial fluids, in veſſels inverted over water, and the method of transferring them from one veſſel to another, under this fluid. In a word, had he lived at a later period, and poſſeſſed the lights of his ſucceſſors, he would in all probability have been a diſtinguiſhed improver of his ſcience and profeſſion. His theory of the nitro-aërial ſpirit runs through all his hypotheſes, and he regards it as the cauſe of muſcular motion and of the nervous energy; in which reſpect, he ſtill more nearly approached ſome of our own contemporaries in his views of this ſpirit. Dr. Beddoes republiſhed his chemical tracts in 1790, with a view of ſhewing his claim to ſome ſhare of the credit which has been awarded to modern diſcoverers. Gen. Biog. Eloy.

MAYPO, in *Geography*, a river of Chili, which runs into the Pacific ocean, N. lat. 33° 26′.

MAYRI, a town of Cuba; 25 miles S. of Havanna.

MAYS, in *Botany*. See Zea. This name, which we uſually write Maize, ſeems to be an Indian word, and was introduced along with the plant which bears it, otherwiſe called Indian wheat, at the very earlieſt period of the introduction of exotic plants into Europe. Maize appears, by Turner's herbal, to have been cultivated here in 1562, and was probably brought much earlier from the eaſt.

MAYSVILLE, in *Geography*, a poſt-town of America, in Maſon county, Kentucky; 484 miles from Waſhington.

MAYTENUS, in *Botany*, a barbarous word, formed of the Chili name *Maiten*. Molin. Chil. 152. Vahl. Enum. v. 1. 304. Juſſ. 449.—Claſs and order, *Diandria Monogynia*. Nat. Ord. *Jaſmineæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, very ſmall, of one leaf, five-lobed. *Cor.* of one petal, bell-ſhaped, undivided. *Stam.* Filaments two, inſerted into the corolla; anthers . . . . *Piſt.* Germen ſuperior, roundiſh; ſtyle undivided; ſtigma ſimple. *Peric.* Capſule ſmall, ovate, compreſſed, of two cells and two valves, burſting at the edges, the partitions continued half way along the middle of the valves, which are at length reflexed. *Seeds* ſolitary, ovate-oblong, attached to the bottom of each cell; embryo flat, in a fleſhy albumen.

Eſſ. Ch. Calyx five-lobed. Corolla bell-ſhaped, undivided. Capſule ſuperior, compreſſed, of two cells and two valves. Seeds ſolitary.

1. M. *boaria.* (Maiten; Feuill. Chil. v. 3. 39. t. 27.) Native of Chili. A *ſhrub* or ſmall *tree*, with the habit of a *Phillyrea*. About twenty feet high, much branched. *Leaves* ſometimes oppoſite, ſometimes alternate, evergreen, nearly ſeſſile, elliptical, acute, ſerrated, ſmooth; dark green above, brighter beneath; with a prominent rib, and ſeveral veins. The *flowers*, which Feuillée did not meet with, are deſcribed by Juſſieu as ſcattered. The laſt-mentioned author ſays one cell of the fruit, with its ſeed, is frequently abortive. He errs in ſuppoſing the genus akin to Forſter's *Bankſia*, which is the *Pimelea* of later writers, and belongs to the order of *Thymeleæ*.

"The *Maiten*," ſays Feuillée, "is the counter-poiſon of the *Llithi*," (Feuill. Chil. v. 3. 33. t. 23, a plant whoſe claſs and genus are unknown to us), "the meer ſhade of which cauſes ſuch ſwellings as to deform the human body. In caſe of ſimilar accidents, a decoction of the branches of the *Maiten*, uſed as a fomentation to the parts afflicted, is the moſt ſpeedy cure."

MAYTO, in *Geography*, a town of Mexico, in the province of Xaliſco; 50 miles W.N.W. of Purification.

MAYTZ, a town of Pruſſia, in the province of Bartenland; 18 miles S. of Raſtenburg.

MAYZE, Cape, or *Cape Maizo*, the eaſtern point of the iſland of Cuba. N. lat. 20 18′. W. long. 74° 10′.

MAZA, a name given by the ancients to a ſort of food, in common uſe among the poorer ſort of people. It is made of the meal of parched barley, ſprinkled with ſome liquid, and was eaten with honey, or with defrutum.

Hippocrates every where ſpeaks of this as of a coarſe kind of bread, and adviſes the changing the common finer bread, in the ſpring ſeaſon, for this coarſer kind, as a thing very conducive to health. He ſeems every where to conſider bread as the drier, and maza the moiſter diet.

Maza, Μαζα, among the Athenians, a ſort of cake, which was the common fare of ſuch as were entertained at the public expence in the common-hall, or *prytaneum*.

Theſe cakes were made with flour boiled with water and oil. Pitiſc. Lex. Ant. in voc.

MAZACA, in *Ancient Geography*, a town of Cappadocia, in the prefecture of Cilicia, called alſo Maza, and ſurnamed Cæſarea. Strabo gives it the title of metropolis of Cappadocia, ſurnamed Euſebia, and places it on mount Argæus.

MAZAGAN, in *Geography*, a town of Africa, in the empire of Morocco; 4 leagues S. Azamore, built by the Portugueſe in 1506, and named by them "Caſtillo Real." Under the walls of this town a dock has been made, which will admit ſmall veſſels; but large ſhips are obliged to anchor two leagues out at ſea, on account of the cape of Azamore, which ſtretches to the W., and which it would be difficult to double, if a S.W. wind ſhould drive them from their anchors. This town remained in the poſſeſſion of the Portugueſe till the year 1769, when the emperor of Morocco laid ſiege to it juſt as it was about to be abandoned by its former maſters. It is at preſent entirely ruined, and almoſt uninhabited. At a little diſtance to the S.W. of Mazagan is an old tower, called Boriſha, whence is derived the name of Bridja, which the Moors confound with that of Mazagan; 61 miles N. of Morocco. N. lat. 32° 54′. W. long. 8° 46′. Chenier's State of Morocco, vol. i.

MAZALIG, a town of Africa, in the country of Sugulmeſſa; 50 miles N.E. of Sugulmeſſa.

MAZAMET, a town of France, in the department of the Tarn, and chief place of a canton, in the diſtrict of Caſtres; 9 miles S.E. of Caſtres. The place contains 5474, and the canton 12,410 inhabitants, on a territory of 257½ kiliometres, in 11 communes.

MAZANDERAN, or Mazendran, a province of Perſia, ſituated along the ſouthern coaſt of the Caſpian ſea, and bounded on the E. by Khoraſan, encircled on the S. by a lofty branch of the Caucaſian chain, which was the ſeat of the Mardi of antiquity, and on the W. by Ghilan. The ſouthern part is mountainous, and nearly deſert, interſperſed with ſome pleaſant vallies, and enjoying a ſalubrious air: this part is called Taberiſtan. Towards the north this province is extremely fertile, inſomuch that it is called the "Garden of Perſia," and from September to April, the whole country appears like a vaſt parterre of flowers. The chief productions are ſilk, far inferior to that of Ghilan, rice and cotton, of which articles there is a large exportation. The cotton the inhabitants dye and manufacture. The province alſo affords ſugar, excellent fruit, eſpecially raiſins, of ſome of which they make wine, but the greateſt part is dried for ſale, corn, and ſalt. Among the animals are tygers, deer, ſheep, goats, &c. Mazanderan is well ſituated for trade on the Caſpian ſea; but the coaſts are much infeſted by pirates. The capital is Fahrabad, or *Farabat*, which ſee. This province, and alſo thoſe of Shirvan, Ghilan, and *Aſtrabad*, (which ſee,) are much affected by the unſettled ſtate of Perſia, and the civil wars which continue to haraſs that divided empire. On the death of Kerim Khan, the ſucceſſor of Nadir Shah, in 1779, Perſia became expoſed to all the horrors of a diſputed ſucceſſion, and was divided between the two principal competitors. Akau Mahomed Khan, a Perſian of high diſtinction, was caſtrated in his infancy by order of Nadir Shah, but poſſeſſing great civil and military talents, he became maſter, in 1788, of Mazanderan and Ghilan, as well as the cities of Iſpahan and Tauris. Jaafar Khan, nephew of Kerim Khan, was at that period ſovereign of Shirauz, the capital, and of the ſouthern provinces. In general, however, theſe provinces are governed by their own khans, who, though tributary to the ſophy, render themſelves occaſionally independent; and as they are continually at war with each other, their governments are almoſt always the ſeat of hoſtility, rapine, and devaſtation ; and the trade flouriſhes or declines in proportion as the exactions of the ſovereigns are more or leſs frequent and exorbitant.

MAZANO, a town of Italy, in the Veroneſe ; 8 miles N. of Verona.

MAZARA, a ſea-port town of Sicily, in the valley of Mazara, ſituated on the S.W. coaſt, near a river of the ſame name, near or upon the ruins of Selinuntium. At a diſtance its appearance is not unpromiſing, as it preſents to view ſeveral convents and chapels richly ornamented ; but its ſtreets are narrow and winding, and it has only one ſquare before the cathedral. Mazaran was of ſome note in the time of the Romans, and many of their tombs and inſcriptions are found in it. In the cathedral are ſome valuable ſarcophagi, and one in particular, which, on account of the ſtyle of its compoſition, as well as its deſign and workmanſhip, is attributed to the Greeks. Mazaran was laid waſte by the Saracens, and was taken from them by earl Roger, who vowed to build a church if he obtained a victory. The church does not now exiſt. At Mazara have been found ſome Punic, and many Roman coins, and thoſe of the Saracens in their tombs. It has not now more than 7000 inhabitants, without trade or manufacture. The chief cultivation is that of cotton. Here is no harbour, but the ſea enters by a channel above half a mile into the country, which would form an excellent ſhelter for ſhipping, if merchants had any inducement to come hither. Mazara is the ſee of a biſhop ; 50 miles S.W. from Palermo. N. lat. 37° 46′. E. long. 12° 28′.

MAZARELLI, a town of Sicily, in the valley of Noto ; 15 miles S.W. of Noto.

MAZARIN, JULIUS, in *Biography*, cardinal, and a celebrated miniſter of ſtate, was born in 1602, at Piſcina, in Italy, of a noble family named “ Mazarini.” In the courſe of his education he was diſtinguiſhed for his talents, and was introduced into the houſhold of Jerome Colonna, afterwards cardinal. He followed that nobleman into Spain, where he ſtudied the law, and on his return he took the degree of doctor. He frequented the court of Rome, and attached himſelf to Sachetti, as he did afterwards to cardinal Barberini, to whom he afforded much aſſiſtance in his attempts to effect an accommodation between the different powers. When the French were juſt preparing to attack the Spaniſh lines before Caſal, Mazarin rode out of them, exclaiming “ Peace, Peace,” and brought propoſals to the French general, which cauſed a ſuſpenſion of arms, which was followed by the treaty in 1631. His ſervice was rewarded by the pope with a place, and in 1634 he was ſent as vice-legate to Avignon, and nuncio to the court of France. He there acquired the eſteem of Richelieu, and of the king, Lewis XIII., who procured for him a cardinal's hat : and after the death of Richelieu, the monarch created him counſellor of ſtate, and one of the executors of his will. At the death of Lewis, in 1643, Mazarin was immediately placed at the head of the government by the regent queen Anne of Auſtria, who had the moſt unbounded confidence in him ; he was a very different man from Richelieu ; he was ſimple and modeſt in his appearance and equipage ; inſinuating in his manners and he ever affected to carry his points rather by gentle means than by the force of authority. The rapacity of his diſpoſition ſoon raiſed a powerful party againſt him, while his foreign manners threw a ridicule over him which rendered him contemptible. Some edicts of taxation being refuſed verification by the parliament of Paris, Mazarin cauſed the preſident Blancmeſnil, and the counſellor Brouſſel to be impriſoned. This was the ſignal for the civil wars which commenced in 1648, in which the Pariſians were excited to revolt by De Retz, with ſeveral princes of the blood and nobles. The queen, the young king, and the miniſter, were obliged to take refuge at St. Germain. Mazarin was proſcribed as a public diſturber of the peace : Condé, then on the ſide of the court, beſieged Paris, and the “ war of the Fronde” enſued, which was more fertile in ſatirical ſongs and epigrams, than in important events. An accommodation was effected in 1649, by which the parliament preſerved its right of aſſembling, and the queen kept her miniſter. In the following year, freſh diſturbances led the parliament to iſſue a decree, baniſhing Mazarin from the kingdom. He made his retreat to Cologne, whence he continued to govern the kingdom by his counſels. In 1652 Mazarin returned to France with 7000 men whom he had raiſed, but being regarded by parliament as a public enemy, he was obliged a ſecond time to retire. In 1653 he entered Paris amidſt the acclamations of the inconſtant people, and even the parliament, from which a more ſteady line of conduct might have been expected, received him with diſtinguiſhed honours. Henceforward his powers were unlimited : in 1655 he made a treaty with Cromwell, of which one of the conditions was the refuſing Charles II. an aſylum in France. The war with Spain was terminated in 1659, by the peace of the Pyrenées, negotiated in perſon between Mazarin and the Spaniſh prime miniſter. The ceſſion of Alſace to France was one of its conditions, and the marriage of the young king to the infanta of Spain was another. After this the cardinal aſſumed a greater ſtate, and ruled with a more abſolute ſway ; while the queen-mother loſt all her influence, and was reduced to inſignificance. Hiſtory has handed down a variety of heavy charges againſt him ; ſuch as having purpoſely brought up the young king in ignorance, not having ſignalized his adminiſtration by a ſingle grand or uſeful national eſtabliſhment ; and having amaſſed ſuch a fortune as no other miniſter ever had, amounting, it was ſaid, to two hundred millions of livres, or eight millions ſterling. His proſperity was of no long duration : he was attacked by a diſeaſe which his conſtitution could not reſiſt. When ſenſible of his danger he began to feel ſcruples concerning the wealth which he had heaped together, and his confeſſor plainly told him that reſtitution was neceſſary for his ſalvation. He gave the whole to the king, in the hope that, as was the caſe, his majeſty would reſtore it to him. He died in 1661, at the age of fifty-nine. The letters of cardinal Mazarin, containing his negociations at the peace of the Pyrenées, were publiſhed in two volumes 12mo. in 1745. The tracts on the controverſy reſpecting the war of Fronde were ſo numerous, that a complete collection of them amounted to forty-ſix volumes 4to. The adminiſtration and talents of Mazarin have been compared with thoſe of Richelieu, but the commanding features which diſtinguiſhed the latter are in vain ſought for in the former. Prudent, ſubtle, and avaricious, he endeavoured to ſoothe rather than command ; to deceive than to vanquiſh ; and the love of glory either did not exiſt in his boſom, or was loſt in his inſatiable thirſt of money. Moreri. Hiſt. of France. 1790.

MAZARINA, in *Geography*, a town of Sicily, in the valley of Noto ; 20 miles N.E. of Alicata.

MAZATLAN, a town of Mexico, in the province of Chiametlan, on a river of the ſame name, which runs into the Pacific ocean; 40 miles N.W. of Chiametlan. N. lat. 23° 15′. W. long. 106° 46′.

MAZE, in *Gardening*. See LABYRINTH.

MAZEAS, JOHN-MATHUIRIN, in *Biography*, a mathematician, was born at Landernau, in Brittany, in 1713, and died in 1802. He wrote Elements of Arithmetic, Algebra, and Geometry, with an Introduction to Conic Sections; he was alſo the author of "Inſtitutiones Philoſophicæ," three vols. 12mo. He was an eccleſiaſtic, and held a canonry in the church of Notre Dame, at Paris, before the Revolution. Nouv. Dict. Hiſt.

MAZERAY, in *Geography*, a town of Perſia, in Khoraſan; 100 miles W.S.W. of Naſſapour.

MAZEUTOXERON, in *Botany*, Billard. Voy. (Engliſh edition), v. 2. 8, and 65. t. 17 and 19. See CORRÆA.

MAZIERA, or MEDJARE, in *Geography*, an iſland in the Indian ſea, near the E. coaſt of Arabia, 60 miles long and 8 wide. N. lat. 20°. E. long. 74°.

MAZIERES, a town of France, in the department of the Two Sevres, and chief place of a canton, in the diſtrict of Parthenay. The place contains 605, and the canton 8447 inhabitants, on a territory of 257½ kiliometres, in 12 communes.

MAZIL, a town of the iſland of Cuba; 20 miles W.S.W. of Bayamo.

MAZOCHI, ALEXIO SYMMACHO, in *Biography*, an Italian antiquary, was born near Capua in 1684. He acquired in early life an attachment to literature, and became diſtinguiſhed for his acquirements. He went through a regular courſe of philoſophy and theology at Naples, and he afterwards became profeſſor of the Greek and Hebrew languages, and obtained ſome preferment in the church. He was author of ſeveral ingenious works, of which the principal was the reſult of the diſcovery of the ruins of an amphitheatre at Capua: it was entitled "Campani Amphitheatri Titulum, aliaſque nonnullas Campanas Inſcriptiones Commentarius," 1727. This he afterwards very much enlarged. In 1739 he publiſhed an epiſtle "De dedicatione ſub Aſcia," on which he employed much erudition. He publiſhed many other antiquarian pieces: as "A Hiſtory of the Cathedral of Naples:" "Commentarium in Regii Herculanenſis Muſæi Æneas Tabulas Heraclienſes:" "Spicelegium Biblicum," three vols., of which the two firſt relate to the Old Teſtament, the laſt to the New. He died at Naples in 1771, at the age of 86. He was a man void of ambition, and attached to a ſober, ſtudious, and retired life. He bequeathed to the poor his library and the little property which he had accumulated. Gen. Biog.

MAZONOMUS, among the *Ancients*, a very large diſh, commonly of wood, in which the maza was ſerved.

MAZORBO, in *Geography*, one of the iſlands in the dogado of Venice, and podeſtaria of Torcello, compoſed of three ſmall iſlands, united by bridges. It has two churches.

MAZORMO, a town of the ſtate of Venice, on the N. bank of the Po; 22 miles S. of Venice.

MAZOUNAH, a town of Algiers, nearly ſurrounded by the river Shelliff, and celebrated for its woollen manufacture; 30 miles S. of Muſtygannim.

MAZULA, in *Ancient Geography*, the name of two towns in Africa propria, according to Ptolemy. He places one on the coaſt, and gives it the title of a colony, and the other a little inland.

MAZULA, in *Geography*, a town of Africa, in Congo, on the coaſt; 50 miles S.S.W. of Bombi.—Alſo, a ſmall iſland in the Atlantic, near the coaſt of Africa. S. lat. 8° 5′.

MAZUR, a ſpecies of birds which the Arabian ſailors eſteem very lucky, becauſe it lays its eggs cloſe by the ſea-ſhore before good weather; ſo that when theſe are obſerved, they promiſe themſelves a ſafe voyage. They alſo pretend that this bird gives notice to ſailors, when the ſhip approaches any danger, by flying and fluttering up and down.

MAZUS, in *Botany*, ſo denominated by Loureiro, from *μαζος, a nipple*, on account of the little ſtalked tubercles, which fill up the mouth of the corolla. Loureir. Cochinch. 385. Brown Prod. Nov. Holl. v. 1. 439.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Scrophulariæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, large, bell-ſhaped, five-ſided, permanent, with five lanceolate, ſpreading, nearly equal ſegments. *Cor.* ringent; its upper lip pointed, in two lobes, reflexed at their ſides; lower longer, in three rounded, inflexed, undivided lobes, and two prominences at its baſe; the throat marked externally with two furrows, and lined with ſtalked glands. *Stam.* Filaments four, two of them longer, approaching each other in pairs; anthers oblong, combined. *Piſt.* Germen ſuperior, roundiſh; ſtyle thread-ſhaped, equal in length to the longer ſtamens; ſtigma ſpatulate, of two ſpreading plates. *Peric.* Capſule roundiſh, encloſed in the calyx, compreſſed, of two cells, and two undivided valves, with partitions from their centre. *Seeds* numerous, ovate, ſmall.

Eſſ. Ch. Calyx bell-ſhaped, in five equal ſegments. Corolla ringent; upper lip cloven, reflexed at the ſides; lower three-lobed, with two ſwellings at the baſe. Capſule of two cells, with many ſeeds. Anthers combined.

1. M. *rugoſus*. Lour. (Lindernia japonica; Thunb. Jap. 253? Brown.)—Flowers numerous, in a long cluſter.—Native of fields in Cochinchina, where it is called *Rau dáng lóng lá*. An annual *herb*, about ſix inches high, branched, and nearly erect. *Leaves* oppoſite, ovate, ſerrated, rugoſe. *Flowers* pale violet, in long looſe cluſters.

2. M. *Pumilio*. Brown. Stalks bearing from one to four flowers, ſmooth as well as the calyx. Gathered by Mr. Brown in Van Diemen's land. A ſmall *herb*. *Leaves* cluſtered at the root. *Flower-ſtalks* radical, either ſimple or racemoſe.

We cannot perceive any clear diſtinction between this genus and *Mimulus*, to which Mr. Brown allows it is nearly allied. See MIMULUS.

MAZZAFERRATA, GIO. BAT., in *Biography*, a muſical compoſer, who publiſhed at Bologna, in 1677, "Cantate," or "Canzonette da Camera a Voce ſola," not very good muſic indeed; but the author ſeems to have been one of the firſt compoſers who uſed the technical terms *vivoce*, *largo*, and *ardito*, to indicate the time of the ſeveral movements. Before that it was done by *moods* at the ſide of the clef.

MAZZANTI, FERDINANDO, an opera ſinger in ſoprano, of great eminence in the bravura ſtyle of the middle of the laſt century. He ſung, when we heard him at Rome in 1770, not only with an exquiſite taſte, but was a good muſician, and not a mean performer on the violin. He was not only a reader, but a writer of muſic, having himſelf compoſed operas and motets for voices; but trios, quartets, and quintets for violins. He had a great collection of Paleſtrina's compoſitions, of which he was truly ſenſible of the ſuperiority to thoſe of all other eccleſiaſtical compoſers of his country, *a capella*, and had made, by way of ſtudy, an abridgment of the modulation of that venerable father of ſacred muſic of the moſt pure and reverential ſtyle, which he had digeſted with great judgment and intelligence. He came to England as a ſinging-maſter about the year 1773, and remained here till the time of his death. During the laſt years of his exiſtence, oppreſſed with age, infirmities, and poverty, he was reduced to the utmoſt miſery and wretchedneſs. His temper was not amiable: he was naturally peeviſh, impatient, and diſputatious, ſo that his ſufferings were not diminiſhed by philoſophy or reſignation. He ſeems not to have made a friend in this country during more than thirty years reſidence, except La Blancherie, who ſolicited thoſe who had been long laid under contributions for himſelf, to extend their benevolence to Mazzanti, and for a certain time procured him ſuccour; but ſubſcriptions and collections at length failing, and having no poſſeſſions left that were convertible to money or food, except his favourite violin, which he brought from Italy, he reluctantly permitted his ſole friend, Blancherie, to negociate a raffle for it, at half a guinea a ticket, and in a ſhort time the requiſite number being diſpoſed of, chiefly to muſical profeſſors, on Saturday, May 11th, 1805, the raffle took place at Menzani's muſic ſhop, when the blind and capricious goddeſs, Fortune, for once, ſeems to have had a glimmering of light and reaſon, in throwing her handkerchief at François Cramer, who ſo well knew the uſe of the lot with which he was crowned. But, alas! during the conflict of the adventurers for Fortune's favour, the poor mortal who furniſhed the prize expired!

MAZZARUNI, in *Geography*, a river of Sicily, which runs into the ſea, on the S. coaſt; three miles S.E. of Terranova.

MAZZO, a town of Italy, in the Valteline; nine miles W. of Sondrio.

MAZZOCCHI, Domenico and Virgilio, in *Biography*, two brothers, the moſt eminent muſicians in Rome during the early part of the ſeventeenth century. Domenico was a voluminous and excellent compoſer. He is much celebrated by Kircher, and was almoſt the laſt ſucceſsful madrigaliſt in Italy, after Luca Marenzio. He ſeems to have penetrated deeper into latent effects and refinements than his contemporaries. In 1638, he dedicated a ſet of madrigals, which he publiſhed at Rome, to cardinal Barberini. In his dedication, he pronounces madrigals to be "the moſt ingenious ſpecies of compoſition that muſic could boaſt. And yet," he ſays, "that few were then compoſed, and ſtill fewer ſung; as they were nearly baniſhed from all *academie*, or concerts."

As ſecular melody was improved by the cultivation of dramatic muſic, ſo choral harmony was meliorated by the new combinations that were hazarded in madrigals. And the two Mazzocchi, during this period, contributed greatly, by their numerous works for the church, to improve the more ſolemn and grave manner of writing for ſacred purpoſes, by extending the bounds of harmony, without which eccleſiaſtical muſic could not ſuſtain its dignity, or be ſuitable to the purpoſes of its deſtination. A clear, pictureſque, and graceful melody ſeems infinitely more neceſſary for the ſtage than the church; as it is there the voice of paſſion, and medium through which lyric and narrative poetry can alone be rendered intelligible. In the church, where new poetry, prayers, or ſentiments of piety ſeldom have admiſſion, and where nothing is ſung that has not often been previouſly read and heard by every member of the congregation, the clothing ſuch portions of ſcripture, or of the liturgy as are appointed to be ſung, in rich and complicated harmony, adds greatly to their ſolemnity, by precluding all ſuch frivolous and fantaſtical ſtrains as remind the hearer of ſecular amuſements. Domenico Mazzocchi, beſides ſeveral new combinations, and a more bold and maſterly uſe of diſcords in ligature than can be found in the works of his predeceſſors, if we except Monteverde, firſt propoſed ſeveral refinements in the execution of his madrigals, and invented characters of *creſcendo*, *diminuendo*, *piano*, *forte*, and the enharmonic ſharp. In his eighth madrigal he has made the moſt frequent uſe of theſe new indications. Page 73, there are, indeed, miſapplications of the enharmonic dieſis to E and B ſharp, which is at preſent rightly appropriated, by the moſt accurate contrapuntiſts, to notes that have been already ſharp, as a ſign of their being ſtill raiſed a ſemitone minor. Enharmonic, ſimilar to that of the ancients, we have none, nor is it practicable in modern counterpoint, where, having no fundamental baſe for quarter tones, their uſe in harmony would produce no other effect to the hearer than that of ſinging or playing out of tune.

The only madrigaliſts after Mazzocchi, who much diſtinguiſhed themſelves, were Stradella, Aleſſandro Scarlatti, Bononcini, Lotti, Perti, and Caldara, of whom we ſhall have occaſion to ſpeak among the moſt eminent compoſers of operas and cantatas.

It ſeems an indiſpenſable duty to inform the curious reader, that there is a madrigal (*Cor mio*) by this compoſer, for four ſopranos and a contralto voice, inſerted in the ſecond part of P. Martini's "Saggio di Contrap," which ſurpaſſes in art and ingenuity all the compoſitions of that kind which we have ſeen. The expreſſion of the words, and paſſages of imitation, are ſtill elegant and new. The learned editor has pointed out all its beauties in an excellent commentary.

Mazzocchi, Virgilio, brother to Domenico, firſt maeſtro di cappella to the pope, and maſter to Bontempi, the muſical hiſtorian.

MAZZONO, in *Geography*, a town of Naples, in the province of Lavora; ſeven miles S.W. of Capua.

MAZZUCHELLI, Giammaria, *Count*, in *Biography*, who flouriſhed in the eighteenth century, was diſtinguiſhed for his acquaintance with Italian literature. He was author of ſeveral works, of which we may notice "Notizie Hiſtoriche e Critiche intorno alla Vita, alle Inventione, ed agli Scritti di Archimede Siracuſano:" "La Vita di Pietro Aretino:" he began a biographical work on the writers of Italy, entitled "Gli Scrittori d'Italia, &c." of which he only finiſhed the two firſt letters in the alphabet.

MAZZUOLI, Franceſco. See Parmeggiano.

Mazzuoli, Girolamo, the couſin and pupil of Franceſco, is little known as a painter beyond Parma and its diſtricts, though for "impaſto," and the whole myſtery of colour, he has few equals. There is reaſon to believe that ſeveral pictures painted by this artiſt, eſpecially thoſe of a higher and gayer tone, are conſtantly aſcribed to Parmeggiano. He was more attached to the ſtyle of Corregio than Franceſco, and ſeized its character with great avidity in the nuptials of Santa Catherina in the church del Carmine. He excelled in perſpective, and in the Laſt Supper, in the refectory of Santa Giovanni, placed and painted a colonnade with all the illuſions of Pozzo. To the moſt harmonious chiaroſcuro, he added grandeur, variety, and vivacity in freſco. He had a ſon, Aleſſandro Mazzuoli, who painted in the dome of Parma 1571. He is a feeble imitator of the family ſtyle. Fuſeli's Pilkington.

MBACQUA, in *Geography*, a town of South America, in Buenos Ayres; 120 miles E. of Corrientes.

MBOMBOY, a river of Paraguay, which runs into the Parana.

MBOTELEY, a river of Paraguay, which runs into the Parana.

MEACO, or MIACO, called alſo *Kio*, a city of Japan, in the iſland of Niphon, the ancient metropolis of the whole empire, and now the ſpiritual capital, being the reſidence of the Dairis, and ſecond city of the empire, is ſituated near the middle of the ſouthern coaſt, on a ſpacious and fertile plain, about 160 miles S W. from Jedo, the reputed capital. Nevertheleſs this is the firſt commercial city, and is celebrated for the principal manufactures. It is alſo the ſeat of the imperial mint, and as the Dairi's court is literary, all books are printed here. It is ſurrounded at ſome diſtance by high mountains, much covered with ſtately temples, monaſteries, burying-places, and pleaſure houſes, all of which are adorned with gardens and orchards, and a great variety of verdure, as they are watered by a great number of rivulets which flow from thoſe mountains.. Theſe ſtreams unite in the centre of the city, and there divide it into the Upper and Lower Towns. The whole city, when in its greateſt ſplendour, appears by its high and ſtately walls to have been about 20 miles in length and nine or ten in breadth; to which we may add its ſpacious ſuburbs, and the imperial palace, which of itſelf is a kind of city, ſeparated from the reſt. The ſtreets are narrow, but long and ſtraight; and we learn from Kæmpfer, that by an enumeration of the inhabitants in 1674, they amounted to 405,642, of whom 182,070 were males, and 223,572 females, without including the numerous attendants of the Dairi, and probably the children, together with an immenſe number of ſtrangers, who reſort hither from all parts of the empire. Its temples are numerous, and beyond conception magnificent and ſplendid. Although Meaco has ſuffered much from pillage, maſſacre, and conflagration, it is ſtill the grand ſtorehouſe of all the manufactures of Japan, and of all foreign as well as domeſtic merchandize, and the principal ſeat of commerce. Here they refine their metals, coin their money, print their books, and carry on all ſorts of manufactures: here they weave and dye the richeſt ſilks and ſtuffs, make and ſell the moſt beautiful Japan work, porcelain, muſical inſtruments, paintings, carvings, all ſorts of gold, ſilver, and copper articles, and particularly ſteel of the moſt excellent quality, and moſt curious workmanſhip: they alſo prepare in this place dreſſes of all ſorts for both ſexes, which are fit for uſe, and they manufacture a variety of toys and trinkets. In a word, there is no kind of commodity which may not be procured at Meaco, nor any kind of workmanſhip which its artiſts will not imitate. N. lat. 35° 24'. E. long. 153° 30'.

MEAD, RICHARD, in *Biography*, a very eminent phyſician, was born at Stepney, "a ſmall village near London," as it is called by his biographer, in Auguſt, 1673, of which pariſh his father, the Rev. Matthew Mead, a Preſbyterian, was one of the two miniſters; but had been ejected, for non-conformity, in the year 1662. As he had a handſome patrimony, being deſcended from a conſiderable family in Buckinghamſhire, he continued to reſide in the pariſh, (preaching to a numerous congregation of diſſenters,) and beſtowed a liberal education on his large family, under a private tutor, at home. This little domeſtic ſchool, however, was broken up in 1683, when Mr. Mead, having been accuſed of participating in a plot againſt government, thought proper to retire to Holland, leaving Richard, his eleventh child, under the care of Mr. Singleton, an able claſſical ſcholar, who had been ejected from the office of ſecond maſter of Eton ſchool as a non-conformiſt. Richard made great progreſs in his claſſical ſtudies, which he proceeded to finiſh at Utrecht, under the learned Grævius, in 1689. After a reſidence of three years at that place, he determined upon the ſtudy of phyſic, and went to Leyden, where he attended the lectures of Herman on botany, and of Pitcairn on the theory and practice of medicine. He received much friendly attention from the latter, from whom he imbibed the mathematical principles of that ſcience, which were prevalent in his early writings. He then commenced his travels, and viſited the principal cities of Italy, where he graduated in philoſophy and phyſic, at Padua, in Auguſt 1695. On his return to England, in 1696, he ſettled in the very houſe in which he was born, and practiſed his profeſſion for ſeveral years with conſiderable ſucceſs: and, in 1699, he married the daughter of a merchant in London. His firſt publication, entitled "A Mechanical Account of Poiſons," which contained the reſult of many experiments, made with the poiſon of the viper, &c. appeared in 1702, and gained him conſiderable credit. In ſubſequent editions, however, he candidly retracted ſome points of his mechanical theory, which more mature obſervation convinced him was inadequate to explain the functions of a living body. Soon after the publication of this treatiſe, he was elected a member of the Royal Society, of which he was afterwards appointed one of the vice-preſidents by ſir Iſaac Newton. In 1703, he was choſen phyſician to St. Thomas's hoſpital, when he took up his reſidence in Crutched Friars. In 1704, he publiſhed his treatiſe, "De Imperio Solis et Lunæ in Corpore humano, et Morbis inde oriundis," 8vo. Phyſicians have always been prone to apply the faſhionable philoſophy of their day to the explanation of the phenomena of the animal economy; and in this eſſay, Mead built his reaſoning on the theory of attraction, which Newton had promulgated, attempting to ſhew that periodical influences were produced on the living body, as upon the tides of the ſea and the atmoſphere. In 1707, he received the diploma of doctor of phyſic from the univerſity of Oxford, through the intereſt, as is ſuppoſed, of Dr. Radcliffe, who was not averſe to patroniſing a junior of riſing reputation, when he was himſelf declining. In 1711, he removed to Auſtin Friars, into the houſe which had been inhabited by Dr. Howe, then deceaſed. About the ſame time he was appointed by the company of ſurgeons to read the anatomical lectures in their hall, which he continued to do during ſix or ſeven years with great applauſe. In 1714, his friend and patron, Dr. Radcliffe, died, and Dr. Mead took his houſe, in Bloomſbury-ſquare. He was now a fellow of the College of Phyſicians, and he had been called into conſultation in the laſt illneſs of queen Anne, a few days before her death, and pronounced more deciſively on her danger than the court phyſicians. From this time he ſeems to have ſtood among the firſt of the profeſſion; and in the beginning of 1715 reſigned his office at St. Thomas's hoſpital, partly in conſequence of his full employment, and partly of the diſtance of the hoſpital from his reſidence.

The occurrence of the plague at Marſeilles, in 1719, occaſioned great alarm in London, where the dreadful mortality of 1665 was not forgotten; and by the direction of the lords of the regency, the ſecretary of ſtate applied to Dr. Mead for his opinion of the nature of the malady, and of the beſt means of preventing its introduction into this country. In conſequence of this application, he publiſhed, in the following year, "A ſhort Diſcourſe concerning peſtilential Contagion, and the Methods to be uſed to prevent it," dedicated to Mr. Craggs, the ſecretary of ſtate. In this work he decidedly maintained the contagious nature of the plague, which had been queſtioned in France, and laid down a plan for the purpoſe of cutting off all communication of the infection, by quarantine, lazarettoes, and other means of ſecluſion. This tract paſſed through no leſs than ſeven editions in one year : to the eighth, in 1723, was added a new chapter on the method of cure ; and the laſt, publiſhed in 1744, was ſtill farther enlarged : it was tranſlated into Latin by Mattaire, and afterwards by profeſſor Ward.

In the year 1721, Dr. Mead was directed by the prince of Wales (afterwards George II.) to ſuperintend the experiment of inoculating the ſmall-pox in the perſons of ſome criminals, which had been recommended by Mr. and lady M. W. Montague, in conſequence of their knowledge of the ſalubrity of the practice, as performed at Conſtantinople, and other eaſtern countries. His report was favourable ; ſo that the example of the practice was immediately ſet by the royal family, and its general introduction thus accelerated.

As Dr. Mead was ever anxious to ſupport the honour of his profeſſion by his liberal conduct, and by aſſociating with it the character of a friend and patron of learning, ſo he aſſerted its dignity in his “ Harveian Oration,” read before the College in October, 1723, and afterwards publiſhed. In this oration he endeavoured to ſhew, that the profeſſion was exerciſed by ſeveral families of diſtinction among the Romans ; and he annexed to it a diſſertation on ſome coins, which had been ſtruck at Smyrna, in honour of phyſicians. This publication was the origin of a controverſy, which was begun by Dr. Conyers Middleton, and in which Mead was ſupported by his friend profeſſor Ward, of the Greſham college. Dr. Middleton, perhaps with the greater weight of erudition on his ſide, undertook to prove the ſervile condition of the Roman phyſicians. The controverſy was carried on in a manner honourable to both parties ; and Dr. Middleton, in a ſubſequent work on Greek and Egyptian antiquities, ſpoke of Dr. Mead in terms of great reſpect. In the ſame year, Dr. Mead gave an example of the honourable conduct that is due between the members of a liberal profeſſion, in the ſervices which he performed towards Dr. Freind, when the latter phyſician was committed a priſoner to the Tower, upon the ſuſpicion of being concerned in Atterbury's plot, in conſequence of ſome free obſervations which had fallen from him in the houſe of commons. (See the article FREIND.) Dr. Mead obtained his liberation in a ſpirited manner, and paid over to him a conſiderable ſum, received from his patients during his impriſonment.

In 1727, Dr. Mead was appointed phyſician in ordinary to George II. His profeſſional occupations were now ſo extenſive, that for many years he had no leiſure for writing. He had, ſo early as the year 1712, communicated to Dr. Freind his opinions reſpecting the importance of purgatives in the ſecondary fever of ſmall-pox, upon which ſubject Dr. Freind publiſhed a letter in 1719. But it was not till the year 1747, that Dr. Mead, printed his treatiſe “ De Variolis et Morbilis,” which contains many valuable obſervations on both theſe diſeaſes, and alſo ſtrong recommendations of the practice of inoculation. Both this work and the Letter of Dr. Freind were made the ſubject of animadverſion by Dr. Woodward, (whoſe ſkill in pathology appears to have been much inferior to his knowledge of natural hiſtory,) in a work entitled “ The State of Phyſic and Diſeaſes, &c.” which gave riſe to a controverſy that engendered conſiderable acrimony in the two learned advocates for the practice. Dr. Mead ſubjoined to his treatiſe, which was written in a pure Latin ſtyle, a tranſlation of Rhazes's commentary on the ſmall-pox, into the ſame language, a copy of which he had obtained from Leyden, through the aſſiſtance of his fellow-ſtudent, Boerhaave, with whom he had maintained a conſtant correſpondence. It was chiefly through the patronage and interpoſition of Dr. Mead, that Mr. Sutton's ventilator, for the purpoſe of cleaning the foul air from ſhips, was received into the ſervice of the navy, by an order from the admiralty, after a delay of ten years : and he ſtill farther recommended it, by adding to a publication of ſeveral tracts that had been written on the ſubject, in 1749, “ A Treatiſe on the Scurvy,” in which he aſcribed that fatal diſeaſe to moiſture combined with putridity.

About this time, as he began to retire in ſome degree from the fatigues of practice, he employed his leiſure in reviſing his former publications, and in compoſing others. He publiſhed in the year 1749 his “ Medicina ſacra, ſeu de Morbis inſignioribus qui in Bibliis memorantur,” 8vo. The object of this work was to reconcile men's minds to the ſacred writings, by ſhewing that the diſeaſes, mentioned in them, were explicable on natural grounds ; and he ſupported the doctrine of ſome divines, who maintained eſpecially that the dæmoniacs mentioned in the goſpel were only inſane, or epileptic perſons. His laſt work was a ſummary of the experience of his active profeſſional life, which might be deemed a bequeſt to his medical brethren, and was publiſhed in 1751, under the title of “ Monita et Præcepta Medica,” 8vo. This little volume was almoſt purely practical, conſiſting of detached obſervations on a variety of diſeaſes and medicines, many of which have ſtood the teſt of ſubſequent experience : it was frequently reprinted, and was tranſlated into Engliſh.

Soon after this period, the infirmities of age rendered him incapable of exertion, either as a practitioner or an author, and he gradually ſunk under increaſing debility, until the 16th of February 1754, when he expired, without any viſible ſigns of ſuffering, in the eighty-firſt year of his age. He was interred in the Temple church, near his brother Samuel, an eminent counſellor, who died twenty years before him ; and a monument was erected to his memory, in Weſtminſter Abbey, by his ſon. He was twice married, but had iſſue only by his firſt wife, of whom four ſurvived him ; namely, a ſon and three daughters. Two of the daughters were married to eminent phyſicians, ſir Edward Wilmot and Dr. Frank Nichols, who were, with himſelf, phyſicians to the king. His ſecond wife, who was daughter to ſir Rowland Alſton, ſurvived him.

The medical character has rarely obtained more reſpectability than in the perſon of Dr. Mead. He was not only in high and univerſal eſteem on account of his profeſſional ſkill, but was the greateſt patron of ſcience and polite literature of his time. He maintained a correſpondence with the principal literati of Europe ; all men of talents found a ready aſſiſtance from him in every undertaking ; and no foreigner of any learning or taſte viſited London, without being introduced to Dr. Mead. His ample income was ſpent in a noble and hoſpitable way of living, in gratuities to men of ſcience, and the encouragement of learned publications, and in the collection of ſcarce and valuable books, manuſcripts, and literary curioſities, of which no individual of his time, in this kingdom, poſſeſſed ſo choice and ample a collection. Of all his treaſures he made the moſt liberal uſe ; for he not only freely admitted learned men of all countries to ſee and examine them, but he likewiſe entertained them at his table, and treated them with ſingular urbanity ; uniting, as his biographer obſerves, “ the magnificence of princes with the pleaſures of philoſophers.”

The whole works of Dr. Mead have frequently been collected and publiſhed in various countries of Europe. A French tranſlation of them by Coſte, 1774, in two vols.

8vo. is eſteemed for its numerous notes. See "Authentic Memoirs of the Life of Richard Mead, M. D." 1755. Gen. Biog.

Mead, a wholeſome agreeable liquor, prepared of honey and water.

One of the beſt methods of preparing mead is as follows: Into twelve gallons of water ſlip the whites of ſix eggs; mixing theſe well together, and to the mixture adding twenty pounds of honey. Let the liquor boil an hour, and when boiled, add cinnamon, ginger, cloves, mace, and a little roſemary. As ſoon as it is cold, put a ſpoonful of yeaſt to it, and tun it up, keeping the veſſel filled as it works; when it has done working, ſtop it up cloſe; and when fine, bottle it off for uſe.

Thorley ſays that mead, not inferior to the beſt of foreign wines, may be made in the following manner: Put three pounds of the fineſt honey to one gallon of water, and two lemon-peels to each gallon; boil it half an hour, well ſcummed; then put in, while boiling, lemon-peel: work it with yeaſt; then put it in your veſſel with the peel, to ſtand five or ſix months, and bottle it off for uſe. If it is to be kept for ſeveral years, put four pounds to a gallon of water.

Macquer, in his "Dictionary of Chemiſtry," directs to chooſe the whiteſt, pureſt, and beſt-taſted honey, and to put it into a kettle with more than its weight of water: a part of this liquor muſt be evaporated by boiling, and the liquor ſcummed till its conſiſtence is ſuch, that a freſh egg ſhall be ſupported on its ſurface, without ſinking more than half its thickneſs into the liquor; then the liquor is to be ſtrained, and poured through a funnel into a barrel; this barrel, which ought not to be nearly full, muſt be expoſed to heat as equable as poſſible, from twenty to twenty-ſeven or twenty-eight degrees of Reaumur's thermometer, taking care that the bung-hole be ſlightly covered, but not cloſed. The phenomena of the ſpirituous fermentation will appear in this liquor, and will ſubſiſt during two or three months, according to the degree of heat; after which they will diminiſh and ceaſe. During this fermentation, the barrel muſt be filled up occaſionally with more of the ſame kind of liquor of honey, ſome of which ought to be kept apart, on purpoſe to replace the liquor which flows out of the barrel in froth. When the fermentation ceaſes, and the liquor has become very vinous, the barrel is then to be put into a cellar, and well cloſed; a year afterwards the mead will be fit to be put into bottles.

Every maker of metheglin or mead for ſale ſhall take out a licence, for which he ſhall pay 1*l.*, and ſhall renew the ſame annually, on pain of 10*l.* (42 Geo. III. c. 38.) If any maker of metheglin or mead for ſale ſhall conceal any of it from the view of the guager, he ſhall forfeit for every gallon 5*s.* 15 Car. II. c. 11.

MEADIA, in *Botany*, ſo called by Cateſby, in compliment to Dr. Richard Mead, the celebrated phyſician, who, whatever might be his merit in his profeſſion, was not judged by his contemporaries to deſerve this botanical honour; and Linnæus therefore did not confirm it. The only work of Dr. Mead's ever mentioned as giving him a claim to ſuch diſtinction, is his "Mechanical Account of Poiſons," in which however there is nothing botanical. Crantz, a petulant critic of Linnæus, affected to oppoſe him in this trifling point, ſaying that "Mead was perhaps more deſerving than many others who had obtained ſuch honours." If this be all that can be ſaid for him, the matter may remain at reſt. See Dodecatheon.

Meadia, in *Geography*, a town of Hungary, in the bannat of Temeſvar, on a ſmall river which runs into the Danube; 52 miles S.E. of Temeſvar. N. lat. 45° 10′. E. long. 21 59′.

MEADOW, in *Agriculture*, a name generally applied to ſuch natural graſs lands as are annually mown for hay; but more particularly to thoſe which are ſo low in their ſituations as to be too moiſt for cattle to graze upon in winter, without breaking the ſward, or poaching the ſurface, which would be highly injurious.

Meadows, from their being generally enriched with the fine mould waſhed down from the adjacent riſing grounds, are uſually of a good ſoil, and ſeldom require much other improvement than the removing of temporary imperfections, and the ſuperabundant moiſture by proper draining. But they may be of ſuch a nature as to ſtand in need of a more particular treatment; as is the caſe when their ſurfaces are of a moſſy, looſe earthy, or a binding clayey quality, where harrowing or ſcarifying, and the application of top-dreſſings will be neceſſary.

They are alſo farther diſtinguiſhed into natural and artificial, or common and watered meadows.

The former, from their being ſituated in the hollows and ſloping ſides of the vallies, where the depth of the ſoil has been conſtantly increaſing by the depoſition of various ſorts of vegetable and other matters brought down from the higher grounds, are, it is ſuppoſed by a late writer, in a conſiderably greater ſtate of fertility, and evidently better fitted for the permanent production of graſs, than thoſe from which they have derived their richneſs. And it has been well obſerved, in the report of Staffordſhire, that this, of all others, is "the moſt productive of graſs and hay, yielding ſuſtenance for cattle through the ſummer and the winter, and producing an everlaſting ſource of manure for the improvement of the adjoining lands. Alſo, that in all caſes of extenſive incloſures, the improvement of the vale land, or that formed by nature for meadow and paſture, ſhould be firſt attended to. In this view, the low lands in all ſituations come under the head of natural meadows."

And the latter are thoſe which lie contiguous to rivers or brooks, whence the water can be eaſily carried or conveyed ſo as to overflow the graſs at pleaſure. Of theſe there are large tracts in ſeveral parts of the kingdom, which, where ſkilfully managed, become highly profitable to their owners, affording not only immenſe crops of hay, but yielding an abundant early graſs for the uſe of ewes and lambs, in the beginning of the ſpring long before the paſture or other grounds are ready to receive them.

However, as the former ſort of meadow lands, from their retention of moiſture in conſequence of their ſituation, and the great depth of vegetable matter which they contain, are ſuggeſted by a late writer to be liable to throw up much more coarſe herbage, of the aquatic or other kind; in many caſes more drainage as well as other management will be neceſſary to bring them into the proper condition for the growth of good herbage than is requiſite in the hay grounds in more elevated places. And that, "by a more particular attention in theſe reſpects they would, in many inſtances, be rendered a vaſt deal more productive than they are at preſent, and, at the ſame time, afford a much better and leſs coarſe herbage. They would alſo admit ſtock upon them a much greater length of time, both in the autumn and ſpring ſeaſon."

It may be noticed, that "the moſt proper ſeaſon for ſurface draining graſs lands is in the autumn, when they are firm and dry, as in the early ſpring months ſuch lands are too full of moiſture. The grips, or ſmall open drains, ſhould be cut obliquely in the moſt ſuitable directions for conveying off the ſuperficial ſtagnant water. It is a practice, in ſome caſes, to ſuffer the ſods or grippings that are taken out of the trenches to remain on their ſides; but it is much better, and a leſs ſlovenly mode, to have them conveyed from the land and laid up in heaps, in order to their being acted upon by the winter froſts and other cauſes, ſo as to be brought into a ſtate proper for being formed into compoſts with well rotted farm-yard dung. Much of this ſort of draining may be performed at a ſmall expence, and the beneficial effects be very conſiderable, eſpecially where the lands are very much loaded with moiſture, in the quantity of produce." Beſides, ſuch meadow lands "demand much more attention in their management in other reſpects, as thoſe of their being fed by cattle, and the performing of the different operations that are proper for rendering them productive of good herbage. In theſe caſes, ſtock ſhould be turned upon the lands, and manures be applied with much care, and only when the land is in ſuch a ſtate of dryneſs as not to be injured by the poaching or breaking of the ſward. The higher ſorts of graſs lands, in moſt inſtances, admit of conſiderably more latitude in performing theſe different operations, as they are capable of admitting the ſtock as well as the dung-cart more early in the ſpring months, and of ſuffering them to remain or be applied at later periods in the autumn without inconvenience. The advantage of this attention is rendered ſufficiently plain by the effects which the contrary practice produces in ſuch meadow and other hay lands as are in a ſtate of commonage, where the ſtock is admitted at all ſeaſons, and under all circumſtances."

It is evident that "theſe ſorts of graſs lands muſt be applied to different purpoſes, according to their nature, ſituation, and other circumſtances. Thoſe which are of the more moiſt and wet kinds, whether from the nature of the ſoil, or the peculiarity of ſituation, and which have been a long time in the ſtate of ſward, are for the moſt part kept under the ſcythe; while thoſe of the contrary deſcriptions, that are ſituated at a greater height, and of courſe, in moſt caſes, poſſeſs a greater degree of firmneſs, are, in general, appropriated to the purpoſe of paſturage; though, in particular ſituations, where graſs land is ſcarce, and conſequently of great value, they are occaſionally likewiſe converted to the purpoſe of hay. And as graſs plants grow to the greateſt height in ſituations where a conſiderable degree of moiſture is conſtantly preſerved, and, of courſe, afford the largeſt produce, it would ſeem that the practice of keeping them under the ſcythe is right on this account; as well as that of their being leſs firm and ſolid in their texture, and their moſtly producing a coarſer herbage. The more elevated grounds, as they bear the ſtock generally with leſs injury, and often afford both a more fine and ſweet feed, are with propriety converted to the uſe of being fed down by animals. By a ſuitable management in the feeding and uſe of manure, the latter ſort of lands may even be brought to afford a conſiderable produce in hay in numerous inſtances.

And "as it muſt be evident to the moſt ſuperficial obſervation, that the breaking of the ſurface texture or ſward of graſs lands muſt, in all caſes, be prejudicial, not only by the deſtruction of plants which is thereby immediately produced, but alſo by the retention and ſtagnation of water upon them in the holes, and depreſſions from ſmall portions of the turf being forced in, the neceſſity and utility of clearing and removing all ſorts of live ſtock, and eſpecially thoſe of the heavy kinds, on both theſe deſcriptions of meadow land when mown, becomes ſtrikingly obvious."

There is a ſtriking fact of this ſort ſtated in the Agricultural Report of Middleſex. "In a piece of clayey meadow land expoſed to the treading of cattle during the wet ſeaſon of winter, with a view of fully aſcertaining the effects of the practice of ſuffering cattle to remain too long upon graſs hay lands, it was found that after three years, notwithſtanding every poſſible care and attention in rolling, manuring, and ſowing graſs ſeeds was employed, it was not reſtored to its former ſtate of ſward." And it has been remarked, that on the deep tough yellow clayey graſs lands in the ſame diſtrict, every care is taken to prevent the leaſt degree of poaching, as "it is well known that wherever a bullock makes a hole with his foot in this kind of ſoil, it holds water, and totally deſtroys every veſtige of herbage, which is not quite replaced till ſeveral years after the hole is grown up."

In regard to the exact period of continuing the feeding down of graſs lands of the hay kind, it cannot be eaſily regulated by any fixed rules, as it muſt depend much on ſeaſons; but it ſhould never, on any account, be continued after the grounds have become ſo much impregnated with moiſture as to eaſily give way to the tread of animals. In the autumn ſeaſon the heavy cattle ſhould ſeldom be ſuffered to remain on the ſofter ſorts of lands longer than the beginning of November, but in thoſe of the more dry kinds, they may be let remain to the end of that month. Sheep ſtock may, in drier caſes, be continued till February, or later; and in the ſpring ſeaſon, if paſtured at all, they ſhould not be admitted upon ſuch lands till they begin to poſſeſs a proper degree of firmneſs, which will depend on the various circumſtances of the preceding ſeaſon. On the more low and moiſt ſorts of meadow land, it can probably ſeldom be ventured earlier than the middle of March.

It is, however, obviouſly a much better practice, eſpecially where hay is the main object, not to eat them down at all, or very little, with cattle in the ſpring, and not ſo much as is the uſual cuſtom with ſheep; as it is plain, that by this means the cultivation will not only enſure a more abundant produce, but a much earlier one, and, of courſe, have more advantage in the making it into hay and ſecuring it.

Beſides, where the lands are fertile and the graſs ſprings quickly, as is often the caſe near large towns where manure is plentiful, it may be advantageous in the view of having a ſecond crop, as by that means the after-graſs may be cut more early, and be leſs in danger of being well ſecured; and, in all events, the after-graſs will be in a more forward ſtate, and, of courſe, ready at a more early period for the admiſſion of ſtock of different kinds, which, in many caſes, is a circumſtance of great importance to the farmer where grazing is the main object.

With reſpect to the moſt proper periods of ſhutting up ſuch graſs lands as are deſigned for hay, they muſt, like thoſe of eating them down by ſtock, depend on various circumſtances that can only ſuit the particular caſes. In general, however, it is the beſt practice not to delay it too long. When the lands are not eaten at all in the ſpring by cattle, after the ſheep have been removed about the middle of February; nothing farther is allowed, according to the writer of the Middleſex Report, to enter the meadows, by which means a quick vegetation is promoted, as well as a more plentiful crop and more early harveſt. And in other caſes it ſhould probably ſeldom much exceed the beginning of April, as when eaten much later, eſpecially in the ſouthern diſtricts, there is not time for the graſs to produce a full crop before the commencement of the hay ſeaſon, of courſe the farmer ſuſtains more loſs than can be repaid by any advantage in the additional feeding he may obtain. This is therefore the beſt practice where the view of the farmer is hay: and it ſhould be particularly adopted and attended to in cow-farms, where it is of much importance to cut early and at different times, in order to ſecure hay of a fine graſſy quality, for the purpoſe of producing large ſupplies of milk. In theſe caſes it is cut two, three, or more weeks before the uſual period, as it is better not to let the ſeed ſtems riſe much.

Immediately after the meadows or other graſs-lands have had the cattle and other ſorts of live ſtock removed from them, in the early ſpring months, and been ſhut up for hay, they ſhould be prepared for the ſcythe, by having all ſorts of obſtructions picked up and removed from the ſurface. This work ſhould always be executed as ſoon as poſſible, before the graſs begins to ſpring up too much and conceal them, as it is difficult to perform the buſineſs effectually afterwards. And it has been obſerved, that "it is an excellent practice, but one that is too much neglected by graſs-farmers in general, to have all ſorts of coarſe plants of the aquatic and other kinds, ſuch as ruſhes, fern, docks, thiſtles, and various others, effectually drawn up and eradicated both from the hedge-rows and other parts of the fields, in order to prevent their running up to ſeed and diſſeminating themſelves over the lands, and thus not only fill them progreſſively with all ſorts of trumpery, but greatly injure the herbage. In a field on an extenſive hay-farm in Middleſex, on perceiving the whole ſurface thickly ſtudded with thiſtle-plants, it was found that this ſort of weed had been ſuffered to flower and perfect its ſeed annually, until the lands on every ſide had become fully ſtocked, to the vaſt injury of the hay-crops. The ſame thing takes place with the dock, and ſeveral other noxious plants, which ſtrongly enforces the utility of the practice juſt recommended. The annual expence of performing the buſineſs is but a mere trifle, while the advantage will be real and permanent. The ſaving to the farmer would be conſiderable, by having the work regularly done as ſoon as the weeds ſhew themſelves, and at the ſame time his young hedge-plants be prevented from being deſtroyed, by being ſhaded and choaked up by ſo many weeds. In order to take them up in a perfect manner, a narrow implement of the ſpade kind, ſuch as is made uſe of in forming narrow drains, may be employed with advantage, as cutting or breaking them off is by no means effectual. After ſuch plants have been removed, and the ground well cleared, ſowing the banks and hedge-rows with the beſt graſs-ſeeds, ſuch as white clover and other ſimilar plants, might be an excellent practice, as in this way the lands may be improved rather than injured."

In regard to plants of the ruſh kind, they may be eaſily removed by preventing the ſtagnation of moiſture near the ſurface, by judicious under or ſurface draining, and the application of ſubſtances of the ſaline or calcareous kinds, ſuch as aſhes, lime, drift from the roads, and other ſimilar materials. Theſe are the beſt made uſe of in a dry ſeaſon, in either the autumn or ſpring; but the latter is probably the beſt, as theſe abſorbent matters will thereby be made uſe of at the time ſuch plants begin to ſhoot and eſtabliſh themſelves, and when there will be the leaſt danger of their operation being leſſened or prevented by too great a degree of moiſture. It has been obſerved, that in natural coarſe meadows, or ſuch as become ſo in conſequence of ruſhes growing upon them, before they have been rendered ſufficiently dry by draining, it forms a great improvement to apply a thin coat of ſand evenly over the ſurface of them, in the proportion of from twenty to thirty common loads. By this means the ſward is rendered much finer, and a much better ſort of herbage brought up; white clover being predominant in moſt caſes where this is practiſed.

But there is another method that, in particular ſituations, may be more eaſy and convenient, and which has been found to quickly deſtroy plants of this coarſe kind, by bringing up thoſe of a finer deſcription. This may appear extraordinary at firſt ſight to thoſe who have not ſeen its ſudden and aſtoniſhing effects in this way. It is that of conducting water over the ſurface of ſuch grounds; but, in this intention, it ſhould not be ſuffered to have the leaſt degree of ſtagnation, but be conveyed off with as much expedition as poſſible, by ſuitable drainage or other means.

M. de Chateauvieux many years ago invented a machine, called a cutting-plough, with three ſharp coulters for cutting the land about ſix or ſeven inches deep, that the manure laid upon it might be waſhed into the inciſions made by the coulters, and which alſo, by cutting the old roots of the graſs, many new roots were produced, and a very great improvement afforded, particularly where the meadows were hide-bound and overrun with moſs. And afterwards Mr. Wynn Baker, in Ireland, added two more coulters, and named it a *ſcarificator*; which is conſidered a very uſeful tool for the purpoſe of improving meadows, as well as paſtures. For it has been found in practice, that if the land is firſt ſcarified, and then manured, the improvement is greater than ſcarifying the land after laying on the manure. And this buſineſs is ſaid alſo to be well performed by a ſward-dreſſer, invented by Mr. Amos in Lincolnſhire. See SWARD-*Dreſſer*.

In caſes where meadow-lands are properly ſituated for the purpoſe of being watered, they may be formed properly for the purpoſe, probably with the moſt advantage, in the early autumn; but when that ſeaſon cannot be conveniently employed, the work may be performed early in the ſpring. The methods of cutting the gutters and trenches, and of managing the whole of the proceſs, as well as the vaſt utility which is the reſult of it, may be ſeen detailed under the heads IRRIGATION and WATERING *of Land*.

Where this practice is attempted, the farmer ſhould commence the watering of his meadow-lands early in November, which, in moſt inſtances, affords more improvement than a dreſſing of the beſt manure that can be provided. As they are commonly the lower parts of the ground that can be made uſe of in this way, much may often be effected by a proper attention to the ditches in the lands that lie at higher levels, as by keeping them in ſuch a ſtate that they may diſcharge themſelves freely into a large main ditch, a little above the lower parts of them, from which the water may be let off occaſionally, ſo as to float the meadow grounds below; care being taken that it does not ſtagnate upon them in any way. And in managing this ſort of operation afterwards, Mr. Wright adviſes that the floater ſhould take care to keep the land ſheltered by the water from the ſeverity of froſty nights. And in the winter, as about January, it is neceſſary, he conceives, every ten days or fortnight to give the land air, and to lay it as dry as poſſible, for the ſpace of a few days. "Whenever the froſt has given a complete ſheet of ice to the meadow, it is adviſable to diſcontinue floating; for the froſt will ſometimes take ſuch ſtrong hold of the land, as to draw it into heaps, and injure the evenneſs of the ſurface. Attention is alſo to be paid to prevent the equal diſtribution of the water being obſtructed, by the continual influx of weeds, leaves, ſticks, &c." And, as the ſeaſon advances, ſtill greater attention is required from the floater in the ſucceeding month: "if the water be ſuffered to flow over the meadow, for the ſpace of many days without intermiſſion, a white ſcum, it is obſerved, is generated, which is found very deſtructive to graſs ; and if the water be taken off, and the land expoſed in its wet ſtate to a ſevere froſty night, a great part of the tender graſs will be cut off. In Glouceſterſhire, two methods of avoiding theſe injuries are practiſed : one is, to take the water off by day, to prevent the ſcum, and to turn it on again at night, to guard againſt the froſt ; the other method is to take the water off early in the morning, and if that day be dry, to ſuffer it to remain off for a few days and nights ; for if the land experiences only one drying day, the froſt at night will do little injury. The former of theſe practices, where it is found not too troubleſome, is preferable to the latter." About the middle of February, the floater ſhould begin to uſe the water more ſparingly than in autumn or winter ; for his chief object now is to encourage or force vegetation. It is moſtly found, that about the laſt week of this month, if the preceding management has been good, there will be a pretty full bite for ewes and lambs. Some adviſe rolling in the beginning of the year. as about January.

The ſame writer alſo ſtates, that " about the beginning of March, the graſs on the old floated meadows will generally be ſufficient to afford an abundant paſturage to any kind of farming ſtock ; and the water muſt be taken off for nearly a week, that the land may become dry and firm before heavy cattle are admitted. It is proper, in the firſt week of eating off the ſpring feed, if the ſeaſon be cold and rainy, to give the cattle a little hay in the evening to intermix with their moiſt food. But the grand application of the young meadow-graſs is for ewes and lambs ; and attention ſhould always be paid to hurdling off the graſs, and giving ſtripes acroſs the meadow, exactly in the way turnips are hurdled for ſheep. The caution of Mr. Boſwell, never to feed on theſe meadows any heavier ſtock in ſpring than ſheep or calves, ſeems to be judicious, but muſt obviouſly depend much on ſoil ; for, upon a ſound gravel, a practice may be admitted, which would be miſchievous on a peat meadow." But good rich meadows, whether watered or not, are moſtly ready to be cut about the middle of June.

Mr. Boſwell adviſes, that " as ſoon as the hay is cleared from theſe meadows, cattle of any ſort (no ſheep) ſhould be turned in for a week to eat the graſs out of the trenches, and what may be left by the mowers. Then the water ſhould be worked on them, care being taken to let it only dribble over every part as thinly as poſſible ; this being the warmeſt ſeaſon of the year. The firſt watering ſhould not laſt longer than two or three days, before it is ſhifted to another meadow. There will ſoon be an after-graſs of ſuch a rich and beautiful verdure as will aſtoniſh a ſpectator not accuſtomed to it ; and the quantity and quality will be beyond conception, compared with the ſtate the lands were in before they were watered. He alſo further cautions us to guard by all means againſt keeping the water too long upon the meadows, in warm weather. It will very ſoon produce a white ſubſtance like cream, which is prejudicial to the graſs, and ſhews it has been upon the ground too long already ; but if permitted to remain a little longer, a thick ſcum will ſettle upon the graſs, of the conſiſtence of glue, and as tough as leather, which will quite deſtroy it."

Meadow-*Graſs*, in *Botany*. See Poa, Cynosurus, and Grass.

Meadow-*Fox-tail Graſs*, in *Agriculture*, a ſort of field graſs, that may be cultivated to advantage on the more moiſt ſorts of ſoil. It is ſaid to be early and productive, but rather coarſe. See Alopecurus *Pratenſis* and Grass.

Meadow *Rue*. See Thalictrum.

Meadow *Saffron*. See Colchicum.

Meadow *Saxifrage*. See Peucedanum and Seseli,

Meadow *Sweet*. See Spiræa.

Meadow *Trefoil*. See Trefoil.

Meadow *River*, in *Geography*, a river of America, which runs into lake Huron, N. lat. 45° 38′. W. long. 84° 30′.

MEADVILLE, a thriving poſt-town, ſeated on French creek, a branch of the Alleghany, in Crawford county, Pennſylvania (N. lat. 41° 36′), and the ſeat of juſtice for the counties of Warren and Crawford, to the latter of which it belongs. It contains about 100 houſes, and ſeveral ſtores, and is a place of conſiderable buſineſs.

MEAGOM, a town of Hindooſtan, in Guzerat ; 20 miles N. of Baroach.

MEAHGURRY, a town of Hindooſtan, in Candeiſh ; 30 miles S.E. of Chuprah.

MEAHMAO, a large town of the Birman empire, on the Irawaddy, ſhaded by groves of palmyra trees, and remarkable for a manufacture of coarſe cloth, ſuch as is worn by the lower claſs of people ; 42 miles W. of Ava.

MEAKING, a town of the Birman empire, on the right bank of the Ava ; 8 miles N. of Penongmew.

MEAL. The meal or flour of England is the fineſt and whiteſt in the world. The French is uſually browner, and the German browner than that. Our flour keeps well with us ; but in carrying abroad, it often contracts damp, and becomes bad. All flour is ſubject to breed worms : theſe are white in the white flour, and brown in that which is brown ; they are therefore not always diſtinguiſhable to the eye : but when the flour feels damp, and ſmells rank and muſty, it may be conjectured that they are there in abundance.

The colour and the weight are the two things which denote the value of meal or flour ; the whiter and the heavier it is, other things being alike, the better it always is. Pliny mentions theſe two characters as the marks of good flour, and tells us, that Italy, in his time, produced the fineſt in the world. This country, indeed, was famous before his time for this produce ; and the Greeks have celebrated it ; and Sophocles, in particular, ſays, that no flour is ſo white or ſo good as that of Italy. The corn of this country has, however, loſt much of its reputation ſince that time ; and the reaſon of this ſeems to be, that the whole country being full of ſulphur, alum, vitriol, marcaſites, and bitumens, the air may have, in time, affected them ſo far, as to make them diffuſe themſelves through the earth, and render it leſs fit for vegetation ; and the taking fire of ſome of theſe inflammable minerals, as has ſometimes happened, is alone ſufficient to alter the nature of all the land about the places where they are. Deſland. Trait. Phyſ.

The flour of England, though it pleaſes by its whiteneſs, yet it wants ſome of the other qualities valuable in flour : the bread that is made of it is brittle, and does not hold together, but, after keeping a few days, becomes hard and dry, as if made of chalk, and is full of cracks in all parts ; and this muſt be a great diſadvantage in it, when intended for the ſervice of an army, or the like occaſions, where there is no baking every day, but the bread of one baking muſt neceſſarily be kept a long time.

The flour of Picardy is very like that of England, and, after it has been kept ſome time, is found improper for making into paſte or dough. The French are forced either to uſe it immediately on the grinding, or elſe to mix it with an equal quantity of the flour of Brittany, which is coarſer, but more unctuous and fatty ; but neither of theſe kinds of flour keeps well.

The flour of almoſt any country will do for the home conſumption of the place, as it may be always freſh ground ;

but the great care to be uſed in ſelecting it is in order to the ſending it abroad, or furniſhing ſhips for their own uſe. The ſaline humidity of the ſea-air ruſts metals, and fouls every thing on board, if great care be not taken in the preſerving them. This alſo makes the flour damp and mouldy, and is often the occaſion of its breeding inſects, and being wholly ſpoiled.

The flour of ſome places is conſtantly found to keep better at ſea than that of others; and when that is once found out, the whole caution needs only be to carry the flour of thoſe places. Thus the French find, that the flour of Poitou, Normandy, and Guienne, all bear the ſea-carriage extremely well, and they have formerly made a conſiderable advantage by carrying them to their American colonies.

The choice of flour for exportation being thus made, the next care is to preſerve it in the ſhips: the keeping it dry is the grand conſideration in regard to this; the barrels in which it is put up ought to be made of dry and well-ſeaſoned oak, and not to be larger than to hold two hundred weight at the moſt. If the wood of the barrels have any ſap remaining in it, it will moiſten and ſpoil the flour; and no wood is ſo proper as oak for this purpoſe, or for making the bins and other veſſels for keeping flour in at home, ſince, when once well dried and ſeaſoned, it will not contract humidity afterwards. The beech-wood, of which ſome make their bins for flour, is never thoroughly dry, but always retains ſome ſap. The fir will give the flour a taſte of turpentine; and the aſh is always ſubject to be eaten by worms. The oak is preferable, becauſe of its being free from theſe faults; and when the ſeveral kinds of wood have been examined in a proper manner, there may be others found as fit, or poſſibly more ſo, than this for the purpoſe. The great teſt is their having more or leſs ſap. See FLOUR and WOOD.

MEAL *Worm*. See WORM.

MEALY-*Tree*, in *Botany* and *Gardening*. See VIBURNUM.

MEAMBOLANGAM, in *Geography*, a town of the Birman empire, on the Ava; 36 miles N. of Prome.

MEAMOY, a town of the Birman empire, on the right bank of the Ava; 16 miles W. of Ava.

MEAN, the middle, between two extremes.

Thus we ſay, the mean motion of a planet; its mean diſtance, &c. meaning a motion or diſtance, which as far exceeds the leaſt diſtance or motion, as it is exceeded by the greateſt.

MEAN, middle, mean proportion, is the ſecond of any three proportions; but in muſic, mean is more properly the title of the ſecond violin in trios, as being the mean between the firſt violin and baſe. In madrigals of five and ſix parts, a third treble is generally termed the mean part.

MEAN, in *Law*, refers either to time or dignity. Thus, in the firſt ſenſe we ſay, his action was mean betwixt the diſſeiſin made to him, and his recovery; *i. e.* in the interim.

In the ſecond ſenſe, we ſay, there is lord *mean* or *meſne*.

MEAN, in *Logic*. See MEDIUM.

MEAN *Anomaly*, in *Aſtronomy*. See ANOMALY.

MEAN *Axis*, in *Optics*. See AXIS.

MEAN $\left\{\begin{array}{l}\textit{Conjunction,}\\ \textit{Oppoſition,}\end{array}\right\}$ in *Aſtronomy*, is when the mean place of the ſun is in $\left\{\begin{array}{l}\text{conjunction}\\ \text{oppoſition}\end{array}\right\}$ with the mean place of the moon in the ecliptic. See CONJUNCTION and OPPOSITION.

MEAN *Diameter*, in *Gauging*. See GAUGING.

MEAN *Diſtance of a Planet from the Sun*, in *Aſtronomy*, is the right line drawn from the ſun, to the extremity of the conjugate axis of the ellipſis in which the planet moves; and this is equal to the ſemitranſverſe axis, and is ſo called becauſe it is a mean between the planet's greateſt and leaſt diſtance from the ſun.

MEAN *Motion*, that whereby a planet is ſuppoſed to move equally in its orbit, and is always proportional to the time.

MEAN *Proportion*. See EXTREME *Proportion*.

MEAN *Time*. See TIME.

MEANA, in *Geography*, a town of Hindooſtan, in Kitchwara; 10 miles N.E. of Budawar.—Alſo, a town of the iſland of Sardinia; 21 miles S.S.W. of Lode.

MEANG, a town of Hindooſtan, in Guzerat; 40 miles N.W. of Puttan-Sumnaut.

MEANGIS, a cluſter of ſmall iſlands in the North Pacific ocean. N. lat. 4° 58′. E. long. 126° 55′.

MEANY, a town of Hindooſtan, in Guzerat, near the coaſt; 40 miles S.W. of Junagur.

MEANY, *Choppa*, a town of Hindooſtan, in Guzerat, on the coaſt; 55 miles W. of Junagur.

MEAO, one of the ſmall Molucca iſlands. N. lat. 1° 12′. E. long. 127° 3′.

MEARIM, a river of Brazil, which runs into the bay of Baranhao, S. lat. 2° 40′. W. long. 45° 30′.

MEASLES, in *Medicine*, a contagious fever, accompanied by a raſh or effloreſcence on the ſkin, of a peculiar form or diſtribution, which moſtly appears on the fourth day of the fever, and, after a continuance of four days, gradually declines together with the febrile ſymptoms.

This diſeaſe, like the ſmall-pox and ſcarlet-fever, was not particularly deſcribed or named by the Greek and Roman phyſicians, but is firſt mentioned by the Arabians. The tranſlators of the writings of the latter into Latin applied the term *morbilli* to the diſeaſe; as it were a *little plague*, the word *il morbo*, in Italy, ſignifying the plague, or *the diſeaſe*, by way of eminence. Subſequently, from the red colour of the raſh, the terms *rubiolæ* and *rubeolæ* were given to this diſeaſe, and to ſcarlet-fever, which was confounded with it. The appellation of *rubeola* has been adopted for the meaſles by our beſt noſologiſts, Sauvages and Cullen. The Engliſh term *meaſles* ſeems to have been borrowed from an appearance, which was ſo denominated in the fleſh of pork, to which the eruption of rubeola was ſuppoſed to bear ſome reſemblance.

The diſeaſe in queſtion is propagated ſolely by contagion; and it commences in children, or in adult perſons of an irritable conſtitution, from ten to fourteen days after they have been expoſed to the infection. Others, who are leſs ſuſceptible, may have frequent communication with perſons affected with the diſeaſe during ſeveral ſucceſſive weeks, but the contagion does not act upon them, unleſs the body be brought into a feveriſh ſtate by ſome incidental cauſe, as by taking cold, by watching, fatigue, or mental diſtreſs. Dr. Willan, in his valuable and elaborate treatiſe on cutaneous diſeaſes, has deſcribed three varieties of meaſles, which it is important to attend to: theſe are the rubeola *vulgaris*, or common form of the diſeaſe; the rubeola *ſine catarrho*, in which fever and catarrh do not accompany the eruption; and the rubeola *nigra*, or purple-meaſles.

1. The *rubeola vulgaris*, or uſual form of meaſles, exhibits the following character. The ſymptoms which precede the effloreſcence are, on the firſt and ſecond days, irregular ſhiverings alternating with heat of the ſkin, general debility or liſtleſſneſs, fluſhing of the cheeks, giddineſs, a ſenſation of pain or weight acroſs the forehead and eyes, with drowſineſs; ſometimes pain of the back and limbs,

ſlight ſoreneſs or roughneſs in the throat, loſs of appetite, frequent nauſea, thirſt, a white fur on the tongue, clear high-coloured urine, the pulſe much increaſed in frequency, and ſomewhat labouring or irregular. On the third and fourth days, the ſame ſymptoms continue, but with greater violence: the eyes become tender and inflamed; the eye-lids and tarſi appear a little turgid; at the ſame time a ſerous humour is copiouſly diſcharged both from the eyes and noſtrils, which occaſions repeated ſneezing. The diſeaſe during this period, and uſually for two or three days longer, is accompanied with a frequent dry cough, hoarſeneſs, difficulty of breathing, and a ſenſe of conſtriction acroſs the cheſt. In children, indeed, in whom all the ſymptoms of the firſt ſtage are more ſevere than in adults, the diſeaſe is often preceded by a harſh ſounding cough for a week, or even a fortnight, before it formally commences; and ſometimes, eſpecially during the period of dentition, is attended with frequent twitchings, or even with ſtrong convulſive fits.

We have ſaid that the efflorеſcence moſtly appears on the fourth day of the fever: this, however, is not invariably true. In perſons who have a very delicate ſkin, it ſometimes appears partially on the third day; while in others, of a dark and thick ſkin, or who have been expoſed much to cold, it may not be manifeſt till the fifth or ſixth day: and as the contagion is, in many perſons, only called into action by ſome incidental feveriſhneſs; ſo it is not eaſy, in theſe caſes, to aſcertain the commencement of the proper eruptive fever.

The raſh is firſt viſible on the face, eſpecially on the forehead and under the chin, and exhibits in other parts only a few ſcattered ſpecks, with a ſomewhat warmer colour of the ſkin than uſual. On the following (fifth) day, it is formed on the neck and breaſt in the morning, and is diffuſed, towards evening or in the night, round the trunk of the body, and along the extremities; during this day it is moſt full and vivid on the face. On the *ſixth* day of the diſeaſe, the raſh on the face begins to fade and ſubſide, while the patches on the body are moſt red and extended; but theſe gradually change their appearance the day after. The patches on the back of the hand and wriſt, which uſually appear lateſt (in ſome inſtances on the ſixth or ſeventh day), do not always decline till the *eighth* day. On the *ninth* day, there remain only veſtiges of the efflorescence, marked by a ſlight diſcolouration; this, however, diſappears before the end of the *tenth* day. When the raſh begins to decline on any part, the cuticle becomes dry and rough, and ſoon after ſeparates into ſcurf. Hence ariſes a very diſagreeable itching of the ſkin which continues from the ſeventh to the tenth day.

The progreſs of the eruption is ſometimes checked by expoſure to continued cold; and its retroceſſion occaſions delirium, reſtleſſneſs, difficulty of breathing, pain of the bowels, diarrhœa, &c. and endangers the life of the patient. The inflammation of the eyes, the diſcharge of tears, the ſneezing, and hoarſeneſs, generally ceaſe on the decline of the efflorescence, about the ſeventh day; at leaſt they are always much abated at that time, and the appetite for food returns. Between the fourth and ſixth days there is often a hæmorrhage from the noſe, and in females an appearance of the catamenia out of their courſe; but theſe circumſtances occur in other eruptive diſeaſes.

It is neceſſary, however, to attend to the form and mode of diſtribution of the efflorescence, as well as to its progreſs and periods, with a view to avoid miſtakes as to the nature of the diſeaſe; which has been frequently, and indeed for many centuries was conſtantly confounded with ſcarlet-fever, and other febrile raſhes. The colour of the raſh in the meaſles, Dr. Willan obſerves, is leſs bright than in ſome other diſeaſes of the exanthematous claſs. It verges towards the raſpberry tint, rather than the ſcarlet or roſe hue of ſome other raſhes. On the eighth day, when the efflorescence declines, it changes to ſomewhat of a yellowiſh hue. The raſh commences with diſtinct, red, and nearly circular dots, about the ſize of common flea-bites, to which moſt writers have compared them. Larger patches afterwards appear, or rather theſe dots, becoming more numerous, coaleſce into larger patches, which, although not exactly defined, approach neareſt in their form to the figure of a creſcent, or ſemicircle. Theſe patches are ſlightly raiſed, and give to the finger the ſenſation of an unequal ſurface. Many of the patches are interſperſed with the ſame ſmall circular dots; but there are, for the moſt part, large interſtices of cuticle retaining its uſual colour.

From theſe characteriſtic appearances of meaſles there are only partial variations: as, 1ſt. The fluſhed and tumefied ſtate of the cheeks, while the fever continues, may obliterate or obſcure the form of the raſh on thoſe parts. 2dly. In infants leſs than a year old the efflorescence is much ſcattered; and on the cheeks, noſe, backs of the hands, &c. it often conſiſts of diſtinct pimples (*papulæ*). The wriſts, hands, and fingers are alſo frequently papulated in adults. 3dly. In many perſons, at different ages, there are, during the height of the efflorescence, lymphatic or miliary veſicles on the neck, breaſt, and arms. Willan on Cutan. Diſeaſes, p. 217, & ſeq.

Dr. Heberden has noticed the following particularities of the meaſles: "One patient was ſeized with a ſpitting on the fourth day, which continued to teaſe him for forty-eight hours, without ſuffering him to reſt at all by day, or to ſleep at night: the cough in the mean time almoſt ceaſed, and all the other ſymptoms were as mild as in a favourable ſort of the meaſles.

"In one or two patients I have ſeen the eruption appear on the arms a few hours after its having been obſerved on the face and neck.

"Once or twice the diſtemper has been obſerved never to have reached the arms, which parts, through the whole of it, ſhewed none of the uſual ſpots.

"The eye-lids have been ſo ſwelled, on the ſecond day of the eruption, that for twenty-four hours they could not be opened.

"In ſeveral patients the marks on the face have been on the third and even fourth day of the eruption, of as bright a red as ever. In others, I have obſerved them to diſappear entirely on this day, and all other ſymptoms likewiſe to retreat.

"I have noted a very troubleſome and conſtant ſneezing, which firſt came on upon this day.

"A child, five years old, became comatoſe the third day of the eruption, and died the next.

"The longer the preparatory ſymptoms have continued and the worſe they were, ſo much the leſs mild the diſtemper proved.

"Thoſe who have ſhewn the leaſt remains of the eruption after the ſeventh day of the diſeaſe (and ſome have hardly ſhewn any) have appeared the beſt; and in thoſe where it was ſtill in undiminiſhed vigour, the cough and fever have been the worſt." See a Paper in the Med. Tranſ. of the Coll. of Phyſ. vol. iii. Alſo, Dr. Heberden's Comment. de Morb. cap. 63.

The eruptive ſtage of the meaſles is not attended with much danger, either to infants or adults. The fever, indeed, does not receive any immediate alleviation, but is often ſomewhat aggravated on the appearance of the raſh: yet the nauſea and vomiting ſeldom continue beyond the fourth day of the fever, as Sydenham has juſtly remarked; and the diſtreſſing heat, panting, and reſtleſſneſs abate on the ſixth day. The ſubſequent period of the diſeaſe, however, may prove fatal to patients of any age. Between the ninth and twelfth day, ſome children are unexpectedly attacked with great difficulty of breathing, or ſuffocation, and die in a few hours. In others, the diarrhœa, which uſually ſupervenes on the diſappearance of the raſh, about the ninth or tenth day, continues, without intermiſſion, for ſo long a period that it exhauſts their ſtrength, and they become pale and emaciated; under theſe circumſtances aphthous ulcerations of the mouth are generally the fore-runners of death. Adults, as well as children, fall ſometimes into a ſtate of hectic fever, which returns twice in twenty-four hours, without any cough or diarrhœa; and during the intervals there is great reſtleſſneſs and a quick irregular pulſe. The patients thus affected, for two or three ſucceſſive weeks, gradually ſink under the complaint; but in ſome inſtances a fatal termination ſeems to be averted by the appearance of boils, puſtules, or ſuppurating tubercles on the ſkin, which operate very favourably with reſpect to the internal diſorder, both in this hectic ſtate, and in caſes where the bowels or the lungs are ſeverely affected. Sometimes this alleviation is ſpeedily produced by an eruption of inflamed watery veſicles round the cheſt, or more ſlowly by a diſcharge from behind the ear, or from the ear itſelf, accompanied with ſuppuration in ſome of the lymphatic glands. When nothing of this kind appears externally, the inflammation of the lungs in adults is ſometimes on a ſudden greatly aggravated; the cough ceaſes, reſpiration becomes more and more laborious, with a ſenſe of oppreſſion and anxiety: the eyes are glaſſy, the countenance livid, the extremities cold, and the pulſe ſcarcely diſcernible. After a ſtruggle of three or four days, the diſeaſe has a fatal termination, the cauſe of which diſſections have aſcertained, in ſeveral caſes, to be an effuſion of lymph, mixed with blood or matter, into the cavity of the thorax. Willan.

Even when the meaſles paſs through their courſe moderately and mildly, however, various diſorders follow them, or a tendency to ſome other diſeaſe is not unfrequently left behind; ſo that the conſequences of this fever are often more to be dreaded than the original diſeaſe itſelf. In many perſons the cough, ſoon after the diſappearance of the raſh, recommences with violence, being attended with difficulty of breathing, fixed pain in the ſides, fluſhing of the cheeks, quick pulſe, and often with paroxyſms, as in a hectic. This ſtate is protracted much longer than pneumonic inflammation produced by cold, and more frequently terminates by effuſion into the cavity of the cheſt, or by ſpitting of blood, ſuppuration, and confirmed pulmonary conſumption. There are alſo ſome other appearances which occaſionally ſucceed the meaſles, eſpecially diſeaſes of the ſkin and glandular ſyſtem, which mark a cachectic ſtate of the habit. Among theſe are ſmall hard tumours, like boils, occurring on the back, loins, and lower extremities, which are very much inflamed in the beginning, and afterwards ſuppurate with great pain, and a ſanious diſcharge; herpetic eruptions, in patches of watery veſicles, with an inflamed baſe, about the cheſt, mouth, &c. producing much heat, pain, and tingling of the ſkin; ſoft puſtules, containing a viſcid ſtraw-coloured fluid on the head, face, breaſt, and thighs, ſucceeded by ulcerations at the corner of the mouth, with tumour of the upper lip, inflammation of the eyes, and ulcerations at the edges of the eye-lids, diſcharges behind the ears, enlargement and tedious ſuppuration of the lymphatic glands under the jaw, in the neck, arm-pits, and groin, ſometimes with pain and ſwelling of the joints, and every other form of ſcrofulous diſeaſe.

Treatment of Common Meaſles.—The rubeola vulgaris is uſually a mild diſeaſe in the ſummer months, being attended with a moderate degree of fever, and but little cough; in January, February, and March, it is moſt frequent, and likewiſe moſt ſevere and dangerous.

In the eruptive ſtage of the diſeaſe, it is neceſſary to enjoin a very light diet, with mild tepid drinks; and to keep the patient in a moderate temperature, carefully guarding againſt any great or ſudden changes. An emetic given on the ſecond or third evening affords ſome ſlight alleviation to the violence of the catarrhal ſymptoms. During the eruption, however, no conſiderable effect appears to be produced by antimonials, or other diaphoretics; and emulſions and mucilages afford but a very feeble palliation of the cough and difficulty of breathing. The firſt of theſe objects, to wit, of ſoftening the ſkin, ſeems to be more efficiently accompliſhed by the uſe of the warm pediluvium every evening; and the latter by the inſpiration of the ſteam of hot water. If a diarrhœa comes on during the continuance of the effloreſcence, it is generally favourable, relieving the cough, and allaying the inflammatory ſymptoms: where this does not ſupervene, therefore, it is adviſable to adminiſter occaſional purgatives, which will be found to produce a ſimilar relief, and often ſuperſede the neceſſity of more violent remedies.

Almoſt all authors, down to our own time, have aſſerted the neceſſity of blood-letting in this diſeaſe, differing only in regard to the period when it may be practiſed with moſt advantage. Morton deemed it requiſite during the height of the eruption, when he thought the diſeaſe was moſt inflammatory; and Sydenham recommended it after the diſappearance of the eruption, when ſymptoms of pulmonary inflammation enſue. Whilſt Mead and Heberden conſidered the period of the diſeaſe as of little moment in determining the propriety of the practice, which the degree of inflammatory affection in the cheſt, they contended, ought alone to decide. Dr. Heberden, however, recommended the uſe of the lancet as a general remedy in the meaſles. "Bleeding may be uſed at any time of the meaſles," he ſays, "and is always beneficial where the ſymptoms are very diſtreſſing, particularly an oppreſſion of the breath, to which every ſtage of this diſtemper is liable; and *bleeding*, together with ſuch medicines as occaſional ſymptoms would require in any other fever, is the whole of the medical care requiſite in the meaſles." Med. Tranſ. vol. iii. p. 404.

In caſe the breathing becomes ſuddenly difficult, threatening to ſuffocate the patient, at the concluſion of the diſeaſe, as Sydenham ſtates, there cannot be a doubt that blood-letting, even in children, may be reſorted to with great benefit, and ought not to be omitted: in infants the application of leeches to the cheſt may be ſufficient. With reſpect to the treatment of the oppreſſion, however, conjoined with anxiety, heaving of the cheſt, and a labouring pulſe, which take place on the third, fourth, or fifth day of the diſeaſe, Dr. Willan juſtly obſerves, that this remedy may be diſpenſed with, unleſs there are at the ſame time pains in the cheſt, and a hard dry cough. "Thoſe who from doubt, or from ſome collateral motive," he ſtates, "are led to await the event, uſually find the pulſe become moderate, and the uneaſy laborious reſpiration terminate in twenty-four hours. This oppreſſed breathing is, indeed," he adds, "common to other eruptive fevers, and if it were univerſally conſidered to be an indication for bleeding, the practice would often be more fatal than the diſeaſe." Loc. cit. p. 232.

He goes on to remark, that "when the effloreſcence in meaſles has wholly diſappeared, and the cough, difficulty of breathing, and pains in the cheſt are very ſevere, bleeding and cupping may perhaps be repeatedly neceſſary. Yet, even in robuſt habits, ſome limitation is requiſite to this mode of practice; ſince it has not an effect in alleviating the ſymptoms, equal to that which is experienced from it in pulmonic inflammations originating from cold. Hence we ſhould employ as auxiliaries to bleeding, at the latter period of the diſeaſe, bliſters, opium, and demulcent liquors. Sydenham preſcribed an opiate every night through the whole courſe of the meaſles; but this plan ſeems not beneficial in the eruptive ſtage; I have obſerved, and myſelf felt, while labouring under the diſeaſe, that opium did not conciliate ſleep, but produced an increaſe of heat and reſtleſſneſs, and therefore ſeldom direct it till the effloreſcence has declined. A diarrhœa occurring at this period may be accounted a moſt favourable circumſtance, ſince nothing ſo effectually relieves the peripneumonic ſymptoms, or contributes more to prevent the troubleſome conſequences of the diſeaſe formerly mentioned. The neceſſity of bleeding, as a remedy for the diarrhœa, is inſiſted upon by Dr. Sydenham from theoretical reaſoning. Experienced practitioners in London ſeem to have now decided, that we ought not much to interfere with this critical evacuation, but rather allow it a free courſe, at leaſt for ſome days. Where the diarrhœa does not thus take place, it is proper to imitate the uſual proceſs of nature, by the occaſional uſe of purgatives, which will always be found to relieve the cough, and by allaying the inflammatory ſymptoms, often to ſuperſede the neceſſity of blood-letting."

2. The *Rubeola ſine catarrho*, which is ſo mild as to require no medicine, is particularly entitled to notice, in conſequence of a circumſtance pointed out by Dr. Willan, and not obſerved by other writers who had mentioned its occurrence; namely, that when the eruption of meaſles occurs without the accompanying fever and catarrhal ſymptoms, it does not appear to ſecure the conſtitution from the future influence of the contagion, nor to prevent the acceſſion of the ordinary form of the diſeaſe at a ſubſequent period. In this way he ſuppoſes that the inſtances of the recurrence of meaſles in the ſame individual, which have been recorded, are probably to be explained, unleſs where other diſeaſes, ſcarlatina, roſeola, ſtrophulus, &c., have been miſtaken for meaſles; for he never ſaw the *febrile* meaſles occur more than once in the ſame perſon. In ſome caſes the non-febrile eruption has occurred at the interval of two years before the rubeola vulgaris; in other inſtances, a very ſhort time has intervened. "I have ſeen other inſtances of the ſame kind," Dr. Willan ſays, "wherein the effloreſcence without fever or catarrhal ſymptoms having declined, there appeared on the fourth day from its commencement a new effloreſcence, and violent diſorder of the conſtitution. Theſe inſtances are perfectly analogous to ſome caſes of ſmall-pox, in which diſtinct puſtules ariſe without any material complaint, and when theſe decline, about the eighth or ninth day after their appearance, the variolous fever takes place, with an eruption of confluent pocks over the whole ſurface of the body." P. 236.

The appearance of the effloreſcence of meaſles, when the ordinary febrile and catarrhal ſymptoms are abſent, is to be diſtinguiſhed from other raſhes, as well as from lichen and ſtrophulus, which are *papular*, by a careful examination of its form and diſtribution, as above deſcribed. In infants, Dr. Willan obſerves, the eruption of meaſles "is more papulated, and the patches often leſs extenſive, ſo that to diſcriminate with exactneſs, the patient being under two years of age, requires both minute attention, and ſome previous habitude."

3. The *Rubeola nigra* is that variety of the meaſles, which ſometimes occurs, in which, about the ſeventh or eighth day, the raſh becomes ſuddenly black, or of a dark purple colour, with a mixture of yellow. This appearance has continued ten days, and in ſome caſes longer, without much diſtreſs to the patient, and with no other ſymptoms of fever than a quick pulſe, and a ſlight degree of languor. The mineral acids were adminiſtered in theſe caſes with evident advantage. Sydenham aſcribes the change of the appearance of the raſh to a black or purple colour, which he occaſionally witneſſed in adults, to the pernicious perſeverance in a heating regimen. To the influence of ſuch a regimen, indeed, he affirms that the pulmonary inflammation, which is the moſt fatal ſymptom, as well as the diarrhœa, that continued many weeks, was generally to be imputed. See his excellent chapter on Meaſles, which contains the prototype of the deſcription of the diſeaſe, that has been given by the majority of ſubſequent writers. Sect. iv. cap. 5.

Under the denomination of "putrid meaſles," ſir Will. Watſon deſcribed a diſeaſe, which prevailed among the children of the Foundling Hoſpital, in 1763 and 1768. (See Med. Obſ. and Inquir. vol. iv.) On examining the ſymptoms of this diſeaſe, however, as detailed by ſir W. Watſon himſelf, as well as the varying appellations, which he gave to it, at different times, in his journal of the caſes, Dr. Willan has ſhewn moſt clearly, that the diſeaſe in queſtion was not meaſles, but ſcarlet-fever. There were, indeed, a cough and watery eyes among the ſymptoms of theſe "putrid meaſles;" but "the eruption appeared over nearly the whole body on the ſecond day;"—"the fauces were of a deep red colour;"—"the pulſe was very quick, but low;"—"the patients complained of extreme weakneſs, and could not bear bleeding;"—"their oppreſſed and difficult breathing was attended with great reſtleſſneſs and anxiety, but with ſcarce any expectoration throughout;"—"ſome died under laborious reſpiration, more from a dyſenteric purging;"—"ſome caſes terminated in mortification of the rectum, pudenda, cheeks, gums, &c. others with caries of the jawbones." Now theſe circumſtances obviouſly belong to ſcarlatina, and not to meaſles: indeed ſir W. Watſon refers them to the morbilli maligni, or epidemii, deſcribed by Morton. (De Morbillis et Febre Scarlatina.) But Morton, who calls the diſeaſe alſo morbilli *ſpurii*, expreſsly maintains that the meaſles and ſcarlatina are the ſame diſeaſe, with no more variation in their form, than there is between the diſtinct and confluent ſmall-pox: he has therefore conjoined the principal ſymptoms (cap. iii.), and wiſhes to baniſh the diſtinction, and the very name of ſcarlatina, from medical language. Hence thoſe readers who attend not to the names of things, but to the things themſelves as deſcribed, will find that the morbilli maligni, epidemii, and ſpurii, and the febris morbilloſa peſtilentialis, in his writings, have no relation to the meaſles, but conſtitute the diſeaſe, to which other writers have given the titles of angina maligna, ſcarlatina anginoſa, and maligna, &c. Willan, loc. cit.

The original writers on the meaſles, however, not only laid the foundation for this error, but created a much greater confuſion, by deſcribing the ſmall-pox and the meaſles as one and the ſame diſeaſe, which admitted of conſiderable variety in its form. This confuſion was tranſmitted from the Arabian phyſicians, who firſt deſcribed theſe diſeaſes, through eight or nine centuries. But as the meaſles and ſcarlet fever were deemed one and the ſame malady, even down to our own times; ſo this confuſion was greater than at firſt ſight it appears to have been; inaſmuch as theſe *three* ſpecific contagions were treated of as one diſeaſe, including alſo the chicken-pox, which was ſeparated during the laſt century. This circumſtance enables us to explain the opinion of the Arabian phyſicians, that the ſmall-pox or meaſles not unfrequently occurred *twice*, but rarely *thrice*, in the courſe of the life of an individual; ſince the occurrence of any one of theſe four diſeaſes would be conſidered as a recurrence of the ſmall-pox. It would ſeem extraordinary, indeed, (if we did not know how completely the obſervation of mankind is obſcured and perverted by pre-conceived opinions,) that the almoſt univerſal occurrence of both the ſmall-pox and the meaſles, in the ſame individuals, ſhould have eſcaped their notice. Yet even ſo late as the time of Sennertus, this fact was not known: for that able and learned phyſician diſcuſſes the queſtion, Why the diſeaſe in ſome conſtitutions aſſumes the form of ſmall-pox, and in others that of the meaſles? (See his Med. Pract. lib. iv. cap. 12.) He refers it merely to ſome indeſcribable idioſyncraſy, or peculiarity of habit. In his time, indeed, phyſicians had not entirely agreed upon the appropriation even of the names *variolæ* and *morbilli*; for ſome applied the term *variolæ* to the eruption of the meaſles, " quæ colorem cutis *variant*," they ſaid. Diemerbroeck, an able Dutch profeſſor, ſtill later expreſſed his opinion, that ſmall-pox and meaſles differed only caſually and in degree, not in kind. " Differunt (morbilli) à variolis accidentaliter, vel quoad magis et minus." Tractat. de Variol. et Morbill. cap. xiv.

When the moſt able phyſicians did not ſtep aſide from the path which the Arabians had marked out for them, ſo as to aſcertain the eſſential difference between the *puſtular* ſmall-pox and the *raſh* called meaſles, it can ſcarcely be expected that they ſhould have made out the diſtinction between the two raſhes of meaſles and ſcarlatina. It is obvious, however, that the ſcarlatina was known to them, and they deemed it a variety of meaſles, as many later writers have done.

There is no trace in medical hiſtory of the origin and primary cauſe of the meaſles, nor of the other contagious eruptive fevers; but it is commonly ſuppoſed, that they had no exiſtence in the time of the older Greek and of the Roman phyſicians; ſince, among the accurate deſcriptions which they have left of many diſeaſes, that are at preſent familiar to us, no diſtinct account of theſe ſtriking and formidable maladies is to be found. This is, indeed, an extraordinary circumſtance; and by thoſe who look back to the fathers of phyſic, as to the only correct and unbiaſſed obſervers of nature, it is deemed concluſive evidence on the ſubject. We have ſeen above, however, that the moſt accompliſhed phyſicians of later times were for ages blinded by the opinions of their predeceſſors, ſo as to overlook the moſt glaring facts; and it is not neceſſary to inform the learned reader, that no ſucceſſion of writers ever diſplayed a more ſervile adherence to the doctrines of their anceſtors, or compoſed their works by a more ſyſtematic tranſcription of thoſe which had gone before, than the ſeries of Greek phyſicians from Galen down to Actuarius; nor has any other claſs of obſervers been more enſlaved by hypotheſis, than the Greeks by the four humours of Hippocrates, and the four qualities which Galen engrafted upon them. Inſomuch that they ſatisfied themſelves, with giving general appellations to the eruptions, connected with fevers, which they claſſed together, as peſtilential; and deemed the *anthraces* and carbuncles of the true plague, and the *eryſipelata*, *ecthymata*, *phlyctænæ*, *erythemata*, *exanthemata*, *herpetes*, &c., under which moſt probably they included the ſmall-pox, meaſles, ſcarlet-fever, nettle-raſh, &c., as mere varieties of peſtilential fever, ariſing from different combinations of the four humours. Theſe eruptions are frequently mentioned as accompanying malignant fevers by Hippocrates and Galen.

Farther, it is remarkable, that the firſt writers (of the Arabian ſchool) who treat of ſmall-pox and meaſles, do not ſpeak of them as new or unuſual diſeaſes. Aaron, a phyſician of Alexandria, and contemporary with Mahomet, conſiders them as the reſult of putridity, and ſimilar to the carbuncles of the groin, axillæ, &c., which were often epidemical in the climate where he reſided, and fatal within four or five days. Rhazes, a phyſician of Bagdad, who, about the middle of the ninth century, collected the obſervations of his predeceſſors, in a curious tract on this ſubject, takes it for granted that the ſmall-pox and meaſles were known to Galen, more than ſix hundred years before his own time. Although we may admit, however, that the paſſages which Rhazes quotes (from an incorrect tranſlation of the works of Galen, and not from the original Greek), do not bear him out in this opinion; yet it is ſcarcely poſſible to deny that the diſeaſes in queſtion were known *before* the time of Galen, if we carefully peruſe a chapter " de Puſtularum (εξανθηματων) in febribus curatione," written by Herodotus, and preſerved by Aëtius. (See Aëtii, tetrab. ii. ſerm. i. cap. 129.) This Herodotus was an eminent phyſician at Rome, in the reign of Trajan, more than half a century before the arrival of Galen in that city; the fragments of his writings, which have been tranſcribed by Oribaſius and Aëtius, contain ſo much original obſervation and perſpicuity of deſcription, as to excite a regret that the greater part of them has been loſt. Herodotus begins this chapter, by mentioning the herpetic eruptions that break out about the mouth and alæ of the noſe, at the termination of catarrhal and other ſlight fevers. " In febrientibus aſſiduè fiunt exanthemata circa labia et naſum, juxta febrium ſolutionem." And he recommends theſe to be treated with a ſimple liniment, or a ſaturnine ointment. " But," he proceeds, " in the beginning of fevers, which are not ſimple, but the reſult of vitious humours, there ariſe *over the whole body* patches like flea-bites; and in malignant and peſtilential fevers theſe ulcerate, and ſome of them have an affinity with carbuncles. All theſe eruptions are ſigns of the redundancy of corrupt and corroſive humours in the habit; but thoſe which appear on the face are the moſt malignant of all. They are worſe if numerous, than if few;—the larger are worſe than thoſe which are ſmaller,—and thoſe which have a ſhort courſe, than thoſe which remain a long time. Thoſe are more dangerous too which are hot and inflamed, than thoſe which are accompanied by itching. And thoſe again which are conjoined with a coſtive or gently open ſtate of bowels, are favourable; while thoſe accompanied by diarrhœa and vomiting are dangerous; but if, while the ſucceſſive eruptions appear, the diarrhœa ceaſes, it is favourable. Theſe exanthemata are attended by malignant ſymptoms of fever, and often by ſyncope." The firſt ſpecies, reſembling the flea-bites, (by which he probably means the meaſles) " are to be treated by blood-letting in the beginning, if nothing contra indicate that remedy; for if the eruptions be repelled inwards, they are wont to produce danger, unleſs the acrimony be carried off by vomiting or by ſtool." Hence he recommends " emollient clyſters of ptiſan, with egg, and oil of chamomile, and that the evening injection ſhould be retained all night; and likewiſe a ſpare diet, quo undique multitudo tollatur." But " at the acceſſion of the diſeaſe, on account of the violent pains at the region of the ſtomach, we order warm water to be given," he ſays, " and vomiting to be excited, by putting the finger or a feather into the throat; light cooling food, &c. &c." But in thoſe caſes where the eruptions are peſtilential and carbunculous, " we employ blood-letting at the very outſet, but not abſtinence; for faſting renders the matter more malignant, and diminiſhes the vital powers, which we ſhould ſupport in all fevers, eſpecially peſtilential ones." He then tells us, that "the ſame cerates and plaiſters, which are uſeful in burns, may be applied to the puſtules, and that thoſe on the face may be alleviated by waſhing with warm water." When they ulcerate, he recommends the application of poultices of bread, lentils, &c., boiled with honey; and at the ſame time a diet of goat's milk, to correct the morbid ſtate of the humours. After the decline of the eruption, a proper purgative is to be adminiſtered; and the cure is to be completed by an antidote of theriaca or mithridate, "which may deſtroy the poiſonous relics of the humours."

This account is applicable only to the exanthematic fevers, and eſpecially to the ſmall-pox, including meaſles and ſcarlatina; for we are acquainted with no other fevers, "occaſionally peſtilential, with eruptions over the whole body, that often ulcerate, eſpecially on the face." And it appears from the concluſion of this chapter, that Herodotus was well acquainted with the danger of the confluent, and highly red or livid forms of theſe eruptions. "Moreover," he ſays, "thoſe which are extremely red, are of the worſt kind; but thoſe which are livid, black, and tumid, like fleſh that has been dotted, are ſtill more fatal; and theſe are abundant on the face and breaſt, abdomen, ſides, and back." His advice as to the conduct of the phyſician in theſe deſperate caſes, is curious. "In ſuch inſtances it is prudent not to attempt any thing in the beginning, but to wait; for if it terminates ill, the blame will fall upon him, who endeavoured or promiſed to effect a cure; but if the diſeaſe goes on to its acme, without any increaſe of malignancy, then it ſhould not be altogether left to itſelf; a little occaſional aſſiſtance ſhould be given, medicine ſhould be adminiſtered at proper opportunities, and the cure be conducted with great vigilance. For thoſe eruptions, which ariſe from beneath in a mortifying ſtate of the ſurface, what can they denote but that the life is paſſing from within?"

It appears pretty obvious, from the preceding extracts, that the contagious exanthemata were familiarly known at Rome, at the end of the firſt century. For this is the language of obſervation and experience, and implies that the diſeaſes, thus diſtinctly deſcribed, were of ordinary occurrence; their recent appearance is not once hinted at. If we trace the accounts of theſe exanthemata, down to the ſeventeenth century, even after appropriate names had been given to them, we ſtill find a ſimilar communion of nature, origin, and treatment, aſcribed to them; and it was not till the end of the 18th century, that their peculiar characteriſtics were pointed out. The Arabians themſelves have diſtinctly deſcribed the ſcarlatina, as a variety of meaſles [ſee Haly Abbas, Theorice. lib. viii. cap. 14. where the tranſlator has diſtinguiſhed it from the *morbilli* (or ordinary meaſles) by giving it the appellation of *rubeola*, from its ſcarlet colour]; yet the diſeaſe was ſtill confounded with the meaſles, ſo late as the publication of ſir W. Watſon's paper, above referred to; ſo difficult it is to ſee with our own eyes through the veil of prejudice! Conſult Rhazes de Varioliſ et Morbillis, tranſlated by Channing. Sydenham, Obſ. Med. ſect. iv. chap. 5. Morton, de Morbis acutis, exercit. iii. Sennert. de Febribus, lib. iv. cap. 12. Diemerbroeck de Variol. et Morbill. cap. xiii. Heberden, in Med. Tranſact. vol. iii., and Commentar. cap. 63.; and Willan on Cutaneous Diſ. order iii.

MEASURE, Mensura, in *Geometry*, denotes any certain quantity aſſumed as one, or unity, to which the ratio of other homogeneous or ſimilar quantities is expreſſed.

This definition is ſomewhat more agreeable to practice than that of Euclid, who defines meaſure a quantity, which being repeated any number of times, becomes equal to another: which only anſwers to the idea of an arithmetical meaſure, or quota part.

Measure *of an Angle*, is an arc deſcribed from the vertex in any place between its legs. Hence angles are diſtinguiſhed by the ratio of the arcs, deſcribed from the vertex between the legs, to the peripheries.

Angles then are diſtinguiſhed by thoſe arcs; and the arcs are diſtinguiſhed by their ratio to the periphery. See Angle.

It is, however, in many caſes, a more ſimple and more convenient method to eſtimate angles, not by the arcs ſubtending them, but by their ſines, or the perpendicular falling from one leg to the other. Thus it is uſual, among miners, to ſay that the ground riſes or falls one foot, or one yard, in ten, when the ſine of the angle of its inclination to the horizon is one-tenth of the radius. Angles of different magnitudes are indeed proportional to the arcs, and not to the ſines, ſo that in this ſenſe the ſine is not a true meaſure of the comparative magnitude of the angle; but in making calculations, we are more frequently obliged to employ the ſine or coſine of an angle than the angle or arc itſelf. Nevertheleſs, it is eaſy to paſs from one of theſe elements to the other by means either of trigonometrical tables, or of the ſcales engraved on the ſector.

To meaſure the height of a hill, ſee Altitude, and the latter part of the article Levelling.

Measure *of a Figure*, or plane ſurface, is a ſquare, whoſe ſide is one inch, foot, yard, or ſome other determinate length.

Among geometricians, it is uſually a rod, called a *ſquare rod*, divided into ten ſquare feet, and the ſquare feet into ſquare digits. Hence ſquare meaſures. See Mensuration.

Measure *of a Line* is any right line taken at pleaſure, and conſidered as unity.

The modern geometricians uſe a decempeda, or rod, divided into ten equal parts, called feet. The feet they ſubdivide into ten digits, the digit into ten lines, &c. This decimal diviſion of the meaſure was firſt introduced by Stevinus, probably from the example of Regiomontanus. The index or character of the decempedæ he made 0, that of feet 1, of digits 2, of lines 3, &c. which, becauſe the meaſure was ſubdivided in a decuple ratio, were the logarithms of the diviſion. Bayer, in lieu of theſe, expreſſed the logarithms by the Roman characters; *v. g.* 5 perches, 4 feet, 3 digits, and 2 lines, he expreſſed thus; 5°, $4'$, $3''$, $2'''$. It is frequently moſt commodious to ſeparate the integers, or rods, from the fractions, by a point; thus, inſtead of 5, $4'$, $3''$, $2'''$, to write 5.432. F. Noel obſerves, that, among the Chineſe, the decimal diviſion obtains in their common meaſures, and even in their weights.

Measures, *Line of*. See Line.

Measure *of the Maſs*, or *quantity of matter*, in *Mechanics*, is its weight; it being apparent, that all the matter which coheres and moves with a body, gravitates with it: and it being found by experiment, that the gravities of homogeneal bodies are in proportion to their bulks: hence, while the maſs continues the ſame, the abſolute weight will be the ſame, whatever figure it put on: but, as to its ſpecific weight, it varies as the quantity of ſurface varies. See Weight.

Measure *of a Number*, in *Arithmetic*, is ſuch a number as divides another, without leaving any fraction; thus 9 is a meaſure of 27.

Measure, *Common*. See Common *Meaſure*.

Measure *of a Solid*, is a cube, whoſe ſide is one inch, foot, yard, or other determined length.

Among geometricians, it is ſometimes a rod, or perch, called a *cubic perch*; divided into cubic feet, digits, &c. Hence cubic meaſures, or meaſures of capacity. See Cube and Mensuration.

Measure *of Velocity*, in *Mechanics*, is the ſpace paſſed over by a moving body in any given time.

To meaſure a velocity, therefore, the ſpace muſt be divided into as many equal parts as the time is conceived to be divided into. The quantity of ſpace anſwering to ſuch an interval of time, is the meaſure of the velocity.

Measure, *Univerſal* and *Perpetual*, is a kind of meaſure unalterable by time, to which the meaſures of different nations and ages might be reduced, and by which they might be compared and eſtimated. Such a meaſure is very deſirable, if it could be attained. Huygens, in his Horol. Oſcill. propoſes, for this purpoſe, the length of a pendulum, vibrating ſeconds, taken from the point of ſuſpenſion to the point of oſcillation. The third part of ſuch a pendulum may be called the horary foot, and ſerve as a ſtandard to which the meaſure of all other feet may be referred. Thus, *v. g.* the proportion of the Paris foot to the horary foot would be that of 864 to 881; becauſe the length of three Paris feet is 864 half lines, and the length of a pendulum, vibrating ſeconds, contains 3 horary feet, or 3 feet 8½ lines, *i. e.* 881 half lines. But this meaſure, in order to its being univerſal, ſuppoſes, that the action of gravity is every where the ſame, which is contrary to fact; and, therefore, it would really ſerve only for places under the ſame parallel of latitude; and in order to its being perpetual, it ſuppoſes that the action of gravity continues always the ſame in the ſame place. (See Pendulum.) See alſo on the ſubject of a ſtandard of meaſures, the article Standard, under which head the different modes of aſcertaining it will be detailed and diſcuſſed.

Measure, in a legal, commercial, and popular ſenſe, denotes a certain quantity or proportion of any thing bought, ſold, valued, or the like. It denotes alſo a veſſel of capacity employed in meaſuring grain and other articles: the fourth part of a peck.

The regulation of weights and meaſures ought to be univerſally the ſame throughout the kingdom, and ſhould, therefore, be reduced to ſome fixed rule or ſtandard; the prerogative of fixing which was veſted, by our ancient law, in the crown. This ſtandard was originally kept at Wincheſter; and we find, in the laws of king Edgar, cap. 8, near a century before the Conqueſt, an injunction, that the one meaſure, which was kept at Wincheſter, ſhould be obſerved throughout the realm. With reſpect to meaſures of length, our ancient hiſtorians (Will. Malm. in Vita Hen. I. Spelm. Hen. I. apud Wilkins, 299.) inform us, that a new ſtandard of longitudinal meaſure was aſcertained by king Henry I. who commanded that the ulna, or ancient ell, which anſwers to the modern yard, ſhould be made of the exact length of his own arm: and one ſtandard of meaſures of length being once gained, all others are eaſily derived from hence; thoſe of greater length by multiplying, thoſe of leſs by ſubdividing the original ſtandard. Thus, by the ſtatute, called "Compoſitio ulnarum et perticarum," 5½ yards make a perch; and the yard is ſubdivided into 3 feet, and each foot into 12 inches; which inches will be each of the length of 3 grains of barley. The ſtandard of weights was originally taken from corns of wheat, whence the loweſt denomination of weights which we have is ſtill expreſſed by a "grain;" 32 of which are directed by the ſtatute, called "Compoſitio menſurarum," to compoſe a pennyweight, of which 20 make an ounce, 12 ounces a pound, and ſo upwards. Upon theſe principles the ſtandards were firſt made; which, being originally ſo fixed by the crown, their ſubſequent regulations have been generally made by the king in parliament. Thus, under king Richard I. in his parliament holden at Weſtminſter, A.D. 1197, it was ordained that there ſhould be only one weight and one meaſure throughout the kingdom, and that the cuſtody of the aſſiſe or ſtandard of weights and meaſures ſhould be committed to certain perſons, in every city and borough. (See Alnager.) In king John's time, this ordinance of king Richard was frequently diſpenſed with for money (Hoved. A.D. 1201); which occaſioned a proviſion to be made for inforcing it, in the great charters of king John and his ſon. Stat. 9 Hen. III. c. 25.

The ſtatute of Magna Charta, cap. 25, ordains, that there ſhall be but one meaſure throughout England, according to the ſtandard in the exchequer; which ſtandard was formerly kept in the king's palace; and in all cities, market-towns, and villages, it was kept in the churches. (4 Inſt. 273.) By 16 Car. I. cap. 19, there is to be one weight and meaſure, and one yard, according to the king's ſtandard, and whoever ſhall keep any other weight or meaſure, whereby any thing is bought or ſold, ſhall forfeit for every offence five ſhillings. And by 22 Car. II. cap. 8, water meaſure, (*viz.* five pecks to the buſhel,) as to corn or grain, or ſalt, is declared to be within the ſtatute 16 Car. I. And if any ſell grain or ſalt, &c. by any other buſhel, or meaſure, than what is agreeable to the ſtandard in the Exchequer, commonly called Wincheſter meaſure, he ſhall forfeit 40*s.* &c. (22 Car. II. c. 8. 22 and 23 Car. II. c. 12.) Notwithſtanding theſe ſtatutes, in many places and counties there are different meaſures of corn and grain; and the buſhel in one place is larger than in another; but the lawfulneſs of it is not well to be accounted for, ſince cuſtom or preſcription is not allowed to be good againſt a ſtatute. (Dalt. 250.) It is now ſettled, that no practice or uſage can countervail the ſtatutes 22 Car. II. c. 8. 22 and 23 Car. II. c. 12. above cited. 4 Term Rep. 750. 5 Term Rep. 353.

There are three different meaſures, *viz.* one for wine, one for ale and beer, and one for corn. In the meaſure of wine, 8 pints make a gallon, 8 gallons a firkin, 16 gallons a kilderkin, half barrel or rundlet, 4 firkins a barrel, 2 barrels a hogſhead, 2 hogſheads a pipe, and 2 pipes a tun. (Stat. 15 R. II. c. 4. 11 H. VII. c. 4. 12 H. VII. c. 5.) In a meaſure of corn 8 pounds or pints of wheat make the gallon, 4 gallons a peck, 4 pecks a buſhel, 4 buſhels a ſack, and 8 buſhels a quarter, &c. And in other meaſure, 3 barley corns in length make an inch, 12 inches a foot, 3 feet a yard, 3 feet and 9 inches an ell, and 5½ yards or 16½ feet, make the perch, pole, or rod. (Stat. 27 Edw. III. c. 10.) Selling by falſe meaſure, being an offence by the common law, may be puniſhed by fine, &c. upon an indictment at common law, as well as by ſtatute. See the ſtatute 11 Hen. VII. c. 4. which inflicts particular fines for offences, pillory, &c. The more eaſy and uſual mode of puniſhment is by levying, on a ſummary conviction, by diſtreſs and ſale, the forfeiture impoſed by the ſeveral acts of parliament adapted to particular frauds.

Measures are various, according to the various kinds and dimenſions of the things meaſured. Hence ariſe *lineal* or *longitudinal* meaſures for lines or lengths: *ſquare* meaſures for areas or ſuperficies: and *ſolid* or *cubic* meaſures for bodies and their capacities. All theſe again are very different in different countries, and in different ages, and even many of them for different commodities. Whence ariſe other diviſions of *domeſtic* and *foreign* meaſures, *ancient* and *modern* ones, *dry* and *liquid* meaſures, &c.

Under this head the reader will find enumerated and exhibited in tables, the various general ſtanding meaſures, long, ſquare, and cubic, now or heretofore in uſe, with their proportions and reductions: for particulars we refer to the following heads; as FOOT, DIGIT, ELL, TUN, GALLON, BUSHEL, PERCH, LEAGUE, FURLONG, &c.

MEASURES, *Aſſay of.* See ASSAY.

MEASURES, *Standard of.* See STANDARD.

The Tables of different Meaſures, extracted from various Publications, are as follow; beginning with Meaſures of Length.

TABLE I.—Scripture Long Meaſures.

								Engl. Feet	Inch. Dec.
Digit								0	0.912
4	Palm							0	3.648
12	3	Span						0	10.944
24	6	2	Cubit					1	9.888
96	24	8	4	Fathom				7	3.552
144	36	12	6	1½	Ezekiel's reed			10	11.328
192	48	16	8	2	1⅓	Arabian Pole		14	7.104
1920	480	160	80	20	13⅓	10	Scoenus, meaſuring line	145	1.104

N. B. There was another ſpan uſed in the Eaſt, equal to ¼th of a cubit.

TABLE II.—Grecian Long Meaſures reduced to Engliſh.

												Engl. Paces.	Feet.	Inch. Dec.
Dactylus, Digit												0	0	0.7554 11/16
4	Doron, Dochme, Paleſta,											0	0	3.0218¾
10	2½	Lichas										0	0	7.5546⅞
11	2¾	1 1/10	Orthodoron									0	0	8.3101 9/16
12	3	1⅕	1 1/11	Spithame								0	0	9.0656¼
16	4	1 6/10	1 5/11	1⅓	Pous foot,							0	1	0.0875
18	4½	1⅘	1 2/11	1½	1⅛	Pygme, cubit						0	1	1.5984⅜
20	5	2	1 9/11	1⅔	1¼	1 1/9	Pygon					0	1	3.109⅜
24	6	2⅖	2 2/11	2	1½	1⅓	1⅕	Pecus, cubit larger				0	1	6.13125
96	24	9⅗	8 8/11	8	6	5⅓	4⅘	4	Orgya, pace			0	6	0.525
9600	2400	960	872 8/11	800	600	533⅓	480	400	100	Stadium Aulus > furlong		100	4	4.5
76800	19200	7680	6981 9/11	6400	4800	4266⅔	3840	3200	800	8	Million, Mile	805	5	0

N. B. Two ſorts of long meaſures were uſed in Greece, *viz.* the Olympic and the Pythic. The former was uſed in Peloponneſus, Attica, Sicily, and the Greek cities in Italy. The latter was uſed in Theſſaly, Illyria, Phocis, and Thrace, and at Marſeilles in Gaul.

The Olympic foot, properly called Greek, according to	Dr. Hutton, contains	12.108 Engliſh inches,
	Folkes —	12.072
	Cavallo —	12.084
The Pythic foot, called alſo natural foot, according to	Hutton —	9.768
	Pauction —	9.731

Hence it appears, that the Olympic ſtadium is 201½ Engliſh yards, nearly; and the Pythic or Delphic ſtadium, 162½ yards, nearly; and the other meaſures in proportion.

The Phyleterian foot is the Pythic cubit, or 1½ Pythic foot. The Macedonian foot was 13.92 Engliſh inches; and the Sicilian foot of Archimedes, 8.76 Engliſh inches. See TABLE VII.

TABLE III.

TABLE III.—Jewiſh Long or Itinerary Meaſures.

						Eng. Miles.	Paces.	Feet. Dec.
Cubit						0	0	1.824
400	Stadium					0	145	4.6
2000	5	Sab. day's journey				0	729	3.0
4000	10	2	Eaſtern mile			1	403	1.0
12000	30	6	3	Paraſang		4	153	3.0
96000	240	48	24	8	A day's journey	33	172	4.0

TABLE IV.—Roman Long Meaſures reduced to Engliſh.

										Engl. Paces.	Feet.	Inch. Dec.
Digitus tranſverſus										0	0	$0.725\frac{3}{4}$
$1\frac{1}{3}$	Uncia, or Inch									0	0	0.967
4	3	Palma minor								0	0	2.901
16	12	4	Pes, or Foot							0	0	11.604
20	15	5	$1\frac{1}{4}$	Palmipes						0	1	2.505
24	18	6	$1\frac{1}{2}$	$1\frac{1}{5}$	Cubitus					0	1	5.406
40	30	10	$2\frac{1}{2}$	2	$1\frac{2}{3}$	Gradus				0	2	5.01
80	60	20	5	4	$3\frac{1}{3}$	2	Paſſus			0	4	10.02
10000	7500	2500	625	500	$416\frac{2}{3}$	250	125	Stadium		120	4	4.5
80000	60000	20000	5000	4000	$3333\frac{1}{3}$	2000	1000	8	Milliare	967	0	0

N.B. The Roman meaſures began with 6 ſcrupula = 1 ſicilicum; 8 ſcrupula = 1 duellum; $1\frac{1}{2}$ duellum = 1 ſeminaria; and 18 ſcrupula = 1 digitus. Two paſſus were equal to 1 decempeda.

TABLE V.—Proportions of ſeveral long Meaſures to each other, by M. Picard.

The Rhinland or Leyden foot (12 whereof make the Rhinland perch) ſuppoſed	696
The Engliſh foot	$675\frac{1}{2}$
The Paris foot	720
The Amſterdam foot, from that of Leyden, by Snellius	629
The Daniſh foot (two whereof make the Daniſh ell)	$701\frac{8}{10}$
The Swediſh foot	$658\frac{1}{4}$
The Bruſſels foot	$609\frac{3}{5}$
The Dantzick foot, from Hevelius's Selenographia	636
The Lyons foot, by M. Auzout	$757\frac{2}{3}$
The Bologna foot, by the ſame	843
The braccio of Florence, by the ſame, and father Merſenne	1290
The palm of the architects at Rome, according to the obſervations of Meſſrs. Picard and Auzout	$494\frac{1}{4}$
The Roman foot in the Capitol, examined by Meſſrs. Picard and Auzout	653 or $653\frac{1}{2}$
The ſame from the Greek foot	652
From the vineyard Mattei	$657\frac{1}{2}$
From the palm	$658\frac{1}{4}$
From the pavement of the Pantheon, ſuppoſed to contain 10 Roman feet	653
From a ſlip of marble in the ſame pavement, ſuppoſed to contain 3 Roman feet	650
From the pyramid of Ceſtius, ſuppoſed to contain 95 Roman feet	$653\frac{1}{2}$
From the diameters of the columns in the arch of Septimius Severus	$653\frac{1}{3}$
From a ſlip of porphyry in the pavement of the Pantheon	$653\frac{1}{3}$

See on this ſubject Phil. Tranſ. vol. li. art. 69. p. 774. For other meaſures, ſee FOOT.

Table VI.—Proportions of the long Meaſures of ſeveral Nations to the Engliſh Foot, taken from Meſſrs. Greaves, Auzout, Picard, and Eiſenchmid.

The Engliſh ſtandard foot being divided into 1000 equal parts, the other meaſures will have the proportions to it which follow:

	Feet.	Inches.
Engliſh foot - - - - - -	1000	12
Paris foot - - - - - -	1068	12.816
Venetian foot - - - -	1162	13.944
Rhinland foot - - - -	1033	12.396
Straſburg foot - - - - -	952	11.424
Norimberg foot - - - -	1000	12
Dantzick foot - - - -	944	11.328
Daniſh foot - - - -	1042	12.504
Swediſh foot - - - -	977¾	11.733
Derahor cubit of Cairo - - -	1824	21.888
Perſian ariſh - - - -	3197	38.364
Greater Turkiſh pike - - -	2200	26.4
Leſſer Turkiſh pike - - -	2131	25.572
Braccio at Florence - - -	1913	22.956
Braccio for woollen at Sienna - -	1242	14.904
Braccio for linen at Sienna - - -	1974	23.688
Canna at Naples - - - -	6880	82.56
Vera at Almeria and Gibraltar - -	2760	33.12
Palmo di Archtetti at Rome - -	7320	87.84
Fanna di Archtetti - - - -	7320	87.84
Palmo di bracchio di mercantia - -	695½	8.346
Genoa palm - - - - -	815	9.78
Bologuian foot - - - - - -	1250	15
Antwerp ell - - - - -	2283	27.396
Amſterdam ell - - - -	2268	27.216
Leyden ell - - - - -	2260	27.12
Paris draper's ell - - -	3929	47.148
Paris mercer's ell - - - -	3937	47.244

Table VII.—Ancient Meaſures taken from Folkes, Raper, Shuckburgh, Hutton, Cavallo, and others.

Arabian, foot - -	1.095	Engl. H.
Babylonian, foot -	1.144 1.135	H. H.
Druſian, foot - -	1.090	H.
Egyptian, foot -	1.421	H.
Egyptian, ſtadium -	730.8	
Greek, foot - -	1.009	H.
	1.006 1.007	Folkes, 1$\frac{1}{24}$ Roman f.
	1.007	C.
Greek, phyleterian foot	1.167	H.
Hebrew, foot - -	1.212	H.
Hebrew, cubit -	1.817	H.
Hebrew, ſacred cubit -	2.002	H.
Hebrew, great cubit = 6 common cubits.		H.
Macedonian, foot -	1.160	H.
Natural foot - -	.814	H.
Ptolemaic = Greek foot		H.
Roman, foot - -	.970	Bernard.
	.967	Picard and Greaves.
	.966 .967	Folkes.
Roman, foot - -	.970	before Titus. Raper.
	.965	after Titus. Raper.
	.9672	from rules. Sh.
	.9681	from buildings. Sh.
	.9696	from a ſtone. Sh.
	.967	H.
Roman mile of Pliny	4840.5	C.
Roman mile of Strabo	4903.	
Sicilian foot of Archimedes - -	.730	H.

The length of the Roman foot in inches is ſtated as follows:

By Bernard - - -	11.640 Engliſh inches.
By Picard and Hutton -	11.604
By Folkes - - -	11.592
By Raper (before Titus) -	11.640
By the ſame (after Titus) -	11.580
By Schuckburgh, from rules -	11.6064
By the ſame, from buildings -	11.6172
By the ſame, from a tomb-ſtone	11.6352

N.B. Hence, 11.6 Engliſh inches ſeem to be a medium; and, therefore, the Roman mile = 1611 Engliſh yards, being 149 yards leſs than the Engliſh mile. See Foot.

Table VIII.—Ancient Greek ſuperficial Meaſures.

Olympic Land Meaſure.

36 Olympic ſquare feet = 1 Hexapodon.
6 Hexapoda = 1 Hemihectos.
2 Hemihecti = 1 Hectos or Modius.
6 Modii = 1 Medimnus or Jugerum.

Hence it appears, that the Olympic jugerum was equal to 103 Engliſh perches, or nearly ⅝ths of an acre.

Pythic Land Meaſure.

1666⅔ Square cubits = 1 Hemihectos.
2 Hemihecti = 1 Modius.
6 Modii = 1 Medimnus or Jugerum.

Hence the Pythic jugerum appears to have been equal to 109 Engliſh perches, or nearly $\frac{11}{16}$ths of an acre.

N.B. The plethron, or acre, is ſaid by ſome to contain 1444, by others 10,000 ſquare feet; and aroura, the half of the plethron. The aroura of the Egyptians was the ſquare of 100 cubits.

Table IX.—Ancient Greek Corn Meaſure.

2 Xeſtes = 1 Chœnix.
4 Chœnices = 1 Hemihectos.
1½ Hemihectos = 1 Tetarlon.
2 Hemihecti = 1 Modius.
6 Modii = 1 Medimnus or Achana.

Paucton ſtates the medimnus to have been 3½ French boiſſeaux = 1.27 Engliſh buſhels, and the inferior meaſures in proportion.

TABLE X.—Attic Dry Meaſures reduced to Engliſh.

	Cochliarion	Cyathus	Oxybaphon	Cotylus	Xeſtes, ſextary	Chœnix	Pecks.	Gall.	Pints.	Sol. Inch
Cochliarion							0	0	0	$0.276\frac{7}{26}$
Cyathus	10						0	0	0	$2.763\frac{1}{2}$
Oxybaphon	15	$1\frac{1}{2}$					0	0	0	$4.144\frac{3}{4}$
Cotylus	60	6	4				0	0	0	16.579
Xeſtes, ſextary	120	12	8	2			0	0	0	33.158
Chœnix	180	18	12	3	$1\frac{1}{2}$		0	0	1	$15.705\frac{1}{4}$
Medimnus	8640	864	576	144	72	48	4	0	6.	3.501

TABLE XI.—Attic Meaſures of Capacity for Liquids, reduced to the Engliſh Wine Meaſure.

	Cochliarion	Cheme	Myſton	Concha	Cyathus	Oxybaphon	Cotylus	Xeſtes, ſextary	Chous, congius	Gall.	Pints.	Sol. Inch. Dec.
Cochliarion										0	$\frac{1}{120}$	$0.0356\frac{5}{12}$
Cheme	2									0	$\frac{1}{60}$	$0.0712\frac{5}{6}$
Myſton	$2\frac{1}{2}$	$1\frac{1}{4}$								0	$\frac{1}{48}$	$0.089\frac{11}{48}$
Concha	5	$2\frac{1}{2}$	2							0	$\frac{1}{24}$	$0.178\frac{11}{24}$
Cyathus	10	5	4	2						0	$\frac{1}{12}$	$0.356\frac{11}{21}$
Oxybaphon	15	$7\frac{1}{2}$	6	3	$1\frac{1}{2}$					0	$\frac{1}{8}$	$0.535\frac{5}{8}$
Cotylus	60	30	24	12	6	4				0	$\frac{1}{2}$	$2.141\frac{1}{2}$
Xeſtes, ſextary	120	60	48	24	12	8	2			0	1	4.283
Chous, congius	720	360	288	144	72	48	12	6		0	6	25.698
Metretes, amphora	8640	4320	3456	1728	864	576	144	7	12	10	2	19.626

Others reckon 6 choi = 1 amphoreus, and 2 amphorei = 1 keramion or metretes. The keramion is ſtated by Paucton to have been equal to 35 French pints, or $8\frac{3}{4}$ Engliſh gallons, and the other meaſures in proportion.

TABLE XII.—Meaſures of Capacity for Liquids, reduced to Engliſh Wine Meaſure.

	Ligula	Cyathus	Acetabulum	Quartarius	Hemina	Sextarius	Congius	Urna	Amphora	Gall.	Pints.	Sol. Inch. Dec.
Ligula										0	$\frac{1}{48}$	$0.117\frac{5}{12}$
Cyathus	4									0	$\frac{1}{12}$	$0.469\frac{2}{3}$
Acetabulum	6	$1\frac{1}{2}$								0	$\frac{1}{8}$	$0.704\frac{1}{2}$
Quartarius	12	3	2							0	$\frac{1}{4}$	1.409
Hemina	24	6	4	2						0	$\frac{1}{2}$	2.818
Sextarius	48	12	8	4	2					0	1	5.636
Congius	288	72	48	24	12	6				0	7	4.942
Urna	1152	288	192	96	48	24	4			3	$4\frac{1}{2}$	5.33
Amphora	2304	576	384	192	96	48	8	2		7	1	10.66
Culeus	46080	11520	7680	3840	1920	960	160	40	20	143	3	11.095

Table XIII.—Jewiſh Dry Meaſures reduced to Engliſh.

							Pecks.	Gall.	Pints.	Sol. Inch.
Gachal							0	0	01$\frac{17}{20}$	0.031
20	Cab						0	0	$2\frac{5}{6}$	0.073
36	$1\frac{4}{5}$	Gomor					0	0	$5\frac{1}{10}$	1.211
120	6	$3\frac{1}{3}$	Seah				1	0	1	4.036
360	18	10	3	Epha			3	0	3	12.107
1800	90	50	15	5	Letteeh		16	0	0	26.500
3600	180	100	30	10	2	Chomer, coron	32	0	1	18.969

Table XIV.—Jewiſh Meaſures of Capacity for Liquids, reduced to Engliſh Wine Meaſure.

							Gall.	Pints.	Sol. Inch.
Caph							0	$\frac{5}{8}$	0.177
$1\frac{1}{3}$	Log						0	$\frac{5}{6}$	0.211
$5\frac{1}{3}$	4	Cab					0	$3\frac{1}{3}$	0.844
16	12	3	Hin				1	2	2.533
32	24	6	2	Seah			2	4	5.067
96	72	18	6	3	Bath, epha		7	4	15.2
960	720	180	60	30	10	Coron, chomer	75	5	7.625

Table XV.—Ancient Roman Land Meaſure.

100 Square Roman feet - - - = 1 Scrupulum of land
4 Scrupula - - - - - = 1 Sextulus
$1\frac{1}{5}$ Sextulus - - - - - = 1 Actus
6 Sextuli or 5 Actus - - - = 1 Uncia of land
6 Unciæ - - - - - = 1 Square Actus
2 Square Actus - - - - = 1 Jugerum
2 Jugera - - - - - = 1 Heredium
100 Heredia - - - - - = 1 Centuria

N. B. The actus was a ſlip of ground four Roman feet broad, and 120 long. The jugerum or acre was conſidered as an integer, and divided, like the libra or as, in the following manner:

	Unciæ	Square Feet.	Jugerum contained Scrup.	Eng. Roods.	Sq. Pol.	Sq. Feet.
1 As	12 As	28800	288	2	18	250.05
$\frac{11}{12}$ Deunx	11 Deunx	26400	264	2	10	183.85
$\frac{5}{6}$ Dextans	10 Dextans	24000	240	2	2	117.64
$\frac{3}{4}$ Dodrans	9 Dodrans	21600	216	1	34	51.42
$\frac{2}{3}$ Bes	8 Bes	19200	192	1	25	257.46
$\frac{7}{12}$ Septunx	7 Septunx	16800	168	1	17	191.25
$\frac{1}{2}$ Semis	6 Semis	14400	144	1	9	125.03
$\frac{5}{12}$ Quincunx	5 Quincunx	12000	120	1	1	58.82
$\frac{1}{3}$ Triens	4 Triens	9600	96	0	32	264.85
$\frac{1}{4}$ Quadrans	3 Quadrans	7200	72	0	24	198.64
$\frac{1}{6}$ Sextans	2 Sextans	4800	48	0	16	132.43
$\frac{1}{12}$ Uncia	1 Uncia	2400	24	0	8	66.21

N. B. If we take the Roman foot at 11.6 Engliſh inches (ſee Table VII.), the Roman jugerum was 5980 Engliſh ſquare yards, or 1 acre $37\frac{1}{2}$ perches.

Table XVI.—Roman Dry Meaſures reduced to Engliſh.

							Peck.	Gall.	Pints.	Sol. Inch. Dec.
Ligula							0	0	$0\frac{1}{48}$	0.01
4	Cyathus						0	0	$0\frac{1}{12}$	0.04
6	$1\frac{1}{2}$	Acetabulum					0	0	$0\frac{1}{8}$	0.06
24	6	4	Hemina or Trutta				0	0	$0\frac{1}{2}$	0.24
48	12	8	2	Sextarius			0	0	1	0.48
384	96	64	16	8	Semi d.		0	1	0	3.84
768	192	108	32	16	2	Modius	1	0	0	7.68

Table XVII.—Ancient Roman Liquid Meaſures.

6 Sextarii - - - = 1 Congius
4 Congii - - - - = 1 Urna
2 Urnæ - - - - = 1 Amphora
20 Amphoræ - - - = 1 Dolium.

N. B. The ſextarius and its diviſions were uſed as in the preceding table. If the ſextarius be, as above ſuppoſed, = 36.94 Engliſh cubic inches, the amphora will be = $7\frac{2}{3}$ Engliſh gallons, and the dolium = $153\frac{1}{3}$ Engliſh gallons.

The principal modern meaſures will be found either in the following tables, or under the names of the countries and towns in which they are uſed, or under their own appropriate titles.

Table XVIII.—Engliſh Long Meaſures, or Meaſures of Application.

Barley-corn											
3	Inch										
9	3	Palm									
27	9	3	Span								
36	12	4	$1\frac{1}{3}$	Foot							
54	18	6	2	$1\frac{1}{2}$	Cubit						
108	36	12	4	3	2	Yard					
180	60	20	$6\frac{2}{3}$	5	$3\frac{1}{3}$	$1\frac{2}{3}$	Pace				
216	72	24	8	6	4	2	$1\frac{1}{5}$	Fathom			
594	198	66	22	$16\frac{1}{2}$	11	$5\frac{1}{2}$	$3\frac{3}{10}$	$2\frac{3}{4}$	Pole, or Rod		
23760	7920	2640	880	660	440	220	132	110	40	Furlong	
190080	63360	21120	7040	5280	3520	1760	1056	880	320	8	Mile

N. B. To the above meaſures we may add a link = 7.92 inches, a chain = 792, a nail of cloth = $2\frac{1}{4}$, a quarter = 9, an ell = 45, and a hand = 4 inches.

Table XIX.—Scotch Long Meaſures.

An Ell - - - - = 37.2 Engliſh inches.
A Fall - - - - = 223.2
A Furlong - - - - = 8928
A Mile - - - - = 71424
A Link - - - - = 8.928
A Chain, or Short Rood - - = 892.8
A Long Rood - - - = 1339.2

MEASURES.

Table XX.—Engliſh Square or Superficial Meaſures.

Inches						
144	Feet					
1296	9	Yards				
3600	25	2$\frac{7}{9}$	Paces			
39204	272¼	30¼	10.89	Poles		
1568160	10890	1210	435.6	40	Rood	
6272640	43560	4840	1743.6	160	4	Acre

N. B. Engliſh ſquare or ſuperficial meaſures are raiſed from the yard of 36 inches, multiplied into itſelf; and this producing 1296 ſquare inches in the ſquare yard, the diviſions of this are ſquare feet and inches; and the multiples, poles, roods, and acres, as in the table. The Scotch acre is 55353.6 ſquare feet Engliſh, or 1.27 Engliſh acre. See Acre.

Table XXI.—Engliſh Dry or Corn Meaſures.

Solid Inches									
34$\frac{1}{12}$	Pint								
272¼	8	Gallon							
544½	16	2	Peck						
2178	64	8	4	Wincheſter Buſhel					
	128	16	8	2	Strike				
	265	32	16	4	2	Carnock or coom			
17424	512	64	32	8	4	2	Seam or quarter		
	3072	384	192	48	24	12	6	Weigh	
	5120	640	320	80	40	20	10	1⅔	Laſt

But if the corn gallon contain only 268.8 ſolid inches, the meaſures will be as follows:

Solid inches				
268.8	Gallon			
537.6	2	Peck		
2150.42	8	4	Wincheſter buſhel *	
17203.36	64	32	8	Quarter

According to this eſtimate of the corn gallon, the pint will be 33.6 ſolid or cubic inches, a quart = 67.2, a pottle = 134 4.

* A heaped buſhel is one-third more.

N. B. Some make five quarters a weigh or load, and two weighs a laſt of wheat; and others reckon ten quarters to the weigh, and twelve weighs to the laſt. A buſhel of wheat, at a mean, weighs 60 pounds, of barley 50, of oats 38; a chaldron of coals is 36 heaped buſhels, weighing about 2988 pounds. See Chaldron.

Engliſh dry or corn meaſures are raiſed from the Wincheſter gallon, which contains 272¼ ſolid inches, and is to hold of pure running or rain-water, nine pounds, thirteen ounces. This ſeems to ſtand on the foot of the old wine gallon, of 224 cubic inches; 12 being to $14\frac{12}{20}$, as 224 to 272¼. Yet by act of parliament, made 1697, it is decreed, that a round buſhel, eighteen inches and a half wide, and eight deep, is a legal Wincheſter buſhel. But ſuch a veſſel will only hold 2150.42 cubic inches: and conſequently the gallon will contain 268 cubic inches. The diviſions and multiples are in the preceding table.

TABLE XXII.—Engliſh Meaſures of Capacity of Liquids.

Wine Meaſure.

Solid or Cubic Inches.

28.875	Pint								
231	8	Gallon							
4158	144	18	Rundlet						
7276.5	252	31½	1¾	Barrel					
9702	336	42	2⅓	1⅓	Tierce				
14553	504	63	3½	2	1½	Hogſhead			
19404	672	84	4⅔	2⅔	2	1⅓	Puncheon		
29106	1008	126	7	4	3	2	1½	Butt or Pipe	
58212	2016	252	14	8	6	4	3	2	Tun

Ale Meaſure.

Solid Inches.

35.25	Pint					
282	8	Gallon				
2256	64	8	Firkin			
4512	128	16	2	Kilderkin		
9024	256	32	4	2	Barrel	
13536	384	48	6	3	1½	Hogſhead

Beer Meaſure.

Solid Inches.

35.25	Pint						
282	8	Gallon					
2538	72	9	Firkin				
5076	144	18	2	Kilderkin			
10152	288	36	4	2	Barrel		
15228	432	54	6	3	1½	Hogſhead	
30456	864	108	12	6	3	2	Butt

Engliſh liquid meaſures were originally raiſed from troy weight; it being enacted by ſeveral ſtatutes that eight pounds troy of wheat, gathered from the middle of the ear, and well dried, ſhould weigh a gallon of wine meaſure; the diviſions and multiples whereof were to form the other meaſures: at the ſame time it was alſo ordered, that there ſhould be but one liquid meaſure in the kingdom; yet cuſtom has prevailed; and there having been introduced a new weight, *viz.* the avoirdupois, we have now a ſecond ſtandard gallon adjuſted thereto, and therefore exceeding the former in the proportion of the avoirdupois weight to troy weight. From this latter ſtandard are raiſed two ſeveral meaſures, the one for ale, the other for beer. For the method of reducing one into the other, ſee WEIGHT.

The ſealed gallon at Guildhall, which is the ſtandard for wines, ſpirits, oils, &c. is ſuppoſed to contain 231 cubic inches; and, on this ſuppoſition, the other meaſures raiſed therefrom will contain as in the preceding tables; yet, by actual experiment made in 1688, before the lord mayor and the commiſſioners of exciſe, this gallon was only found to contain 224 cubic inches; it was however agreed to continue the common ſuppoſed contents of 231 cubic inches; ſo that all computations ſtand on their old footing. Hence, as 12 is to 231, ſo is $14\frac{12}{20}$ to $281\frac{1}{2}$, the cubic inches in the ale gallon: but in effect the ale quart contains $70\frac{1}{2}$ cubic inches; on which principle the ale and beer gallon will be 282 cubic inches. See on this ſubject Phil. Tranſ. vol. xlvi. art. 15. p. 54.

The ſeveral diviſions and multiples of theſe meaſures and their proportions, are exhibited in the preceding tables.

It is conjectured, that ſome centuries before the conqueſt, a cubic foot of water weighing 1000 ounces, 32 cubic feet weighed 2000 pounds, or a ton; that the ſame quantity was a ton of liquids, and a hogſhead eight cubic feet, or 13824 cubic inches, one ſixty-third of which was 219.4 inches, or a gallon. A quarter of wheat was a quarter of a ton, weighing about 500 pounds, a buſhel one-eighth of this, equivalent to a cubic foot of water. A chaldron of coals was a ton, and weighed 2000 pounds. (Barlow, Phil. Tranſ. for 1740.) At preſent 12 wine gallons of diſtilled water weigh exactly 100 pounds avoirdupois.

Whereas it has been thought expedient that the quantities to be returned as and for a barrel of beer or ale brewed by the common brewer and the allowances for waſte ſhould be in all places the ſame, it is enacted that after the 5th day of July, 1803, every thirty-ſix gallons of beer or ale brewed by the common brewers in Great Britain, whether within the weekly bills of mortality or without the ſame, taken according to the ſtandard of the ale-quart, four thereof to the gallon in the exchequer, ſhall be reckoned and returned by the guager or other officer of exciſe for a barrel of beer or ale; and the allowances to be made in Great Britain to the common brewer not ſelling beer ale or worts in any leſs quantity than the whole caſk, containing $4\frac{1}{2}$ gallons, whether within or without the ſaid limits, for waſte by fillings and leakage, or otherwiſe, out of the returns by the gagers or other officers, ſhall be three barrels upon every thirty-ſix barrels, both of ſtrong beer, or table beer and ale, and after that rate for any greater or leſs quantity. 43 Geo. III. c. 69.

TABLE XXIII.—Scotch Meaſures of Capacity of Liquids.

A Gill is - -	6.462 Engliſh cubic inches.
A Mutchkin -	25.85
A Choppin -	51.7
A Pint - -	103.4
A Quart - -	206.8
A Gallon -	827.23
A Hogſhead -	13235.7, or 16 gallons.

N.B. By the Act of Union, twelve Scotch gallons are reckoned equal to an Engliſh barrel, or 9588 cubic inches, inſtead of 9927.

A lippie or feed is 200.345 cubic inches.

TABLE XXIV.—French Meaſures, according to the Old Syſtem before the Revolution.

A Point is - - - -	.0148025 Engliſh inch, or nearly $\frac{2}{135}$.
A Line - - - - -	.088815, or nearly $\frac{8}{90}$.
An Inch or Pouce - - -	1.06578, or $\frac{1}{.93825}$, or $\frac{81}{76}$.
A Foot - - - - -	12.78933
An Ell or Aune - - -	46.8947, or 44 French inches, or according to Vega, 43.9
A Sonde - - - - -	63.9967, or 5 French feet, about $\frac{8}{9}$ Engliſh fathom.
A Toiſe or Fathom - - -	76.7360, or 6 French feet; formerly 76.71, Phil. Tranſ. for 1742.
A Perche - - - -	230.2080, or 18 French feet.
A Perche, meſure royale - - - -	22 French feet.
A League - - - - - - -	2282 toiſes, or $\frac{1}{25}$ of a degree.
A Square Inch - - - -	1.13582 Engliſh ſquare inches.
An Arpent - - - - - -	100 ſquare perches, about $\frac{5}{6}$ acre Engliſh, uſed near Paris.
An Arpent, meſure royale - - - - -	about $1\frac{1}{4}$ Engliſh acre.
A Cubic Inch - - - -	1.21063 cubic inches Engliſh.
A Litron - - - -	65.34
A Boiſſeau - - - -	1045.44, or 16 litrons.
A Minot - - - -	2090.875, or 3 boiſſeaux, nearly an Engliſh buſhel.
A Mine - - - - -	4181.75, or 2 minots.
A Septier - - - -	8363.5, or 2 mines, or 6912 inches French.
- - - - - - - -	double for oats.
A Muid - - - - -	100362, or 12 ſeptiers.

N.B. A ton of ſhipping contains 42 cubic feet. The aune or ell of Paris varies, being for ſilk ſtuffs 527.5 lines, or $46\frac{17}{20}$ Engliſh inches; for woollens, 526.4 French lines, or $46\frac{3}{4}$ Engliſh inches; for linens, 524 French lines, or $46\frac{11}{20}$ Engliſh inches; and it varies ſtill more in other parts of France. The perch, which determines the meaſure of the acre, varies in different parts of the country: but the arpent of wood-land is every where the ſame, the perch being 22 feet long; and this arpent contains 48,400 French ſquare feet, or 6108 Eng. ſquare yards, or one acre, one rood, one perch. The arpent for cultivated land, in the vicinity of Paris, contains 900 ſquare toiſes, or 4088 Engliſh yards, ſo that 43 ſuch arpents are equal to 38 Engliſh acres nearly.

Table XXV.—French Meaſures, according to the New Syſtem, with the amended Nomenclature of Dr. Young.

Meaſures of Length.

	Engliſh Inches.
Millimetre - - - -	.03937
Centimetre - - - -	.39371
Decimetre - - - -	3.93710
Metre - - - -	39.37100, or 3.281 feet, or 1.09364 yds. or nearly 1 y. 1½ nail, or 443.2959 French lines, or .513074 toiſe.
Decametre - - -	393.71000, or 10 yards, 2 feet, 9.7 inches.
Hecatometre - - -	3937.10000, or 100 yards, 1 foot, 1 inch.
Chiliometre - -	39371.00000, or 4 furl. 213 yards, 1 foot, 10.2 inches: ſo that 8 chiliometres are nearly 5 miles.
Myriometre - - -	393710.0000, or 6 miles, 1 furl. 136 yds. 0 f. 6 inch.

N. B. An inch is .0354 metres; 2441 inches 62 metres, 1000 feet nearly 305 metres.

Superficial or Square Meaſures.

Are, a ſquare decametre, is -	3.95 Eng. perches, or 119.6046 ſquare yards.
Decare - - - -	1196.0460 ſquare yards.
Hecatare - - -	11960.4600 ſquare yards, or 2 acres, 1 rood, 35.4 perches.

Meaſures of Capacity.

	Cubic Inches Engliſh.
Millilitre - - - -	.06103
Centilitre - - - -	.61028
Decilitre - - - -	6.10280
Litre, a cubic decimetre - -	61.02800, or 2.113 wine pints.
Decalitre - - - -	610.28000, or 2.64 wine gallons.
Hecatolitre - - -	6102.80000, or 3.5317 cubic feet, or 26.4 wine gallons.
Chiliolitre - - -	61028.00000, or 35.3170 cubic feet, or 1 tun, 12 wine gallons.
Myriolitre - - -	610280.00000, or 353.1700 cubic feet.

Solid Meaſure.

	Cubic Feet.
Deciſtre, for fire wood -	3.5317
Stere, a cubic metre -	35.3170
Decaſtere - - -	353.1700

N. B. In order to expreſs decimal proportions in this new ſyſtem, the following terms have been adopted. The term *Deca* prefixed denotes 10 times; *Heca*, 100 times; *Chilo*, 1000 times; and *Myrio*, 10,000 times. On the other hand, *Deci* expreſſes the 10th part; *Centi*, the 100dth part; and *Milli*, the 1000dth part: ſo that *Decametre* ſignifies 10 metres; and a *Decimetre*, the 10th part of a metre, &c. &c. The *Metre* is the element of long meaſures; *Are*, that of ſquare meaſures; *Stere*, that of ſolid meaſures: the *Litre* is the element of all meaſures of capacity; and the *Gramme*, which is the weight of a cubic centimetre of diſtilled water, is the element for all weights. (See Weight.) For the principle on which this ſyſtem of meaſures is founded, ſee Standard. See Dr. Young's Philoſ. vol. ii. Kelly's Un. Cambiſt. vol. ii.

Table XXVI.—Modern Meaſures of various Countries compared with thoſe of England.

Altdorf, foot - -	.775	Engl. H.
Amſterdam, foot - -	.927	H.
	.930	C.
	.931	Howard.
Amſterdam, ell - -	2.233	C.
Ancona, foot - -	1.282	H.
Antwerp, foot - -	.940	H.
Aquileia, foot - -	1.128	H.
Arles, foot - -	.888	H.
Augſburg, foot - -	.972	H.
Avignon = Arles.		
Barcelona, foot - -	.992	H.
Baſle, foot - -	.944	H.
Bavarian, foot - -	.968	Beigel. See Munich.
Bergamo, foot - -	1.431	H.
Berlin, foot - -	.992	H.
Bern, foot - -	.962	Howard.
Beſançon, foot - -	1.015	H.
Bologna, foot - -	1.244	H.
	1.250	C.
Bourg en Breſſe, foot -	1.030	H.
Brabant, ell, in Germany	2.268	V.
Bremen, foot - -	.955	H.
Breſcia, foot - -	1.560	H.
Breſcian, braccio - -	2.092	C.
Breſlau, foot - -	1.125	H.
Bruges, foot - -	.749	H.
Bruſſels, foot - -	.902	H.
	.954	V.
Bruſſels, greater ell -	2.278	V.
Bruſſels, leſſer ell - -	2.245	V.
Caſtilian, vara - -	2.746	C.
Chambery, foot - -	1.107	H.
China, mathematical foot	1.127	H.
China, imperial foot -	1.051	H.
	1.050	C.
Chineſe, li - -	606.	C.
Cologne, foot - -	.903	H.
Conſtantinople, foot -	2.195 1.165	H.
Copenhagen, foot - -	1.049	H.
Cracau, foot - -	1.169	H. V.
Cracau, greater ell - -	2.024	V.
Cracau, ſmaller ell - -	1.855	V.
Dantzic, foot - -	.923	H.
Dauphiné, foot - -	1.119	H.
Delft, foot - -	.547	H.
Denmark, foot - -	1.047	H.

Dijon, foot	1.030	H.
Dordrecht, foot	.771	H.
Dreſden, foot	.929	Wolfe, Ph. Tr. 1769 V.
Dreſden, ell = 2 feet	1.857	V.
Ferrara, foot	1.317	H.
Florence, foot	.995	H.
Florence, braccio	1.900 1.910	C.
Franche Comté, foot	1.172	H.
Frankfort = Hamburg		H.
Genoa, palm	.812	H.
	.800 .817	C.
Genoa, canna	7.300	C.
Geneva, foot	1.919	H.
Grenoble = Dauphiné		H.
Haarlem, foot	.937	H.
Halle, foot	.977	H.
Hamburg, foot	.933	H.
Heidelberg, foot	.903	H.
Inſpruck, foot	1.101	H.
Leghorn, foot	.992	H.
Leipzig, foot	1.034	H.
Leipzig, ell	1.833	H. Journ. R. I.
Leyden, foot	1.023	H.
Liege, foot	.944	H.
Liſbon, foot	.952	H.
Lucca, braccio	1.958	C.
Lyons = Dauphiné.		
Madrid, foot	915	H.
	.918	Howard.
Madrid, vara	3.263	C.
Maeſtricht, foot	.916	H.
Malta, palm	.915	H,
Mantua, braſſo	1.521	H.
Mantuan, braccio = Breſcian		C.
Marſeilles, foot	.814	H.
Mechlin, foot	.753	H.
Mentz, foot	.988	H.
Milan, decimal foot	.855	H.
Milan, aliprand foot	1.426	H.
Milaneſe, braccio	1.725	C.
Modena, foot	2.081	H.
Monaco, foot	.771	H.
Montpelier, pan	.777	H.
Moravian, foot	.971	V.
Moravian, ell	2.594	V.
Moſcow, foot	.928	H.
Munich, foot	.947	H.
Naples, palm	.861	H.
	.859	C.
Naples, canna	6.908	C.
Nuremberg, town foot	.996	H.
	.997	V.
Nuremberg, country foot	.907	H.
Nuremberg, artillery foot	.961	V.
Nuremberg, ell	2.166	V.
Padua, foot	1.406	H.
Palermo, foot	.747	H.
Paris, foot	1.066	H.
Paris, metre	3.281	Y.
Parma, foot	1.869	H.
Parmeſan, braccio	2.242	C.
Pavia, foot	1.540	H.
Placentia = Parma		C.
Prague, foot	.987	H.
	.972	V.
Prague, ell	1.948	V.
Provence = Marſeilles.		
Rhinland, foot	(†1.023	H.)
	1.030	V. Eytelwein.
Riga = Hamburg.		
Rome, palm	.733	H.
Rome, foot	.966	Folkes
Rome, deto, $\frac{1}{16}$ f.	.0604	F.
Rome, oncia, $\frac{1}{12}$ f.	.0805	F.
Rome, palmo	.2515	F.
Rome, palmo di architettura	.7325	F.
Rome, canna di architettura	7.325	F.
Rome, ſtaiolo	4.212	F.
Rome, canna dei mercanti	6.5365	F. 8 palms.
Rome, braccio dei mercanti	2.7876	F. 4 palms.
	2.856	C.
Rome, braccio di teſſitor di tela	2.0868	F.
Rome, braccio di architettura	2.561	C.
Rouen = Paris		H.
Ruſſian, archine	2.3625	C.
Ruſſian, arſchin	2.3333	Ph. M. XIX.
Ruſſian, verſchock, $\frac{1}{16}$ arſchin	.1458	
Savoy = Chambery		H.
Seville = Barcelona		H.
Seville, vara	2.760	C.
Sienna, foot	1.239	H.
Stettin, foot	1.224	H.
Stockholm, foot	1.073	H.
Stockholm, foot	(.974	Celſius Ph. Tr.)
Straſburg, town foot	.956	H.
Straſburg, country foot	.969	H.
Toledo Madrid		H.
Trent, foot	1.201	H.
Trieſte, ell for woollens	2 220	H.
Trieſte, ell for ſilk	2.107	H.
Turin, foot	1.676	H.
	1.681	C.
Turin, ras	1.958	C.
Turin, trabuco	10.085	C.
Tyrol, foot	1.096	V.
Tyrol, ell	2.639	V.
Valladolid, foot	.908	H.
Venice, foot	1.137	H.
	1.140	Bernard, Howard, V.
	1.167	C.
Venice, braccio of ſilk	2.108	C.
Venice, ell	2.089	V.
Venice, braccio of cloth	2.250	C.
Verona, foot	1.117	H.
Vicenza, foot	1.136	H.
Vienna, foot	1.036	H.
	1.037	Howard, C. V.
Vienna, ell	2.557	V.
Vienna, poſt mile	24888.	V.
Vienne in Dauphiné, foot	1.058	H.
Ulm, foot	.826	H.
Urbino, foot	1.162	H.
Utrecht, foot	.741	H.
Warſaw, foot	1.169	H.
Weſel = Dordrecht		H.
Zurich, foot	.979	H.
	.984	Ph. M. VIII. 289.

N. B. The preceding table has been formed by Dr. Young from the authorities of Folkes, Vega, Hutton, Cavallo, and others.

TABLE XXVII.—A Compariſon of the Foot, and other Meaſures of Length in different Countries; namely, the Number of Feet, &c. of each Place, correſponding to 100 Engliſh Feet; and alſo the Length of a ſingle Meaſure of each denomination in Engliſh Inches, and Hundredths of an Inch.

		Number of each equal to 100 Engliſh Feet.	Length of a ſingle Meaſure of each Sort.
			E. Inches.
Aix la Chapelle	Feet	105.18	11.41
Amſterdam	ditto	107.62	11.15
Anſpach	ditto	102.38	11.72
Ancona	ditto	78.02	15.38
Antwerp	ditto	106.76	11.24
Aquileia	ditto	88.69	13.53
Augſburg	ditto	103	11.65
Baſil	ditto	102.22	11.74
Bavaria	ditto	105.08	11.42
Bergamo	ditto	69.89	17.17
Berlin	ditto	98.44	12.19
Bern	ditto	103.98	11.54
Bologna	ditto	80.05	14.99
Bremen	ditto	105.45	11.38
Breſcia	Bracci	64.10	18.72
Breſlaw	Feet	107.24	11.19
Brunſwick	ditto	106.85	11.23
Bruſſels	ditto	104.80	11.45
Cadiz	(See Spain.)		
Cagliari	Palmi	150.52	7.97
Calemberg	Feet	104.34	11.50
Carrara	Palmi	125	9.60
Caſtile	(See Spain.)		
Chamberry	Feet	90.36	13.28
China	Mathematical Feet	91.46	13.12
	Builders' ditto	94.41	12.71
	Tradeſmen's ditto	90.08	13.32
	Land Survey. do.	95.39	12.58
Cleves	Feet	103.18	11.63
Cologne	ditto	110.80	10.83
Copenhagen	Legal Feet	97.17	12.35
	Fathoms	16.20	74.10
	Ruthes	9.71	123.50
Cracow	Feet	85.53	14.03
Dantzic	ditto	106.28	11.29
	Ruthes	7.08	169.35
Dordrecht	Feet	84.74	14.16
Dreſden	ditto	107.62	11.14
Embden	ditto	102.92	11.66
England	ditto	100	12
	Yards	33.33	36
	Poles	6.06	198
Ferrara	Feet	75.95	15.80
	Pertiche	11.11	108
Florence	Builders' Bracci	55.55	21.60
France	Pieds de Roi	93.89	12.78
	Toiſes	15.65	76.68
	Metres	30.48	39.37
Francfort	Feet	106.48	11.27
Geneva	ditto	62.50	19.20
Genoa	Palmi	123.45	9.72
Gottingen	Feet	104.80	11.45
Gotha	ditto	106	11.32
Groningen	ditto	104.44	11.49
Hamburgh	Feet	106.28	11.29
	Rhineland ditto	97.17	12.35
	Clafters	17.71	67.74
	Maſch Ruthes	7.59	158.06
	Geeſt ditto	6.64	180.64
	Rhineland ditto	8.10	148.20
Hanover	Feet	104.80	11.45
	Ruthes	6.50	183.20
Harlem	Feet	106.67	11.25
Heidelberg	ditto	109.48	10.96
Hildeſheim	ditto	108.60	11.05
Holſtein	(See Copenhagen.)		
Inſpruck	Feet	96	12.50
Konigſberg	ditto	99.09	12.11
Leghorn	(See Florence.)		
Leipſic	Common Feet	108.01	11.11
	Builders' ditto	107.81	11.13
Leyden	ditto	97.24	12.34
Liege	ditto	106	11.32
Lindau	Common Feet	105.26	11.40
	Long ditto	96.77	12.40
Liſbon	Feet	92.78	12.96
	Palmi	139.17	8.64
Lorraine	Feet	106.20	11.30
Lubec	ditto	104.80	11.45
	Ruthes	6.55	183.20
Luneburg	Feet	104.80	11.45
Madrid	(See Spain.)		
Magdeburg	Feet	107.52	11.16
Malta	ditto	107.43	11.17
Manheim	ditto	105.39	11.41
Mantua	Bracci	65.75	18.25
Maſtricht	Feet	108.60	11.05
Mecklenburg	(See Hanover.)		
Mentz	Feet	101.26	11.85
Middleburg	ditto	101.61	11.81
Milan	ditto	76.82	15.62
	Bracci	62.34	19.25
Monaco	Feet	129.73	9.25
Moſcow	ditto	91.12	13.17
Naples	Palmi	115.62	10.38
Neufchatel	Feet	101.61	11.81
Nuremberg	ditto	100.34	11.96
Oldenburg	ditto	103	11.65
Oſnaburg	ditto	109.09	11
Padua	ditto	86.15	13.93
Palermo	Palmi	125.93	9.53
Paris	(See France.)		
Parma	Surveyors' Bracci	56.23	21.34
Pavia	ditto	65.57	18.30
Perſia	Ariſh	31.36	38.27
Pomerania	Feet	104.34	11.50
Portugal	(See Liſbon.)		
Prague	Feet	101	11.88

		Number of each equal to 100 Engliſh Feet.	Length of a ſingle Meaſure of each Sort.
			E.Inches.
Ratiſbon	(See Bavaria.)		
Ratzburg	Feet	104.80	11.45
Revel	ditto	113.96	10.53
Reggio	Bracci	57.55	20.85
Rhineland	Feet	97.17	12.35
Riga	ditto	111.21	10.79
Rimini	Bracci	56.10	21.39
Rome	Feet	103.45	11.60
	Builders' Canne	13.65	87.92
	Palmi	136.49	8.79
Roſtock	Feet	105.45	11.38
Rotterdam	(See Rhineland.)		
Ruſſia	Arſheens	42.86	28
	Saſhes	14.28	84
	Feet	87.27	13.75
Sardinia	Palmi	122.70	9.78
Savoy	(See Chamberry.)		
Sienna	Feet	80.75	14.86
Sicily	(See Palermo.)		
Sileſia	Ruthes	7.06	170
Spain	Feet	107.91	11.12
	Toeſas	17.98	66.72
	Palmos	143.88	8.34
Stade	Feet	104.80	11.45
Stettin	ditto	107.91	11.12
Stockholm	(See Sweden.)		
Straſburg	Feet	105.35	11.39
	Land ditto	103.28	11.62
	(See alſo France.)		
Stutgard	(See Wurtemberg.)		
Sweden	Feet	102.66	11.69
	Fathoms	17.11	70.14
	Rods	6.43	187.04
Trent	Feet	83.28	14.41
Turin	ditto	94.34	12.72
Ulm	ditto	105.35	11.39
Utrecht	ditto	111.82	10.74
Venice	ditto	87.72	13.40
Verona	ditto	89.55	13.68
Vicenza	ditto	88.04	13.63
Vienna	ditto	96.39	12.45
Warſaw	ditto	85.53	14.03
Wiſmar	ditto	103.63	11.58
Wurtemberg	ditto	104.80	11.45
Zell	(See Hanover.)		
Ziriczee	ditto	98.28	12.21
Zurich	Feet	101.60	11.81
	Ruthes	10.16	118.10
	Fathoms	16.32	73.50

Table XXVIII.—A Compariſon of the Itinerary Meaſures of different Countries, exhibiting the Number of each, anſwering to 100 Engliſh Miles; alſo the Length of a ſingle Meaſure of each Sort, in Engliſh Yards.

		Number of each equal to 100 En. Miles.	Length of a ſingle Meaſure of each Sort.
			Eng.Yards
Arabia	Miles	81.93	2148
Bohemia	ditto	17.36	10137
Brabant	ditto	28.93	6082
Burgundy	ditto	28.46	6183
China	Lis	279.80	629
Denmark	Miles	21.35	8244
England	ditto	100	1760
	ditto geographical	86.91	2025
Flanders	Miles	25.62	6869
France	Leagues, Aſtronomical	36.21	4860
	ditto Marine	28.97	6075
	ditto legal of 2000 Toiſes.	41.28	4263
Germany	Miles, geograph.	21.72	8101
	ditto, Long	17.38	10126
	ditto, Short	25.66	6859
Hamburgh	Miles	21.35	8244
Hanover	ditto	15.23	11559
Heſſe	ditto	16.68	10547
Holland	ditto	27.52	6395
Hungary	ditto	19.31	9113
Ireland	ditto	57.93	3038
Italy	ditto	86.91	2025
Lithuania	ditto	18	9781
Oldenburgh	ditto	16.26	10820
Poland	Miles, Short	28.97	6075
	ditto, Long	21.72	8101
Portugal	Legoas	26.03	6760
Pruſſia	Miles	20.78	8468
Rome	Ancient Miles of 8 Stadia	109.18	1612
	Modern Miles	86.91	2025
Ruſſia	Verſts	150.81	1167
Saxony	Miles	17.76	9905
Scotland	ditto	88.70	1984
Sileſia	ditto	27.67	7083
Spain	Leguas common of 8000 Varas	23.73	7416
	ditto Legal, of 5000 Varas	37.97	4635
Swabia	Miles	17.38	10126
Sweden	ditto	15.04	11700
Switzerland	ditto	19.23	9153
Turkey	Berries	96.38	1826
Weſtphalia	Miles	14.56	12151

TABLE XXIX. Shewing the Contents of a Square Foot of different Countries, in Engliſh Square Inches, and hundredth Parts of an Inch.

		Engliſh Square Inches.
A Square Foot of	Amſterdam contains -	124.32
	Antwerp - - -	126.34
	Berlin - - - -	148.59
	Bern - - - -	133.23
	Bologna - - -	224.70
	Bremen - - -	129.50
	Denmark or Rhineland -	152.52
	Dantzic - - -	127.46
	Dreſden - - -	124.10
	England - - -	144.00
	France - - -	163.32
	Hamburgh - - -	127.46
	Hanover - - -	131.10
	Konigſberg - - -	146.65
	Leipſic - - -	123.43
	Liſbon - - -	167.96
	Milan - - -	243.98
	Nuremberg - - -	143.04
	Oſnaburg - - -	121.00
	Rome - - -	134.56
	Spain - - - -	123.65
	Sweden - - -	136.65
	Turin - - - -	161.80
	Venice - - -	187.13
	Vienna - - -	155.00
	Zurich - - -	139.42
A French Square	Metre - - - -	1550.00

TABLE XXX.—Shewing the Contents of a Cubic Foot of different Countries, in Engliſh Cubic Inches, and hundredth Parts of an Inch.

		Engliſh Cubic Inches.
A Cubic Foot of	Amſterdam contains -	1386.20
	Antwerp - - -	1420.03
	Berlin - - -	1811.39
	Bern - - -	1536.80
	Bologne - - -	3368.25
	Bremen - - -	1473.76
	Denmark or Rhineland	1883.65
	Dantzic - - -	1439.07
	Dreſden - - -	1382.50
	England - - -	1728.00
	France - - -	2087.34
	Hamburgh - -	1439.07
	Hanover - - -	1501.12
	Konigſberg - -	1775.96
	Leipſic - - -	1371.33
	Liſbon - - -	2177.80
	Milan - - -	3812.98
	Nuremberg - -	1710.76
	Oſnaburgh - - -	1331.00
	Rome - - -	1560.90
	Spain - - -	1375.04
	Sweden - - -	1597.52
	Turin - - -	2058.07
	Venice - - -	2560.10
	Vienna - - -	1929.78
	Zurich - - -	1647.20
A French Cubic	Metre - - -	61023.50

TABLE XXXI.—A Compariſon of the Corn Meaſures of different Places; namely, the Number of Meaſures of each Place, correſponding to 10 Quarters, or 80 Engliſh Buſhels, Wincheſter Meaſure; alſo, the Contents of a ſingle Meaſure in Engliſh Cubic Inches.

		Number of each equal to 10 Eng. Quarters.	Contents of a ſingle Meaſure of each Sort.
			Cub. Inch.
Abbeville - -	Setiers - -	18.37	9364
Agen - -	Sacks - -	32.23	5337
Aix-la-Chapelle -	Faſs - -	117.73	1461
Alcmaar - -	Sacks - -	34.80	4943
Alexandria -	Rebebes - -	17.94	9587
	Kiſlos - -	16.51	10418
Algiers - -	Tarrie - -	141.10	1219
Alicant - -	Caſſiſes - -	11.44	15038
Altona - -	(See Hamburgh.)		
Amersfort - -	Mudden - -	12.30	13986
Amiens - -	Setiers - -	85.79	2005
Amſterdam -	Mudden - -	26.06	6596
	Sacks - -	34.76	4947
	Scheepels - -	104.28	1649
	Tonnes - -	20.85	8245
Ancona - -	Rubbi - -	10.32	16662
Antwerp - -	Viertels - -	36.55	4705
Apulia - -	Tomoli - -	55.11	3121
Archangel - -	Czetwer - -	14.46	11888
Arles - -	Setiers - -	47.40	3628
Arnheim - -	Mouvers - -	21.27	8087
Augſburg - -	Schaff - -	6.41	26812
Avignon - -	Boiſſeaux - -	30.65	5612
Azores - -	Alquieres - -	235.30	731
Barcelona - -	Quarteras - -	39.08	4401
Baſil - -	Sacks - -	21.93	7844
Bayonne - -	Conques - -	68.72	2503
Bergamo - -	Soma - -	17.18	10008
Bergen - -	(See Copenhagen.)		
Bergen-op-Zoom	Siſters - -	60.98	2821
Berlin - -	Scheffels - -	54.09	3180
Bern - - -	Mutt - -	16.76	10260
Beauvais - -	Tonneaux - -	1.45	118529
Bilboa - -	Fanegas - -	47.19	3645
Boiſleduc - -	Mouvers - -	19.84	8671
Bologna - -	Corbe - -	38.20	4503
Botzen or Bolſano	Scheffels - -	25.84	6657
Boulogne - -	Setiers - -	16.32	10535
Bourdeaux -	Boiſſeaux - -	36.73	4682
Breda - -	Viertels - -	32.41	5806
Bremen - -	Scheffels - -	39.64	4339
Breſlaw - -	ditto - -	40.32	4266
Breſt - -	Tonneaux - -	2.04	84200
Brille - -	Sacks - -	39.22	4385
Bruges - -	Hoeds - -	16.92	10164
Brunſwick -	Himten - -	90.62	1898
	Scheffels - -	9.06	18980
Bruſſels - -	Sacks - -	24.17	7117
Cadiz - -	Fanegas - -	50	3439
Calabria - -	Tomoli - -	55.15	3119
Calais - -	Setiers - -	16.95	10144
Campen - -	Mudden - -	24.10	7137
Candia - -	Charges - -	18.52	9288
Caſſel - -	Viertels - -	19.75	8710
Caſtile - -	Fanegas - -	49.74	3458

Cette

		Number of each equal to 10 Eng. Quarters.	Contents of a ſingle Meaſure of each Sort.
			Cub. Inch.
Cette	Setiers	42.98	4002
Cleves	Malters	15.70	10954
Cologne	ditto	17.39	9892
Colberg	Scheffels	56.72	3032
Conſtantinople	Kiſlos	85.02	2023
Copenhagen	Toende	20.26	8489
Corfu	Moggi	23.21	6097
Corſica	Stajo	28.60	6014
Corunna	Ferrados	174.44	986
Culm	Scheffels	51.37	3348
Creutznach	Malters	19.38	8874
Cyprus	Medimni	38.62	4453
Dantzic	Scheffels	57.95	2968
Darmſtadt	ditto	28.14	6111
Denmark	(See Copenhagen.)		
Delft	Sacks	28	6141
Deventer	Mudden	34.80	4942
Dieppe	Mines	27.55	6243
Dixmude	Raſieres	29.51	5821
Dordrecht	Great Sacks	23.17	7428
	Little ditto	30.91	5565
Dreſden	Scheffels	26.64	6456
Dunkirk	Sea Raſieres	17.40	9884
	Land ditto	19.57	8786
Elbing	Scheffels	58	2965
Embden	Tonnen	14.70	11697
	Verps	58.80	2924
England	Wincheſter Buſh.	80	2150
	ditto Quarters	10	17200
Enkhuyſen	Mudden	21.25	8095
	Sacks	42.50	4048
Erfurt	Scheffels	50.01	3430
Faro	Alquieres	174.26	987
Femeren	Scheffels	74.98	2294
Ferrara	Stari	93.22	1845
Ferrol	Ferrados	155.80	1104
Florence	Stari	118.70	1449
Fluſhing	Sacks	37.67	4566
France	Old Syſtem. (See Paris.)		
	New Syſ. Litres	2818.70	61
	Decalitres	281.87	610
	Hectalitres	28.18	6102
Francfort	Malters	26.10	6590
Friderickſtadt	Tonnen	21.74	7913
Galicia	Ferrados	149.16	1153
Geneva	Coupes	36.29	4739
Genoa	Mina	23.30	7382
Ghent	Halſter	54.12	3178
Goes	Sacks	38.70	4444
Gluckſtadt	Tonnen	22	7815
Gouda	Sacks	27.09	6348
Gorcum	Mudden	16.67	10314
Gravelines	Raſieres	21.29	8080
Greece	Medimni	71.96	2390
Greipſwald	Scheffels	72.36	2377
Groningen	Mudden	31.93	5386
Hague (The)	Sacks	27.06	6356
Hamburgh	Scheffels	26.76	6426
	Faſs	53.52	3213
	Himten	107.04	1606

		Number of each equal to 10 Eng. Quarters.	Contents of a ſingle Meaſure of each Sort.
			Cub. Inch.
Hanau	Malters	25.04	6868
Hanover	ditto	15.10	11388
Harderwick	Mudden	28.87	5957
Harlem	Sacks	36.80	4673
Harlingen	Mudden	31.93	5386
Havre-de-Grace	Boiſſeaux	81.55	2109
Heidelberg	Malters	27.37	6285
Heuſden	Mudden	16.69	10305
Hildeſheim	Scheffels	54.36	3164
Holſtein	Tonnen	20.26	8489
Honfleur	Boiſſeaux	71.96	2390
Hoorn	Sacks	42.50	4047
Huſum	Rye Tonnes	18.34	9378
	Wheat ditto	18.25	9426
Ingolſtadt	Schaff	2.70	63536
Ireland	Barrels	20	8600
Kiel	Tonnes	23.78	7232
	Scheffels	71.34	2411
Konigſberg	New Scheffels	54.56	3152
Laland	Tonnen	20.52	8380
Lawemburg	Sacks	16.43	10466
Leghorn	Staji	114.60	1501
	Sacchi	38.20	4503
Leipſic	Scheffels	20.28	8481
Lewarden	Mudden	31.93	5386
Leyden	Sacks	42.47	4049
Libourne	Sacks	33.86	5079
Liebau	Loofs	45	3822
Liſbon	Alquieres	210.52	817
	Fanegas	52.63	3268
Liege	Setiers	94.14	1827
Liſle	Razieres	39.64	4339
Lubec	Wheat Scheffels	84.27	2041
	Oats ditto	71.81	2395
Lucca	Staji	116.85	1472
Luneburgh	(See Hanover.)		
Lyons	Anées	14.69	11706
Madeira	Alquieres	251.46	684
Magdeburgh	Scheffels	54.56	3152
Majorca	Quarteras	41.83	4112
Malaga	Fanegas	45.46	3783
Malta	Salme	10.15	16930
Manheim	Malters	27.37	6285
Mantua	Stari	80.94	2125
Marſeilles	Charges	18.27	9411
Maſtricht	Setiers	124.38	1383
Mentz	Malters	30.94	5558
Mecklenburgh	Scheffels	66.39	2591
Memel	ditto	58.22	2954
Middleburg	Sacks	40.08	4291
Milan	Moggi	20.37	8444
	Staji	162.96	1055
Modena	ditto	40	4297
Montpellier	Setiers	53.21	3232
Morlaix	Boiſſeaux	52.56	3272
Munich	Scheffels	7.74	22130
Muyden	Sacks	42.50	4048
Nancy	Reals	14.70	11700
	Cartes	58.80	2925
Nantes	Setiers	19.68	8739
Naples	Tomoli	55.09	3122

Narva

		Number of each equal to 10 Eng. Quarters.	Contents of a ſingle Meaſure of each Sort.
			Cub. Inch.
Narva	Tonnes	17.38	9893
Naumburg	Scheffels	36.50	4712
Negropont	Kiſlos	93.02	1849
Nice	Staji	70.46	2441
Nieuport	Razieres	16.93	10157
Nimeguen	Mouvers	21.04	8181
Nuremberg	Malters	16.86	10200
Oldenburg	Tonnen	17.28	9946
Oneglia	Mine	23.78	7233
Oporto	Alquieres	163.66	1051
Oſnaburg	Scheffels	98.12	1753
Oſtend	Razieres	16.02	10733
Oviedo	Fanegas	37.51	4585
Paris	Setiers	18.38	9360
	Boiſſeaux	220.52	780
Paſſau	Sechſling	8.83	19465
Patras	Stare	34.31	5012
	Bachels	102.93	1671
Pernau	Tonnes	22.25	7729
Perſia	Artabas	42.85	4013
Poland	Corzecs	55.13	3120
Prague	Stricks	26.39	6516
Ratiſbon	Maaſs	10.64	16171
Revel	Tonnen	23.83	7219
Riga	Loofs	43.24	3978
	Tonnen	21.62	7956
Rochelle	Boiſſeaux	85.70	2007
Rome	Rubbi	10.17	16904
	Quarti	40.70	4226
Roſtock	Scheffels	79.40	2166
Rotterdam	Sacks	27.04	6361
	Hoeds	2.53	67850
Rouen	Setiers	15.75	10920
	Boiſſeaux	126	1365
Ruſſia	Chetwer	13.82	12448
St. Andero	Fanegas	51.95	3311
St. Gall	Charges	38.71	4443
St. Maloes	Boiſſeaux	63.77	2697
St. Omer	Raſiares	21.77	7900
St. Sebaſtian	Fanegas	47.12	3650
St. Valery	Setiers	18.38	9356
Sardinia	Starelli	57.56	2988
Schiedam	Sacks	27.04	6360
Scotland	Wheat Firlots	78.28	2197
	Barley ditto	53.66	3205
Sleſwig	Tonnen	20.19	8520
Seville	(See Spain.)		
Sicily	Salme Groſſe	8.18	21014
	Salme Generale	10.18	16886
Smyrna	Kiſlos	80.34	2141
Spain	Fanegas	50.01	3439
	Cahizes	4.16	41268
Stettin	Scheffels	54.09	3180
Stolberg	Viertels	61.30	2806
Stralſund	Tonnen	24.11	7134
	Scheffels	72.33	2378
Sweden	Tunner	19.24	8940
	ditto (with good meaſure)	17.10	10058
Tonningen	Tonnen	23.20	7413
Tortoſa	Quarteras	31.77	5414
Toulon	Emines	79	2178
Trieſte	Stari	38.04	4521
Tripoli	Caſſiſi	8.69	19780
Tunis	ditto	7.87	21855
Turin	Sacchi	24.52	7015
	Staji	73.56	2338
Ulm	Immis	12.26	14021
Utrecht	Mudden	24.16	7117
Valencia	Cahizes	17.13	10037
Vannes	Tonneaux	1.84	93556
Venice	Staji	34.78	4945
Verona	Minelli	76.41	2251
Viana	Alquieres	173.88	989
Vienna	Metzen	45.83	3753
Weimar	Scheffels	31.67	5430
Wiſmar	ditto	73.66	2336
Wolgaſt	ditto	69.38	2479
Wurtemberg	ditto	53.28	3228
Zant	Barrili	76.41	2251
Zell	(See Hanover.)		
Ziriczee	Sacks	36.28	4741
Zurich	Mutten	34.07	5048
Zwoll	Sacks	25.16	6836

TABLE XXXII.—A Compariſon of the Liquid Meaſures of different Places; namely, the Number of Meaſures of each Place, correſponding to 100 Engliſh Gallons, Wine Meaſure; and alſo the Contents of a ſingle Meaſure of each Sort, in Engliſh Cubic Inches.

		Number of each equal 100 Eng. Gallons.	Contents of a ſingle Meaſure of each Sort.
			Cub. Inch.
Alicant	Cantaras	37.14	622
Altona	Tonnes	3.26	7072
	Stubgens	104.52	221
Amſterdam	Ankers	9.91	2331
	Stekans	19.82	1165
	Viertels	52.03	444
	Stoops	158.22	146
	Mingels	316.44	73
Augſburgh	Maaſs	255.71	90
Ancona	Boccali	267.04	86
Antwerp	Stoops	119.08	194
Apulia	Salme	2.45	9428
Arragon	Cantaras	39.49	585
Barcelona	Wine Cargas	2.93	7877
	Arrobas	35.21	656
	Oil Cargas	3.12	7394
Bari	Oil Staji	22.87	1010
	Salme	2.29	10100
Baſil	Ohms	7.56	3053
Bayonne	Veltes	51.22	451
Bergamo	Brente	5.20	4441
Berlin	Ankers	10.31	2239
Bern	Maaſs	226.48	102
Blois	Quartauts	3.74	6183

		Number of each equal 100 Eng. Gallons.	Contents of a ſingle Meaſure of each Sort.
			Cub. Inch.
Bologna	Corbe	5.13	4503
	Boccali	308	75
Bourdeaux	Barriques	1.64	14033
	Veltes	52.74	438
	Pots	181.18	127½
Bremen	Stubgens	118.79	194½
Breſlaw	Eimers	6.82	3389
	Tops	135.88	170
Brunſwick	Stubgens	203.12	224
Burgundy	Quartauts	3.68	6275
Cadiz	(See Spain.)		
Canary Iſlands	Arrobas	24.34	949
Candia	Oil Miſtati	34.95	661
Caſſel	Quartlins	46.29	499
Champaigne	Quartauts	4.20	5496
Cognac	Veltes	51.68	447
Cologne	Ohms	2.43	9501
	Viertels	63.29	365
Conſtantinople	Almuds	72.41	319
Copenhagen	Ahms	2.45	9420
	Ankers	9.81	2355
	Stubgens	98.07	235½
Cracow	(See Poland.)		
Dantzic	Beer Stofs	164.40	140½
	Wine ditto	221.06	104½
	Ahms	2.01	11495
Dijon	Quartauts	3.68	6275
Dreſden	Viſier Kannes	268.60	86
	Common ditto	102.90	57½
	Wine Eimers	5.59	4128
	Beer Tonnen	3.85	5993
Dunkirk	Pots	167.39	138
England	Beer Gallons	81.91	285
	Pints	655.28	32¼
	Wine Gallons	100	231
	Pints	800	28⅞
Ferrara	Maſtelli	4.60	5015
	Secchie	36.84	627
Florence	Oil Barrili	11.87	1946
	Wine ditto	9.52	2427
	Fiaſchi	190.90	121
	Boccali	381.80	60½
France	Old Syſtem, (See Paris.)		
	New Syſt. Litres	377.20	61¼
	Decalitres	37.72	612½
	Hectalitres	3.77	6124
Francfort	Viertels	51.33	450
	Maaſs	205.33	112½
Gallipoli	Salme	2.44	9459
Geneva	Setiers	8.37	2760
	Quarterons	200.87	115
	Pots	401.74	57½
Genoa	Wine Barrili	5.10	4530
	Pinte	255.24	90½
	Oil Barrili	5.85	3946
Gotha	Stubgen	111.86	206½
Hamburgh	Ahms	2.61	8836
	Ankers	10.45	2209
	Eimers	13.07	1767
	Viertels	52.26	442
Hamburgh	Stubgen	104.52	221
	Beer Tonnes	2.17	10608
Hanover	Ahms	2.43	9493
	Stubgen	97.46	237
	Beer Tonnes	3.73	6198
Heidelberg	Viertels	41.10	562
	Maaſs	164.40	140½
Holſtein	(See Hamburgh.)		
Hungary	Eimers	5.16	4474
	Tokay Anthals	7.49	3084
Konigſberg	Stofs	264	87½
	Quarts	330	70
Leghorn	Wine Barrili	9	2564
	Fiaſchi	180.47	128
	Boccali	360.94	64
	Oil Barrili	11.89	1942
Leipſic	Eimers	4.97	4644
	Kannen	312.16	74
	Viſier Kannen	268.60	86
	Beer Tonnes	4.16	5550
Lindau	Quarts	165	140
Liſbon	Almudes	22.21	1040
	Potes	44.42	520
	Canhadas	265.51	87
Liſle	Lots	183.33	126
London	(See England.)		
Lubec	(See Hamburgh.)		
Lucca	Oil Coppi	3.79	6093
Lyons	Pots	403.49	57¼
Macon	(See Burgundy.)		
Majorca	Oil Cortanes	91.66	252
Malaga	(See Spain.)		
Malta	Caffiſi	18.19	1270
Mantua	Oil Moggi	3.39	6804
Marſeilles	Millerolles	6.35	3639
	Eſcandeaux	25.40	910
	Pots	380.75	60⅔
Maſſa	Oil Barrili	10.69	2161
Mentz	Maaſs	202.63	114
Meſſina	Wine Salme	4.40	5242
	Oil Caffiſi	34.89	662
Minorca	Barriles	12	1927
	Quartillos	66	350
Montpellier	Setiers	11.17	2067
	Wine Barrals	14.89	1550
	Pots	358.14	64½
	Oil Barrals	11.39	2028
	Pots	363.78	63½
Nantes	Veltes	67.34	343
Naples	Wine Barrili	9.08	2544
	Oil Staji	20.39	1133
Narva	Ankers	9.77	2364
	Stofs	292.40	79
Nice	Rubbi	44	525
Nuremberg	Eimers	5.56	4149
	Viſier Maaſs	355.38	65
	Schenck Maaſs	381.18	60⅗
Oneglia	Oil Barrili	6.16	3749
Oporto	Almudes	14.85	1555
	Alquieres	29.73	777
	Canhadas	178.38	129½

		Number of each equal 100 Eng. Gallons.	Contents of a single Meaſure of each Sort.
			Cub. Inch.
Orleans - -	(See Burgundy.)		
Oſnaburg -	Kannes - -	310.06	74½
Oviedo - -	Cantaras - -	20.17	1145
Paris - -	Setiers - -	50.43	458
	Pots - -	201.75	114½
	Pintes - -	403.50	57¼
Pernau - -	(See Narva.)		
Poland - -	Garniecs - -	238.14	97
Prague - -	Eimers - -	5.89	3916
	Pints - -	188.93	122¼
Ratiſbon - -	Great Eimers -	3.33	6934
	Berg ditto -	4.31	5359
	Common ditto -	4.58	5043
	Kopfen - -	293.33	78¾
Revel - -	Ankers - -	10.43	2214
	Stofs - -	312 16	74
Riga - -	Idem.		
Rochelle - -	Wine Barriques	2.17	10636
	Brandy Veltes -	51.79	446
Rome - -	Wine Barrili -	9.02	2560
	Oil ditto - -	10.31	2240
	Boccali - -	288.75	80
Rotterdam -	(See Amſterdam.)		
Rouen - -	Pots - -	232.16	99½
Ruſſia - -	Weddras - -	30 72	752
	Kruſkas - -	245.75	94
Saragoſſa - -	Cantaras - -	39.55	584
Scotland - -	Pints - -	223 18	103½
Schaffhauſen -	Maaſs - -	288.75	80
Sicily - - -	Oil Caffiſi -	34.89	662
Spain - - -	Wine Arrobas -	23.60	981
	Azumbres -	188.56	122½
	Quartillos -	757.37	30½
	Oil Arrobas -	29.97	771
Stettin - -	Ankers - -	7.34	3165
Stralſund - -	Stubgen - -	97.45	237
Straſburg - -	Ohms - -	8.21	2813
	Pots - -	197.43	117
Sweden - -	Eimers - -	4.82	4794
	Ankar - -	9.64	2397
	Kannor - -	144.37	160
	Stops - -	288.74	80
Toulon - -	Millerolles -	5.93	3893
Trieſte - -	Orne - -	5.76	4007
	Boccali - -	207.48	111⅓
Tripoli - -	Oil Mattari -	16.80	1376
Tunis - -	Oil ditto - -	19.98	1157
	Wine ditto -	39.96	578
Turin - -	Brente - -	6.71	3441
	Rubbi - -	40.31	573
Valencia - -	Arrobas - -	28.44	812
	Azumbres -	113.79	203
Venice - -	Secchie - -	36.78	628
Verona - -	Brente - -	5.23	4417
	Baſſe - -	83.68	276
Warſaw - -	(See Poland.)		
Vienna - -	Eimers - -	6.69	3452
	Maaſs - -	267.57	86⅓
Zell - -	Stubgen - -	97.45	237
Zurich - -	Land Maaſs -	206.25	112
	City dito - -	228.71	101
	Old ditto - -	273.91	84⅓

Dr. Kelly, always actuated by a deſire of promoting literature and ſcience, has, with a polite attention, which we thus reſpectfully acknowledge, allowed us to extract ſeveral of the preceding tables from his very valuable work, the "Univerſal Cambiſt:" a work which is planned with judgment, and executed, at the expence of much time and labour, with accuracy, and which will be no leſs acceptable and uſeful to men of ſcience in general, than to mercantile perſons in particular.

Measures *uſed by different artificers* are 144 ſquare inches = a ſquare foot, 9 ſquare feet = a ſquare yard, 63 ſquare feet = 7 ſquare yards = a rood, 100 ſquare feet = a ſquare, and 272¼ ſquare feet = 30¼ ſquare yards = a rod, perch, or ſquare pole.

Measure *of fire-wood.* See Cord *of wood.*

Measure *for Horſes.* See Hand.

Measure is alſo uſed to ſignify the cadence and time obſerved in poetry, dancing, and muſic, to render them regular and agreeable.

The different meaſures or metres, in poetry, are the different manners of ordering and combining the quantities, or the long and ſhort ſyllables. Thus hexameter, pentameter, iambic, ſapphic verſes, &c. conſiſt of different meaſures. In Engliſh verſes, the meaſures are extremely various and arbitrary, every poet being at liberty to introduce any new form that he pleaſes. The moſt uſual are, the heroic, generally conſiſting of five long, and five ſhort ſyllables; and verſes of four feet; and of three feet and a cæſura, or ſingle ſyllable.

The ancients, by variouſly combining and tranſpoſing their quantities, made a vaſt variety of different meaſures. Of words, or rather feet, of two ſyllables, they formed a ſpondee, conſiſting of two long ſyllables; a pyrrhic, of two ſhort ſyllables; a trochee, of a long and a ſhort ſyllable; and an iambic, of a ſhort and a long ſyllable.

Of their feet of three ſyllables, they formed a moloſſus, conſiſting of three long ſyllables; a tribrach, of three ſhort ſyllables; a dactyl, of one long and two ſhort ſyllables; and an anapæſt, of two ſhort and one long ſyllable. The Greek poets contrived a hundred and twenty-four different combinations or meaſures, under as many different names, from feet of two ſyllables to thoſe of ſix. See Metre and Prosody.

Measure, in *Muſic*, the interval, or ſpace of time, which the perſon who beats time, takes between the raiſing and falling of his hand or foot, in order to conduct the movement, ſometimes quicker, and ſometimes ſlower, according to the kind of muſic, or the ſubject that is ſung or played.

The meaſure is that which regulates the time we are to dwell on each note. See Time.

The ordinary or common meaſure is one ſecond, or ſixtieth part of a minute, which is nearly the ſpace between the beats of the pulſe or heart; the ſyſtole or contraction of the heart anſwering to the elevation of the hand; and its diaſtole, or dilatation, to the letting it fall. The meaſure uſually takes up the ſpace that a pendulum, of two feet and a half long, employs in making a ſwing or vibration. The meaſure is regulated according to the different quality or value of the notes in the piece; by which the time, that each note is to take up, is expreſſed. The ſemi-breve, for inſtance, holds one riſe, and one fall; and this is called the *meaſure*, or *whole meaſure*; ſometimes the *meaſure-note*, or *time-note*; the minim, one riſe, or one fall; and the crotchet, half a riſe, or half a fall, there being four crotchets in a full meaſure.

Measures, *Muſical*, are now much ſimplified, compared with thoſe which our anceſtors *deſcribed*, we cannot ſay *uſed*, as ſome of them are impracticable. In the muſical MS. of Waltham holy-croſs, in the poſſeſſion of the marquis of Lanſdowne, N° 9, by Chiliton, we have not only double and triple proportions, but quintuple, ſeſquialterate, and ſeſquioctavan; that is, when one minim in the baſe is as long as a ſemibreve, or two minims in the treble; as three minims; as five; as one and a half; as 16 to 12, or 12 to 9.

Whether all theſe meaſures were ever received in practical muſic, does not appear; but we can be very certain, if they were, that the reſult would be nothing but diſlocation and confuſion.

All meaſures and ſpecies of time in modern muſic are reduced to two proportions; the *binary, dual,* or *even meaſure,* in which the riſe and fall of the hand are equal; and the *ternary, triple,* or *odd* meaſure, in which the fall is double to the riſe. The firſt, uſually called *common time,* is the meaſure conſiſting of two ſemibreves, two minims, or two crotchets; the ſecond, or *triple time,* of three minims, three crotchets or three quavers.

To this purpoſe the number 3 is placed at the beginning of the lines, when the meaſure is intended to be triple; and a C, when the meaſure is to be common or double. This riſing and falling of the hands was called by the Greeks *αϱσις* and ϑεσις. St. Auguſtine calls it *plauſus,* and the Spaniards *compas.* See Arsis and Thesis.

There is likewiſe a mixed or compound meaſure of 6 or 12 crotchets or quavers in a bar, indicated at the beginning of a movement, thus: ${}_{4}$, or ${}^{12}_{4}$, ${}^{9}_{4}$, or ${}_{8}$. But as all theſe meaſures move in triplets, for each portion of a bar, they are reducible to binary and ternary meaſures.

Measures, *Powder,* in *Artillery,* are made of copper, and contain from an ounce to twelve pounds: theſe are very convenient in a ſiege, when guns or mortars are loaded with looſe powder, eſpecially in ricochet firing, &c.

MEASURING, Mensuration, defined *geometrically,* is the aſſuming any certain quantity, and expreſſing the proportion of other ſimilar quantities to the ſame.

Measuring, defined *popularly,* is the uſing of a certain known meaſure, and determining thereby the preciſe extent, quantity, or capacity of any thing.

Meaſuring, in the general, makes the practical part of geometry. See Mensuration.

From the various ſubjects on which it is employed, it acquires various names, and conſtitutes various arts. Thus,

Measuring *of Lines,* or quantities of one dimenſion, we call *longimetry;* and when thoſe lines are not extended parallel to the horizon, *altimetry.* When the different altitudes of the two extremes of the lines are alone regarded, we call it *levelling.*

Measuring *of Superficies,* or quantities of two dimenſions, is variouſly denominated, according to its ſubjects: when converſant about lands, it is called *geodeſia,* or *ſurveying:* in other caſes, it is called ſimply *meaſuring.* The inſtruments uſed are the ten-foot rod, chain, compaſs, circumferentor, &c.

Measuring *of Solids,* or quantities of three dimenſions, we call *ſtereometry;* where it is converſant about the capacities of veſſels, or the liquors they contain particularly, *gauging.*

The inſtruments for this art are the gauging-rod, ſliding-rule, &c.

From the definition of meaſuring, where the meaſure is expreſſed to be ſimilar or homogeneous to, *i. e.* of the ſame kind with, the thing meaſured, it is evident, that in the firſt caſe, or in quantities of one dimenſion, the meaſure muſt be a line; in the ſecond, a ſuperficies; and in the third, a ſolid. For a line, *v. gr.* cannot meaſure a ſurface; to meaſure, being no more than to apply the known quantity to the unknown, till the two become equal. Now a ſurface has breadth, and a line has none: and if one line have no breadth, two or a hundred have none. A line, therefore, can never be applied ſo often to a ſurface, as to be equal to it, *i. e.* to meaſure it. And from the like reaſoning it is evident, a ſuperficies, which has no depth, cannot become equal to, *i. e.* cannot meaſure, a ſolid, which has.

While a line continues ſuch, it may be meaſured by any part of itſelf: but when the line begins to flow, and to generate a new dimenſion, the meaſure muſt keep pace, and flow too; *i. e.* as the one commences ſuperficies, the other muſt do ſo too. Thus we come to have *ſquare* meaſures, and *cubic* meaſures.

Hence we ſee why the *meaſure of a circle* is an arc, or part of the circle; for a right line can only touch a circle in one point, but the periphery of a circle conſiſts of infinite points. The right line, therefore, to meaſure the circle, muſt be applied infinite times, which is impoſſible. Again, the right line only touches the circle in a mathematical point; which has no parts or dimenſions, and has conſequently no magnitude; but a thing that has no magnitude or dimenſions, bears no proportion to another, that has; and cannot therefore meaſure it. Hence we ſee the reaſon of the diviſion of circles into 360 parts or arcs, called *degrees.* See Arc, Circle, and Degree. See alſo Mensuration.

Measuring *of Triangles,* or from three given ſides or angles to determine all the reſt, is called *trigonometry.*

Measuring *of the Air,* its preſſure, ſpring, &c. is called *aerometry,* or *pneumatics.*

MEAT, Cibus. See Food and Diet.

Meats, *Dreſſing of.* See Dressing.

Meats, *Dry.* See Xerophagy.

Meats, *White.* See White.

MEATH, in *Geography,* a county of Ireland, which, though only the tenth in ſize, is one of the moſt diſtinguiſhed on account of its many natural advantages. It is bounded on the north by the counties of Cavan, Monaghan, and Louth; on the eaſt by the Iriſh channel and port of Dublin; on the ſouth by the county of Kildare, and on the weſt by Weſtmeath. It extends from N. to S. 29 miles (36 Engliſh), and from E. to W. 35 (44½ Engliſh) miles, including an area of 512 ſquare miles, or 327,900 acres Iriſh meaſure, which are equal to 822 ſquare miles, or 526,700 acres Engliſh meaſure. This county, united with Longford, Weſtmeath, and part of ſome adjoining counties, was formerly one of the five kingdoms into which Ireland was divided; and long after the Engliſh obtained poſſeſſion of the country, it was conſidered as a diſtinct province, though it is now part of Leinſter. It derived its name, according to ſome, from a corruption of Media, from its being ſurrounded by the other kingdoms, but others derive its name from the Iriſh Magh or Maith, which ſignifies a plain or level country. On the eſtabliſhment of the Engliſh in Ireland, Henry II. made a grant of Meath to Hugh de Lacy, who planted ſeveral colonies, and erected many caſtles, and was more powerful in Ireland, as he boaſted, than Henry himſelf. In 1234 the inheritance of Meath paſſed, by marriage, to Jeffery de Geneville, from whom it, in like manner, paſſed to Mortimer, earl of March, whoſe daughter and heir married the duke of York, father of Edward IV. Meath formed a principal part of what was called the Engliſh Pale, and from the number of pariſhes into which it was divided, and the many ruins it contains, it is probable that it was then very populous. In 1792, the 147 pariſhes were, by unions, reduced to 59 benefices, of which 44 had churches, and 19 only glebe houſes. The population was eſtimated by Dr. Beaufort at 112,400, the number of houſes amounting to 22,468. Since the time that calculation was made (1792) a very great increaſe has probably taken place, but the writer knows of no *data* from which it can be eſtimated. The country is, in general, level, having few hills, and thoſe of inconſiderable height. The ſoil is variable, but that moſt generally met with is a ſtrong deep clay upon limeſtone gravel, at a greater or leſs diſtance from the ſurface, in different places. That land which borders on the county of Louth, north of the river Boyne, is the worſt and moſt unprofitable, whilſt the north-weſtern and ſouth-eaſtern diſtricts are the moſt productive. Though ſome peculiar diſtricts in other counties are richer, yet there is no tract of equal extent in Ireland of ſuch excellent quality, and ſo appropriate to every purpoſe of grazing and tillage. Meath is indeed proverbial for cattle, and not only ſupplies the Dublin market, but alſo buyers from the north of Ireland, and from different parts of England. There is alſo a number of dairy farms, eſpecially in the ſouth-eaſtern part, which ſend their produce to the metropolis. Some butter is alſo made for exportation, but it is not highly prized. At Slaine there is a manufactory of cheeſe carried on by natives of England. The paſtures yield a luxuriant crop of natural graſſes, and there is little attention paid to the introduction of others. Some marſhes on the Moynalty river feed an immenſe number of horſes in the ſummer ſeaſon; and the Kilcrew hills in the weſtern angle adjoining Cavan, are remarkable for fattening ſheep. Agriculture has of late years extended much, and about one-third of the county is at preſent under tillage. The crops commonly cultivated are, wheat, oats, barley, rye, clover, flax and potatoes. Cabbages, turnips, rape, and peas are alſo frequently met with, though not very general. The quantity of waſte land, excluſive of bog, is very ſmall, and chiefly conſiſts of the commons belonging to ſome of the towns, which will probably be ſoon encloſed.

The manufactures of this county are few. The principal is that of ſacking, which is made from tow, brought out of the northern counties. This manufacture is chiefly carried on in the neighbourhood of Navan. Dowlas and three-quarters wide coarſe linens are made in the parts near Drogheda, which are exported thence to the Weſt Indies to clothe the negroes. In the north-weſtern parts linen of a finer texture is made, which is ſold in the county of Cavan. In the ſouthern parts ſpinning is generally neglected, and there is no manufacture except of ſome coarſe frieze for home conſumption. It may be added that the manufacture of ſtraw hats, both of ſplit and whole ſtraw, has been brought to great perfection, and is carried on to a great extent. In the weſtern and northern parts of the county are ſome conſiderable bogs, which ſupply a large quantity of fuel, though not equal to the wants of the inhabitants; whilſt the eaſtern parts have coal from Dublin or Drogheda. There are ſuppoſed indications of coal in ſeveral parts of the county, but no mine is worked. The other mineral productions are of little importance. There is a copper mine at Skreen, from which the proprietor has yet derived no benefit; and a valuable potters' clay near Dunſhaughlin, reckoned equal, if not ſuperior (ſays Mr. Thompſon) to moſt of the potters' clay found in Staffordſhire, which, though within fifteen miles of Dublin, has been turned to no account. Marle is found at ſome depth under the bogs, ſimilar to that found in Louth, which is uſeful in agriculture; and the limeſtone at Ardbraccan has been thought ornamental in building.

Meath is well watered, and the attention paid to inland navigation cannot fail of contributing to its rapid improvement. The principal river is the Boyne, which riſing in the county of Kildare, enters Meath in the ſouth-weſtern angle, and divides it into two nearly equal parts. Its courſe lies through ſome of the moſt fertile and beſt improved parts of the county. Its banks in moſt parts riſe to a conſiderable height, gradually ſloping from the water's edge to their verdant brow, and in others bold projecting rocks and ſteep precipices overhang its limpid ſurface. Though in ſome places the river is much diſturbed in its courſe by ſharps and rocks, yet in others it ſteals ſilently along through flats of conſiderable extent, adding elegance and beauty to ſcenes ſcarcely to be equalled in Ireland. On this river, in its courſe within the county, are ſix extenſive bolting mills, beſides ſeveral griſt and cloth mills, and one for the manufacture of cotton. A canal has been made, called the Boyne navigation, which is for the moſt part contiguous to the river. This canal has been completed as far as Navan, but the other projected cuts to Trim, Athboy, and Kells, remain unfiniſhed, which appears, from Mr. Wakefield's account, to be the caſe with moſt of ſuch undertakings in Ireland. The Blackwater, flowing from lough Ramor in the county of Cavan, enters the county in the north-weſt, and paſſing near the town of Kells, joins the Boyne at Navan. The Moynalty flows into the Blackwater, and the Athboy, Knightſbrook, and ſome other ſmall rivers, add their waters to the Boyne. The river Nanny, or, as it is uſually called, the *Nanny water*, riſes near Navan, and takes nearly an eaſterly direction to the Iriſh ſea. The water of this river has, like the Bann, the character of being peculiarly adapted to the purpoſes of bleaching. The ſea-coaſt is principally a ſhelving ſtrand with ſhallow water, ſo that little advantage is derived from it. The land adjoining is a light ſoil, reſembling ſea ſand, without much vegetative power, and well adapted for rabbits. The towns in Meath are numerous, but generally ſmall and ill built. Trim is the county town, but Navan is more thriving, from its eaſy communication with Drogheda. Tarah hill, on which there is now an inſignificant village, is ſaid to have been formerly the royal reſidence, not only of the kings of Meath, but alſo of the monarchs of Ireland. A Daniſh invader is ſuppoſed to have alſo taken up his abode there, and to have built the fine Daniſh fort or rath on the ſouth-eaſt ſide of the hill, which is now beautifully planted. Thompſon's Statiſtical Survey of Meath. Wakefield's Account of Ireland.

MEATH, a biſhopric in Ireland, the biſhop of which takes precedence of all other Iriſh ones. Several ſmall biſhoprics gradually coaleſced into one ſee, which received the name of Meath at the end of the 12th century, being the only one not taking its name from a city or town. In 1568 the biſhopric of Clonmacnoiſe was incorporated with it by act of parliament. It extends from the ſea to the Shannon, over part of ſix counties, and contains 663,600 Iriſh acres. The pariſhes are 224, but unleſs late improvements have been made, the churches are little more than a third part of the number. There is no cathedral in this dioceſe; neither is there a chapter, nor even a dean of Meath; the only dignities are the deanery of Clonmacnoiſe and the archdeaconry of Meath. The revenue of this ſee is ſtated by Mr. Wakefield to be 6000*l. per annum.* The epiſcopal reſidence is at Ardbraccan, near Navan. Dr. Beaufort's Memoir of a Map of Ireland.

MEATUS, in *Anatomy*, a term applied to two paſſages belonging to the ear. The meatus auditorius externus is the tube leading from the external ear to the membrana tympani. The meatus auditorius internus is the opening in the petrous portion of the temporal bone receiving the nerves of the ſeventh pair. See CRANIUM and EAR.

MEATUS *Auditorius*, *Imperforate*, in *Surgery*. Obſtruction of the external tube of the ear is ſometimes a congenital malformation. In particular caſes, the outer opening

ing of the paſſage is cloſed by a membranous ſubſtance; in others, the canal is entirely obliterated, either by the approximation of its cartilaginous and bony parietes to each other, or by being filled up with a fleſhy maſs. In all theſe caſes of ſimple cloſure, or complete obliteration, the deafneſs, that is unavoidably produced, is not equally eaſy of cure. When the opening of the meatus auditorius externus is merely ſhut up by membrane, this may have a crucial inciſion made into it, or it may be removed altogether by cutting in a circular manner. After either of theſe operations, the new opening muſt be kept from becoming again impervious, by the introduction of tents, until the part is entirely healed. When the membrane is more deeply ſituated, the operation is leſs eaſy of accompliſhment. In this ſort of caſe Richerand adviſes us to draw the external ear upwards, in order to efface the natural curvature of the meatus, and let the entrance of the light make the ſtate of the inſide of the paſſage viſible. We are then to introduce a narrow ſtraight biſtoury, the blade of which is wrapped round with lint nearly to the point, and make an inciſion with great caution, taking particular care to avoid injuring the membrane of the tympanum. It was the apprehenſion of doing miſchief to the latter part, that induced Leſchevin to prefer, in ſuch examples, the application of cauſtic, to the employment of a cutting inſtrument. (Prix de l'Acad. de Chirurg. tom. i. p. 67. 118. 4to.) He adviſes us to apply the cauſtic to the bottom of the meatus auditorius ſeveral times, ſo as to deſtroy the preternatural membrane. It appears to us, however, that the uſe of cauſtic muſt here be exceedingly inconvenient, and hardly ſo ſafe as a biſtoury. Perhaps cauſtic may be attended with the advantage of making an opening, that will be leſs likely to cloſe again. Experience can alone determine ſuch points.

When the bony and cartilaginous parietes of the meatus auditorius are in contact, the obliteration of the paſſage is incurable. But when the canal is filled up with a fleſhy ſubſtance, the diſeaſe ſometimes admits of relief. In ſuch a caſe, M. Leſchevin recommends us to introduce a trocar, in the natural direction of the meatus auditorius, to the depth of from 15 to 18 lines. Should the point of the trocar now meet with no reſiſtance, the inſtrument muſt be withdrawn, and a tent paſſed into the artificial opening, in order to keep it from becoming cloſed. When the trocar, after being introduced to ſuch a depth, that there is reaſon to believe it has reached the natural ſituation of the cavity of the tympanum, and yet the ſame reſiſtance to its further introduction is experienced, we are recommended to abandon the operation. Were any one, ſays M. Leſchevin, here to aſcribe the want of ſucceſs to unſkilfulneſs in the ſurgeon, he would be very unjuſt.

A preternatural narrowneſs of the meatus auditorius externus is not ſo bad a caſe as its obliteration, and the deafneſs produced by it is incomplete. But it is not to be imagined, that a cure is practicable when the bony portion of this tube is the ſeat of the contraction. Should the cartilage alone be concerned, a gradual dilatation may be accompliſhed by means of prepared ſponge, or tents made of lint, the ſize of which is to be increaſed every day. Richerand acquaints us, that he has preſerved ſeveral temporal bones which belonged to ſubjects who were very hard of hearing; and in all of them the bony portion of the meatus auditorius is remarkably narrow. M. Lametrie has recorded an inſtance, in which this paſſage was ſo narrow in a young perſon, that it would ſcarcely admit of the introduction of a needle into it. Noſog. Chir. tom. ii. p. 124.—126. edit. ii.

There was a curious caſe (which was ſeen a few years ago by many medical gentlemen in London), of a total deficiency of the external ears, unattended with any meatus auditorius, the ſituation of this opening, on each ſide of the head, preſenting only the common integuments. It was remarkable, that notwithſtanding ſuch malformation, the faculty of hearing was far from being altogether deſtroyed. In all probability, the internal and moſt eſſential parts of the ear were, in this example, altogether perfect; and it ſeems not unlikely, that, by removing a portion of the ſkin over the orifice of each meatus auditorius, the hearing might have been rendered ſtill leſs dull.

Meatus Auditorius Externus, Extraneous Subſtances in.—Beſides the defects of which we have been ſpeaking, and which are, for the moſt part, congenital, the meatus auditorius may be obſtructed by foreign bodies. With reſpect to water and other liquids, they readily eſcape on putting the head in a favourable poſition. Small ſolid ſubſtances, like a pea, bean, &c. are uſually extracted with a pair of forceps, the blades of which ſhould be of a ſlender conſtruction. But if the foreign bodies cannot be thus extracted, ſurgical authors recommend us to try to break them to pieces with a ſtronger pair of forceps, in order to facilitate their removal. They alſo adviſe us to inſtil into the ear a few drops of the oil of almonds, both before and after the operation. The lodgment of extraneous ſubſtances in the ear may give riſe to a train of moſt unaccountable and perplexing ſymptoms, as may be ſeen by referring to the fourth obſervation of Fabricius Hildanus, cent. 13.

Meatus Auditorius Externus, obſtructed with Cerumen. See DEAFNESS.

Meatus Auditorius Externus, Polypi and other Tumours of.—Theſe, when their ſituation will permit, muſt be removed with a knife, and the part to which they were attached may be touched with the argentum nitratum. When they cannot be cut away, they ſometimes admit of extraction, or of being tied in the manner of other excreſcences, ſituated in cavities. (See POLYPUS.) The application of cauſtic to them can ſcarcely ever be a prudent mode of treatment.

Meatus Auditorius Externus, containing Inſects.—Worms which make their appearance in the meatus auditorius are always produced ſubſequently to ulcerations in the paſſage, or in the interior of the tympanum, and, very often, ſuch inſects are quite unſuſpected cauſes of particular ſymptoms. In the caſes of ſurgery, publiſhed in 1778 at Stockholm, by Olaus Acrel, there is an inſtance confirming the ſtatement juſt offered. It is the caſe of a woman, who, having been long afflicted with a hardneſs of hearing, was ſuddenly ſeized with very violent convulſions, without any apparent cauſe, and ſoon afterwards complained of an acute pain in the ear. This affection was followed by a recurrence of convulſions, which were more vehement than before. A ſmall tent of fine linen, moiſtened with a mixture of oil and laudanum, was introduced into the meatus auditorius, and on removing it the next day, ſeveral ſmall round worms were obſerved upon it, and from that period all the ſymptoms diſappeared. To this caſe we ſhall add another from Morgagni. A young woman conſulted Valſalva, and told him, that when ſhe was a girl a worm had been diſcharged from her left ear; that another one, about ſix months ago, had alſo been diſcharged, very much like a ſmall ſilk-worm in ſhape. This event took place after ſome very acute pain in the ſame ear, the forehead, and temples. She added, that ſince this ſhe had been tormented with the ſame pains at different intervals, and ſo ſeverely, that ſhe often ſwooned away for two hours together. On recovering from this ſtate, a ſmall worm was diſcharged of the ſame ſhape as, but much ſmaller than, the preceding one, and that ſhe was now afflicted with deafneſs and inſenſibility on the ſame ſide. After hearing this relation, Valſalva no longer entertained any doubt of the membrane of the tympanum being ulcerated. He propoſed the employment of an injection, in order to deſtroy the neſt of worms, which he preſumed to exiſt. For this purpoſe diſtilled water of St. John's wort, in which mercury had been agitated, was uſed. Morgagni adds, that nothing appears to him more proper in ſuch caſes, to prevent a recurrence of ſuch worms, than to avoid going to ſleep, particularly in autumn and ſummer, without taking care to ſtop up the affected ear. If this be not done, flies, attracted by the ſuppuration, enter the meatus auditorius, and, while the patient is unconſcious, depoſit their eggs in the ear. Acrel, in ſpeaking of worms generated in the meatus auditorius, obſerves, that there is no better remedy for them, than the decoction of ledum paluſtre, injected into the ear ſeveral times a day. However, as it is not always poſſible to procure this plant, we ſhall recommend in ſuch caſes, in preference to all other remedies, a ſlight infuſion of tobacco in oil of almonds, a few drops of which are to be dropped into the ear, and to be retained there by means of a little bit of cotton. This application, which is not injurious to the lining of the paſſage, is fatal to inſects, and eſpecially to worms, as various experiments have convinced naturaliſts. This method may alſo ſucceed in caſes, in which caterpillars, ants, and other inſects, have inſinuated themſelves into the meatus auditorius; but it is always better, firſt to endeavour to extract them. A piece of lint, ſmeared with honey, often ſuffices for this purpoſe; and when they cannot be extracted by this ſimple means, they may be taken out with a very ſmall pair of forceps, however little of them may be viſible.

Meatus Auditorius Externus, Purulent Diſcharges from.—The ſecreted matter may either proceed from ſuppuration of this paſſage itſelf, or from diſeaſe in the tympanum, the membrane of which is imperfect. The latter caſe may be the conſequence of blows on the head, abſceſſes after fevers, the ſmall-pox, or the venereal diſeaſe. In moſt inſtances, the little bones of the internal ear are detached, and eſcape externally, complete deafneſs generally enſuing. A total loſs of hearing, however, does not invariably follow this kind of miſchief, as we have ourſelves witneſſed in one or two examples. Greater hopes of ſuch an event being avoidable may be indulged, when the diſorder is confined to the meatus; as judicious treatment may now avert the moſt ſerious conſequences. In Acrel's ſurgical caſes, there is a caſe relative to the circumſtance of which we are ſpeaking. Suppuration took place in the meatus auditorius externus in conſequence of acute rheumatiſm, which was followed by vertigo, reſtleſſneſs, and a violent head-ache. The matter diſcharged was yellowiſh, of an aqueous conſiſtence, and acid ſmell. The meatus auditorius was filled with a ſpongy fleſh. On introducing the probe, our author felt a piece of looſe rough bone, which he immediately took hold of with a pair of forceps, and extracted. From the time, when this was accompliſhed, the diſcharge diminiſhed, and, with the aid of proper treatment, the patient became perfectly well.

Meatus Auditorius Externus, Inflammation of.—This paſſage, like every other part of the body, is ſubject to inflammation, which is frequently brought on by expoſure to cold. It is hardly neceſſary to ſay, that topical bleeding and antiphlogiſtic means in general are indicated. The meatus auditorius ſhould alſo be protected from the cold air, particularly in the winter ſeaſon, by means of a piece of cotton.

Mr. Saunders obſerves, "When the means employed to reduce the inflammation have not ſucceeded, and matter has formed, it is generally evacuated; as far as I have obſerved, between the auricle and maſtoid proceſs, or into the meatus. If it has been evacuated into the meatus, the opening is moſt commonly ſmall, and the ſpongy granulations, ſqueezed through a ſmall aperture, aſſume the appearance of a polypus. Sometimes the ſmall aperture, by which the matter is evacuated, is in this manner even cloſed, and the patient ſuffers the inconvenience of frequent returns of pain from the retention of the diſcharge. When the parts have fallen into this ſtate, it will be expedient to haſten the cure by making an inciſion into the ſinus, between the auricle and maſtoid proceſs.

"It occaſionally happens, that the bone itſelf dies, in conſequence of the ſinus being neglected, or the original extent of the ſuppuration. The exfoliating parts are the meatus externus of the os temporis or the external lamina of the maſtoid proceſs." See Saunders on the Anatomy of the Human Ear and its Diſeaſes, p. 24, 25.

Meatus Auditorius, Herpetic Diſeaſe of. See DEAFNESS.

Meatus Urinarius, Imperforate. See URETHRA, *Imperforate.*

MEAVAUA, in *Geography*, a town of Italy, in the county of Bormio; five miles N.E. of Bormio.

MEAUDEE, a town of the Birman empire, on the left bank of the Ava; 10 miles N. of Prome.

MEAUX, a town of France, principal place of a diſtrict, in the department of the Seine and Marne, before the revolution the ſee of a biſhop, and diſtinguiſhed by having been the firſt ſcene of the reformation in the time of Francis. The chief traffic conſiſts in grain, wool, and cheeſe. The city contains 6447, and the canton 14,484 inhabitants, on a territory of 127 kiliometres, in 15 communes. N. lat. 48° 58′. E. long. 2° 57′.

MEBOREA, in *Botany*, a word of whoſe origin no account is given, Aubl. Guian. 826. t. 323. (See RHOPIUM.) Juſſieu places this genus amongſt his *Plantæ incertæ ſedis.* We ſhould have ſuppoſed it one of his *Euphorbiæ*, though it may not anſwer to all the characters he has given of that order.

MEBU, in *Geography*, a town of Japan, in the iſland of Niphon; 160 miles N.W. of Jedo.

MECATINA, an iſland in the gulf of St. Lawrence. N. lat. 50° 48′. W. long. 59° 10′.

MECCA, a city of Arabia, known to the Greeks under the name of "Macoraba," is ſituated in a dry and barren tract of country, a full day's journey from *Jidda*, which ſee. "Some latent motives perhaps of ſuperſtition," ſays Gibbon (Decl. Rom. Emp. vol. ix. p. 223.) "muſt have impelled the founders of this city to the choice of a moſt unpromiſing ſituation. Their habitations were erected of mud or ſtone, in a plain about two miles long and one broad, at the foot of three barren mounatins; the ſoil being a rock; the water even of the holy well of Zemzem being bitter or brackiſh; the paſtures remote from the city; and grapes tranſported to it above 70 miles from the gardens of Tayef. The fame and ſpirit of the Koreiſhites, who reigned in Mecca, were conſpicuous among the Arabian tribes; but their ungrateful ſoil refuſed the labours of agriculture, and their poſition was favourable to the enterprizes of trade. By the ſea-port of Gedda (or Jidda), at the diſtance only of 40 miles, they maintained an eaſy correſpondence with Abyſſinia; and the Chriſtian kingdom afforded the firſt refuge to the diſciples of Mahomet. The treaſures of Africa were conveyed over the peninſula to Gerrha or Katif, in the province of Bahrein, a city built, as it is ſaid of rock ſalt, by the Chaldean exiles; and from thence, with the native pearls of the Perſian gulf, they were floated in rafts to the mouth of the Euphrates. Mecca is placed almoſt at an equal diſtance, a month's journey, between Yemen on the right, and Syria on the left hand. The former was the winter, and the latter the ſummer ſtation of her caravans: and their ſeaſonable arrival relieved the ſhips of India from the tedious and troubleſome navigation of the Red ſea. In the markets of Saana and Merab, in the harbour of Oman and Aden, the camels of the Koreiſhites were laden with a precious cargo of aromatics; a ſupply of corn and manufactures was purchaſed in the fairs of Boſtra and Damaſcus; the lucrative exchange diffuſed plenty and riches in the ſtreets of Mecca; and the nobleſt of her ſons united the love of arms with the profeſſion of merchandize." On an approach to the high lands, a few leagues beyond it, abundance of excellent fruits is to be found. In the ſummer months, the heat is exceſſive at Mecca, and in order to avoid and moderate it as much as poſſible, the inhabitants take care to ſhut their windows and water the ſtreets. Inſtances have occurred, of perſons that have been ſuffocated in the ſtreets by the burning wind, called "Samoum," or "Samiel." As many of the firſt nobility in Hedjas reſide at Mecca, the buildings are better here than in any other city in Arabia. Among its elegant edifices the moſt remarkable is the Kaba or Caaba, or houſe of God, which was held in high veneration by the Arabians, even before the days of Mahomet. (See CAABA.) Niebuhr ſays, that no Chriſtian dares to enter Mecca, on account of the prejudices of the people with reſpect to the ſanctity of the place, who think that it would be profaned by the feet of infidel Chriſtians; though there is no prohibition to this purpoſe in the laws of Mahomet. The ſuperſtitious people perſuade themſelves, that Chriſtians are reſtrained from approaching it by a ſupernatural power. We may hence preſume, that the Chriſtians of Europe, who deſcribe Mecca as eye-witneſſes, have been renegadoes, who have eſcaped from Turkey. The Mahometans have ſuch high ideas of the ſanctity of Mecca, that they ſuppoſe it to extend even to the environs of the city. Its territory is reputed ſacred, to a certain diſtance round it, which is indicated by marks ſet up for this purpoſe. Every caravan finds one of theſe marks in their way, which warns the pilgrims to put on the modeſt garb which it becomes them to wear on that ſacred ground. The government of this holy city is ſeated in a Sherriff, who is a temporal prince; and his revenue is increaſed by the donations of Mahometan ſovereigns. N. lat. 21° 47′. E. long. 56° 46′.

Every Muſſulman, it is well known, is obliged, once in his life, to viſit Mecca, and to perform acts of devotion in the ſacred places. But if this duty were univerſally performed, the concourſe of pilgrims would be immenſe, and the city would not contain the crowds that would reſort to it from every country in which the Mahometan religion has been introduced. Thoſe, whoſe circumſtances do not admit of their undertaking this pilgrimage, are allowed to have a perſon to perform it for them. But a pilgrim of this deſcription can act for no more than one perſon at the ſame time; and, in order to prevent impoſture, he muſt bring back a formal atteſtation from an Imam at Mecca, teſtifying, that he has actually performed the appointed devotional exerciſes in the holy places, in the name of ſuch a perſon, living or dead; for even after the death of any perſon, who, during life, has neglected this duty, it may be diſcharged in his name, and for his benefit. The caravans that viſit this city, are frequently compoſed of perſons who become pilgrims more from motives of intereſt and traffic than from thoſe of devotion. (See CARAVAN.) A pilgrim who has not been preſent from the commencement at the celebration of all the ceremonies, and performed every act of devotion, cannot obtain the title of "Hadgi;" an honour much courted by the Turks, becauſe it confers ſubſtantial privileges, and commands reſpect to thoſe who bear it. (See MAHOMET and MAHOMETANISM.) We ſhall here obſerve, that a ſimilar cuſtom prevails among the Chriſtians in the Eaſt, who are very anxious to obtain the title of "Hadgi" or "Mokdaſi," which they give to pilgrims of their communion. In order to acquire this title, it is not ſufficient for a perſon to go in pilgrimage to Jeruſalem: he muſt ſpend the ſeaſon of the paſſover in that city, and aſſiſt at all the ceremonies in the holy weeks. See PILGRIM.

MECCA, a town of Morocco, near the coaſt of the Atlantic. S. lat. 29° 45′. W. long. 9° 45′.

MECHADER, a town of Arabia, in Yemen; 27 miles S. of Sana. N. lat. 14° 7′. E. long. 44° 15′.

MECHAIN, PETER FRANCIS ANDREW, in *Biography*, a very able French mathematician and aſtronomer, was born at Laon in the year 1744. At an early age he diſcovered a ſtrong inclination for mathematical purſuits, and while he was under the inſtruction of his tutors, correſponded with Lalande, whom he was deſirous of aſſiſting in his labours. In 1772, Mechain was invited to Paris, where he was employed at the depôt of the marine, and aſſiſted M. Darquier in correcting his obſervations. Here his merit brought him acquainted with M. Doiſy, director of the depôt, who gave him a more advantageous ſituation at Verſailles. At this place he diligently obſerved the heavens, and, in 1774, ſent to the Royal Academy of Sciences, "A Memoir relative to an Eclipſe of Aldebaran," obſerved by him on the 15th of April. He calculated the orbit of the comet of 1774; and diſcovered that of 1781. In 1782, he gained the prize of the academy on the ſubject of the comet of 1661, the return of which was eagerly expected in 1790; and in the ſame year he was admitted a member of the academy, and ſoon ſelected for the ſuperintendance of the Connoiſſance des Tems. In the year 1790, M. Mechain diſcovered his eighth comet, and communicated to the academy his obſervations on it, together with his calculations of its orbit. In 1792 he undertook, conjointly with M. Delambre, the labour of meaſuring the degrees of the meridian, for the purpoſe of more accurately determining the magnitude of the earth and the length of a metre. In the month of June 1792, M. Mechain ſet out to meaſure the triangles between Perpignan and Barcelona; and notwithſtanding that the war occaſioned a temporary ſuſpenſion of his labours, he was enabled to reſume and complete them during the following year. He died on the 20th of September 1805, at Caſtellon de la Plana, in the ſixty-ſecond year of his age. Lalande deplores his loſs as that of not only one of the beſt French aſtronomers, but one of the moſt laborious, the moſt courageous, and the moſt robuſt. His laſt obſervations and calculations of the eclipſe of the ſun on the 11th of February, are inſerted in the Connoiſſance des Tems for the year 15, and he alſo publiſhed a great many in the Ephemerides of M. Bode of Berlin, which he preferred to a former work after Lalande became its editor. A more extenſive memoir of his labours may be ſeen in baron von Zach's Journal for July 1800; and Lalande's Hiſtory of Aſtronomy for 1804.

MECHANICS, that branch of practical mathematics which conſiders motion and moving powers, their nature, laws, effects, &c. This term, in a popular ſenſe, is applied equally to the doctrine of the equilibrium of powers, more properly called ſtatics, and to that ſcience which treats of the generation and communication of motion, which conſtitutes dynamics, or mechanics ſtrictly ſo called. See STATICS, POWER, MOTION, and DYNAMICS.

This ſcience is divided by Newton into practical and rational mechanics, the former of which relates to the mechanical powers, *viz.* the lever, balance, wheel and axis, pulley, wedge, ſcrew, and inclined plane; and the latter, or rational mechanics, to the theory of motion; ſhewing, when the forces or powers are given, how to determine the motion that will reſult from them, and converſely when the circumſtances of the motion are given, how to trace the forces or powers from which they ariſe.

Mechanics, according to the ancient ſenſe of the word, conſiders only the energy of *organa,* or machines. The authors who have treated the ſubject of mechanics ſyſtematically have obſerved, that all machines derive their efficacy from a few ſimple forms and diſpoſitions, that may be given to the *organa,* which are interpoſed between the agent and the reſiſtance to be overcome; and to thoſe ſimple forms they have given the name of mechanical powers, ſimple powers, or ſimple machines. See MECHANICAL *Powers.*

The practical uſes of the ſeveral mechanical powers were undoubtedly known to the ancients, but they were almoſt wholly unacquainted with the theoretical principles of this ſcience till a very late period; and it is therefore not a little ſurpriſing that the conſtruction of machines, or the inſtruments of mechanics, ſhould have been purſued with ſuch induſtry, and carried by them to ſuch perfection. Vitruvius, in his 10th book, enumerates ſeveral ingenious machines which had then been in uſe from time immemorial. We find, that for raiſing or tranſporting heavy bodies, they employed moſt of the means which are at preſent commonly uſed for that purpoſe, ſuch as the crane, the inclined plane, the pulley, &c.: but with the theory or true principles of equilibrium they ſeem to have been unacquainted till the time of Archimedes. This celebrated mathematician, in his book of Equiponderants, conſiders a balance ſupported on a fulcrum, and having a weight in each ſcale; and taking as a fundamental principle, that when the two arms of the balance are equal, the two weights ſuppoſed to be in equilibrio are alſo of neceſſity equal, he ſhews, that if one of the arms be increaſed, the weight applied to it muſt be proportionally diminiſhed. Hence he deduces the general concluſion, that two weights ſuſpended to the arms of a balance of unequal length, and remaining in equilibrio, muſt be reciprocally proportional to the arms of the balance; and this is the firſt trace any where to be met with of any theoretical inveſtigation of mechanical ſcience. Archimedes alſo farther obſerved, that the two weights exert the ſame preſſure on the fulcrum of the balance, as if they were directly applied to it; and he afterwards extended the ſame idea to two other weights ſuſpended from other points of the balance, then to two others, and ſo on, and hence, ſtep by ſtep, advanced towards the general idea of the centre of gravity, a point which he proved to belong to every aſſemblage of ſmall bodies, and conſequently to every large body, which might be conſidered as formed of ſuch an aſſemblage. This theory he applied to particular caſes, and determined the ſituation of the centre of gravity in the parallelogram, triangle, trapezium, parabola, parabolic trapezium, &c. &c. To him we are alſo indebted for the theory of the inclined plane, the pulley, and the ſcrew, beſides the invention of a multitude of compound machines, of which, however, he has left us no deſcription, and therefore little more than their names remain.

We may judge of the very imperfect ſtate in which the theory of mechanics was at that time, by the aſtoniſhment expreſſed by king Hiero, when Archimedes exclaimed, "Give me a place to ſtand on and I will move the earth," a propoſition which could have excited no ſurpriſe in any perſon poſſeſſing a knowledge of the ſimple property of the lever. Of the theory of motion, however, it does not appear that even Archimedes poſſeſſed any adequate idea; the properties of uniform motion ſeem only to have engaged the attention of the ancients, and with thoſe of accelerated and variable motion they were totally unacquainted: theſe were ſubjects to which their geometry could not be applied, the modern analyſis being neceſſary to bring this branch of the ſcience to perfection.

From the time of Archimedes till the commencement of the ſixteenth century, the theory of mechanics appears to have remained in the ſame ſtate in which it was left by this prince of Grecian ſcience, little or no additions having been made to it during ſo many ages; but about this time, Stevinus, a Flemiſh mathematician, made known directly, without the introduction of the lever, the laws of equilibrium of a body placed on an inclined plane: he alſo inveſtigated, with the ſame ſucceſs, many other queſtions on ſtatics, and determined the conditions of equilibrium between ſeveral forces concurring in a common point, which comes, in fact, to the famous propoſition relating to the parallelogram of forces; but it does not appear, however, that he was at all aware of its conſequences and application. In 1592, Galileo compoſed a treatiſe on Statics, which he reduced to this ſingle principle, *viz.* it requires an equal power to raiſe two different bodies to heights having the inverſe ratio of their weights; that is, whatever power will raiſe a body of two pounds to the height of one foot, will raiſe a body of one pound to the height of two feet. On this ſimple principle he inveſtigated the theory of the inclined plane, the ſcrew, and all the mechanical powers, and Deſcartes afterwards employed it in conſidering the ſtatical equilibriums of machines in general, but without quoting Galileo, to whom he had been indebted for the firſt idea. To Galileo we are alſo indebted for the theory of accelerated motion, and its complete coincidence with the obſerved phenomena of nature may be conſidered as one of the greateſt ſteps made at one time in the ſcience of phyſics. Since all bodies, ſaid this philoſopher, are heavy, into whatever number of parts we divide any maſs, it follows, that its total weight is proportional to the number of material atoms of which it is compoſed. Now the weight being thus a power always uniform in quantity, and its action never undergoing any interruption, it muſt, in conſequence, be continually giving new impulſes to a body, in every equal and ſucceſſive inſtant of time, and while the body is falling, theſe impulſes are inceſſantly accumulating, and remain in the body without alteration, the reſiſtance of the air alone being deducted, and hence the motion muſt be accelerated by equal degrees.

Torricelli, a pupil of Galileo, proſecuted the ſubject after his maſter, and added ſeveral curious propoſitions concerning projectiles, to thoſe which the latter had previouſly inveſtigated. Huygens conſidered the motion of bodies along given curves, and demonſtrated that the velocity of a heavy body, which deſcends along any curve, is the ſame at every inſtant in the direction of the tangent, as it would have acquired by falling freely from a height equal to the correſponding vertical abſciſs. Then applying this principle to the inverted cycloid, the axis of which is vertical, he found that a heavy body, from whatever part of the cycloidical arc it falls, always arrives at the loweſt point of that arc in the ſame ſpace of time. This very remarkable propoſition includes what is commonly called the *iſochroniſm* of the cycloid, and would alone have been ſufficient to eſtabliſh the fame of a geometrician. In 1661, Huygens, Wallis, and ſir Chriſtopher Wren, all diſcovered the true laws of percuſſion ſeparately, and without any communication with each other, a propoſition which Deſcartes had previouſly attempted, but failed in giving it a general ſolution. The finding of the centres of oſcillation in compound bodies ſoon followed that relating to percuſſion, and here again Huygens equally diſtinguiſhed himſelf by the accuracy and elegance of his ſolution; but as the principles which he employed were not well underſtood by the philoſophers and mathematicians of that period, his inveſtigations were much criticiſed at the time; but the honour of the diſcovery was finally attributed to him, and thoſe of Deſcartes and Roberval admitted to be erroneous, or at leaſt not ſufficiently general. However, before the diſcovery of the fluxional calculus, there were many curious and intereſting mechanical properties which the ancient geometry was incompetent to inveſtigate, and which could never have been brought to light but by the aſſiſtance of this modern branch of analyſis.

After the foundation of ſtatics was laid by Archimedes, it was not difficult to diſcover the conditions of equilibrium in every particular caſe, and theſe had guided the genius of invention in a number of machines, but they were not yet reduced to a general and uniform principle.

Varignon undertook and accompliſhed this plan of combining them, by means of the theory of compound motions. He gave ſome ſketches of this in 1687, in his Project of a new Syſtem of Mechanics, and he in ſome degree exhauſted all the combinations of the equilibrium of machines, in his "General Mechanics," not publiſhed till after his death, in 1725. In 1695, la Hire publiſhed a "Treatiſe on Mechanics," the general object of which, like that of Varignon's, is the equilibrium of machines, beſide which it contains various applications of machines to the arts, in which the author was well verſed. He alſo ſubjoined a treatiſe on epicycloids, and their uſe in this ſcience, particularly as relating to the forms of teeth in wheel-work. This is a beautiful theory, and is highly creditable to its author, who it appears from the teſtimony of Leibnitz was not la Hire, though he publiſhed it as ſuch, but was due to the celebrated Daniſh mathematician Roemer, who had communicated it to Leibnitz twenty years before la Hire's work appeared. After this period, ſeveral elementary treatiſes on the ſubject of mechanics were publiſhed, without, however, adding much to the previous ſtock of knowledge, unleſs indeed we except that of Cormus, a work highly valuable for the ſtrictneſs and perſpicuity of its demonſtrations.

At this time very little had been done with regard to the theory of variable motion; this now began to engage the attention of mathematicians, and opened an extenſive field to their reſearches. Galileo, as we have ſeen, made known the properties of rectilinear and uniformly accelerated motions; Huygens had treated of curvilinear motion, which finally led to the beautiful theory of central forces in a circle, and which is equally applicable to motion in any curve, by conſidering them as infinite ſeries of ſmall arcs of a circle, agreeably to the idea which he himſelf had employed in his general theory of evolutes. The laws of the communication of motion, likewiſe ſketched by Deſcartes, and farther purſued by Wallis, Huygens, and Wren, had made a new and very conſiderable ſtep, by means of the ſolution which Huygens gave of the celebrated problem of the centres of oſcillation. All theſe acquiſitions, at firſt ſeparate and in ſome meaſure independent of each other, having been reduced to a ſmall number of ſimple, commodious, and general formulæ, by means of the analyſis of infinites, the ſcience of mechanics acquired freſh vigour, and was proſecuted with the moſt unbounded ſucceſs. The problems relating to motion were reduced into two claſſes; the firſt compriſing the general problem of the motion of a ſingle body acted upon by any given powers; and the ſecond, the motions which reſult from the action and re-action that ſeveral bodies exert on each other in any given manner.

In the motion of a ſingle body, we obſerve that matter, being of itſelf paſſive, if once ſet in motion, muſt uniformly perſevere in it; and that its motion can neither increaſe nor diminiſh, unleſs by the action of ſome external power, which may be either conſtant or variable. And hence ariſe two principles, that of *vis inertiæ* and that of compound motion; and on theſe are founded the whole theory of motion, rectilineal or curvilineal, conſtant or variable, according to a given law. By virtue of the *vis inertiæ*, motion at every inſtant is eſſentially rectilinear and uniform, ſetting aſide reſiſtance and every obſtacle that might otherwiſe impede or change its direction; and by the nature of compound motion, a body expoſed to the action of a given number of forces, all tending at the ſame time to change the quantity and direction of its motion, takes ſuch a path through ſpace that in the laſt inſtant it reaches the ſame point at which it would have arrived, had it ſucceſſively and freely obeyed each of the forces propoſed.

On applying theſe principles to rectilineal motions uniformly accelerated, we perceive, 1ſt, that in this motion, the velocities increaſing by equal degrees, or proportionally to the time, the accelerating force muſt be conſtant, or inceſſantly give equal impulſes to the moving body, and that, conſequently, the final velocity is as the product of the accelerating force multiplied by the time. 2dly. Each elementary portion of ſpace paſſed through being as the product of the correſponding velocity multiplied by the element of the time, the whole of the ſpace paſſed through is as the product of the accelerating force multiplied by the ſquare of the time; and theſe two properties equally take place for each elementary portion of any variable motion whatever. Thus in every rectilineal motion variable according to a given law, the increment of the velocity is as the product of the accelerating force into the element of the time, and the ſecond fluxion of the ſpace paſſed through is as the product of the accelerating force into the ſquare of the element of the time. Now if to theſe principles we add that of compound motion, we ſhall arrive at the knowledge of all curvilineal motion whatever. In fact, whatever forces be applied to a body deſcribing a curve, we may at each inſtant reduce theſe forces to two, the one acting in the direction of the tangent at any point of the curve, and the other perpendicular to it; the firſt produces an inſtantaneous rectilineal motion, to which the principle of *vis inertiæ* applies; and the ſecond is expreſſed by the ſquare of the actual velocity of the body, divided by the radius of curvature, agreeably to the theory of central forces in the circle, which equally reduces to the ſame principle the motion in the direction of the radius of curvature. Such were the general principles introduced into the ſcience of mechanics by means of the modern analyſis, and there ſeems to be no doubt that it was by purſuing this theory, Newton was led to thoſe brilliant diſcoveries which he afterwards publiſhed in his "Principia" under a different form. In 1716, Hermann publiſhed his "De Phoronomia," in which he undertook to explain all that regards mechanics, both of ſolids and fluids, that is to ſay, ſtatics, dynamics, hydroſtatics, and hydraulics; in which he employs the ſynthetic method, although, like Newton, he doubtleſs derived moſt of his reſults from analyſis, a circumſtance which frequently interrupts the unity and connection of his problems.

The Mechanics of Euler, publiſhed in 1736, contain the whole theory of rectilinear and curvilinear motion in an iſolated body, acted upon by any accelerating forces whatever, either in vacuo or in a reſiſting medium. The author has every where followed the analytical method, which, by reducing all the branches of this theory to uniformity, greatly facilitates the connection of it, and the whole is managed with an elegance and perſpicuity, of which, before this time, we had no example. As to the principles of mechanics by which he puts his problems into equations, he employs thoſe above mentioned.

This manner of laying the foundation of the calculation, however, though ſufficiently commodious, was not the only one that might have been employed, nor was it the moſt ſimple. For the forces and motions at every inſtant may be reſolved into other forces and motions parallel to fixed lines of given poſition in ſpace. In which caſe nothing more is neceſſary than to apply the equations of the principles of *vis inertiæ* to theſe motions and forces, by which means the theorem of Huygens may be avoided. This ſimple idea, which was firſt employed by Maclaurin in his "Treatiſe on Fluxions," threw new light on the theory of mechanics, and much facilitated the ſolution of various problems. When the body moves conſtantly in one plane, two fixed axes only are to be taken, which are ſuppoſed to be perpendicular to each other, for the ſake of greater ſimplicity; but when we are obliged, by the nature of the forces, to change the path continually in all directions, and to deſcribe a curve of double curvature, three axes are to be employed perpendicular to each other, or forming the edges of a right-angled parallelopipedon. But the problems relating to the communication of motion, commonly called *dynamic problems*, required new principles. Theſe, for inſtance, conſiſt in determining the motions that reſult from the percuſſion of ſeveral bodies; the centre of oſcillation of a compound pendulum; the motions of ſeveral bodies ſtrung upon a rod, which has a rotatory movement round a fixed axis; &c.

Now it is evident, that in all caſes of this kind the motion of the bodies is not the ſame as if the bodies were iſolated and at liberty, but that there muſt be a diſtribution of the forces among all the bodies forming one whole, ſo that the motion gained by ſome of them is loſt by others. The motion gained or loſt is always eſtimated by the product of the maſs into the velocity received or loſt, whether the communication or the loſs of motion be produced every inſtant by finite degrees, as in the ſhock of hard bodies, or whether the velocity change at each inſtant only by degrees infinitely ſmall, as in motion of ſeveral bodies ſtrung on a moveable rod, and generally in all caſes where forces act in the manner of gravitation.

When Huygens gave his ſolution of the problems of oſcillation, ſome unſkilful mathematicians attacked it in reviews. James Bernouilli defended it in the Leipſic Tranſactions for 1686, and undertook to give a direct demonſtration by means of the principle of the lever. At firſt, he conſidered only two equal weights faſtened to an inflexible rod devoid of gravity, which was in motion round an horizontal axis. Having then obſerved that the velocity of the weights, neareſt to the axis of rotation, muſt neceſſarily be leſs, and that on the other greater, than if each acted on the rod ſeparately, he concludes that the force loſt and the force gained balance each other, and that, conſequently, the product of the quantity of matter in one, into the velocity it loſes, and that of the other multiplied by the velocity it gains, muſt be inverſely proportional to the arms of the lever. This reaſoning is in fact accurate, only James Bernouilli miſtook in ſetting out, by conſidering the velocities of the two bodies as finite, inſtead of which he ſhould only have conſidered the elementary velocities, and compared them with the ſimilar velocities produced every inſtant by the action of gravitation. De l'Hôpital remarked this error, and in correcting it, he found the centre of oſcillation of the two weights, without departing in other reſpects from the principle of Bernouilli. In order then to proceed to a third weight, he united the former two at their centre of oſcillation, and combined this new weight with the third, as he had combined together the former two, and ſo on. But the propoſed union was a little precarious, and could not be admitted without a demonſtration. This led Bernouilli to revive his former ſolution, in order to extend it generally to any number of bodies, which he finally accompliſhed. His method conſiſts in reſolving the motion of each body at any given inſtant into two other motions, the one, that which the body actually takes; and the other, that which is deſtroyed, and in forming equations which expreſs the condition of equilibrium between the motions loſt; by which means the problem is brought under the general laws of ſtatics. The author applies this principle to ſeveral examples, and demonſtrates ſtrictly, and in the moſt evident manner, the propoſition which Huygens employed as the baſis of his ſolution. See Memoirs of the Academy of Sciences for 1703.

This ſolution of the problem of the centres of oſcillation, ſeemed to leave nothing to be deſired; yet, in 1714, it was brought forward again by John Bernouilli and Dr. Taylor, which were fundamentally the ſame. This occaſioned warm diſputes between them, as to the originality of their performances. Here, inſtead of the elementary weights of which the pendulum is compoſed, other weights are ſuppoſed to be ſubſtituted, in one and the ſame point, ſuch that their motion of angular acceleration, and their motion with reſpect to the axis of rotation, ſhall be the ſame, and the new pendulum oſcillate as the former. But theſe ſolutions are not conſidered ſo luminous as that of James Bernouilli, which was founded immediately on the laws of equilibrium. Leibnitz eſtimated the momenta of bodies by the maſs into the ſquare of their velocities, and John Bernouilli having adopted the ſame opinion, gave to the principles of Huygens, for the problem of the centres of oſcillation, the name of the principle of converſion of the *vires vivæ*, which it has retained, becauſe, in fact, in the motion of a ſyſtem of heavy bodies, the ſum of the products of the maſſes into the ſquares of the velocities remains the ſame, when the bodies deſcend conjointly, and when they afterwards aſcend ſeparately, with the velocities they acquired by their deſcent. This principle was alſo followed with ſucceſs in dynamical problems, by ſeveral able analyſts of the laſt century; but as it gives only a ſingle equation, from which the velocity or the time muſt afterwards be expunged, the ſecond object was attained by different means.

John Bernouilli employed for this purpoſe the principle of *tenſions*; Euler, that of *preſſures*; Daniel Bernouilli, that of *virtual power*, which a ſyſtem of bodies has of reeſtabliſhing itſelf in its former ſtate; and in certain caſes both he and Euler made uſe of the conſtant quantity of circulatory motion round a fixed point. And when at length all the differential, or fluxional equations of the problem were eſtabliſhed, it remained only to reſolve them, which was of courſe the leaſt difficult part of their inveſtigations.

The principle which had been employed by James Bernouilli, in the ſolution of the problem relating to the centre of oſcillation, was generalized by D'Alembert; he ſhewed, that in whatever manner the bodies of one ſyſtem act upon each other, their motions may always be reſolved at every inſtant into two ſorts of motions, thoſe of the one being deſtroyed in the ſucceſſive inſtant, but the other retained; and that the motions retained are neceſſarily known from the conditions of the equilibrium between the motions deſtroyed. This general principle applies to all the problems of dynamics, and at leaſt reduces all their difficulties to thoſe of the problems of ſimple ſtatics; and renders uſeleſs that of the converſion of *vires vivæ*. By this means D'Alembert has reſolved a number of very beautiful and very difficult problems, ſome of which were abſolutely new, as, for example, that relating to the preceſſion of the equinoxes. Theſe general principles were firſt developed by D'Alembert in 1743, but they were more fully treated of in his Treatiſe of Dynamics, publiſhed in 1749; a truly intereſting and original work, highly creditable to the talents of this celebrated author. The ſcience of dynamics having thus gradually attained a high degree of perfection, was ſtill farther enriched, in 1765, by an important diſcovery, which is due to Segner; who has ſhewn in a ſhort paper entitled "Specimen Theoriæ Turbinum," *that if a body, of any ſize and figure, after rotatory or gyratory motions in all directions have been given to it, be left entirely to itſelf, it will always have three principal axes of rotation;* that is, that all the rotatory motions, by which it is affected, may conſtantly be reduced to three, which are performed round three axes perpendicular to each other paſſing through the centre of gravity or inertiæ of the body, and always preſerving the ſame poſition in abſolute ſpace, while the centre of gravity is at reſt, or moves uniformly in a right line; the poſition of theſe three axes being determined by an equation of the third order. This theory, which its author had not ſufficiently developed, Albert, the ſon of the celebrated Euler, treated at length in his paper "On the Stowage of Ships," which ſhared the prize of the Academy of Sciences at Paris for 1761, as did likewiſe his father, according to the ſame method, in the Memoirs of the Academy at Berlin for 1759, and in his work entitled "Theoria Motus Corporum rigidorum, 1765." Laſtly, D'Alembert ſhewed in his "Mathematica Opuſcula," vol. iv. publiſhed in 1768, that the ſolution of the problem was deducible from the formulæ which he had given in a memoir for determining the motion of a body of any figure, acted upon by any forces whatever, printed in vol. i. of his Opuſcula in 1761. The knowledge of theſe motions of free rotation round three principal axes, naturally led to the determination of the motion round any variable axes whatever; and hence, if we conſider the body to be acted upon by any given accelerating forces, we muſt begin with determining the rectilinear or curvilinear motion of the centre of gravity abſtractedly from all rotatory motion, and then combining this progreſſive motion with the rotatory motion of a given point of the body round a variable axis, we ſhall know at every inſtant the compound motion of this point in abſolute ſpace. On theſe principles Euler has reſolved many curious and intereſting problems relating to dynamics, and the ſame have been ſince farther proved by ſubſequent mathematicians. (Boſſut's Hiſt. Math.) We have thus given a ſketch of the hiſtory and ſucceſſive improvements of the ſcience of mechanics, which is all that is neceſſary under the preſent article, as the particular branches connected with this ſubject are treated of ſeparately under their reſpective heads in the different articles of this work. But as we have only directed our attention to the more prominent parts of the hiſtory, the works to which our references have been made are very limited. It remains, therefore, before we conclude this article, to enumerate ſome of the principal writers on mechanics, or on particular branches of it, which are as follows, *viz.*

Newton, in his "Principia;" Guido Ubaldus, in his "Liber Mechanicorum;" Torricelli, "Libri de Motu Gravium naturalitis Decendentium et Projectorum;" Balianus, "Tractatus de Motu naturali Gravium;" Huygens, "Horologium Oſcillatorium," and "Tractatus de Motu Corporum ex Percuſſione;" Leibnitz, "Reſiſtentia Solidorum," in Acta Euroditus, ann. 1684; Guldinus, "De Centro Gravitatis;" Wallis, "Tractatus de Mechanica;" Varignon, "Projet d'une Nouvelle Mechanique," and his papers in the Memoires Acad. ann. 1702; Borelli, "Tractatus de Vi Percuſſionis, de Motionibus naturalibus, &c.;" De Chales, "Treatiſe on Motion;" Pardies, "Diſcourſe on Local Motion;" Parent, "Elements of Mechanics and Phyſics;" Caſatus, "Mechanica;" Oughtred, "Mechanical Inſtitution;" Robault, "Tractatus de Mechanica;" Lamy, "Mechanique;" Keil, "Introduction to true Philoſophy;" De la Hire, "Mechanique;" Mariotte, "Tracti du Choc du Corps;" Ditton, "Laws of Motion;" Hermann, "Phoronomia;" Graveſande, "Phyſics;" Euler, "Tractatus de Motu;" Muſchenbroeck, "Phyſics;" Boſſu, "Mechaniques;" La Grange, "Mechanique Analytique;" Atwood, "On Motion;" Prony, "Architeture Hydraulique," and "Mechanique Analytique;" Francear, "Mechanique;" Gregory, "Mechanics in Theory and Practice," &c. &c. to which may be added the names of Nicholſon, Enfield, Wood, Ferguſon, Young, and Marat. For thoſe works which relate principally to the deſcription of machinery, ſee the article Machine.

MECHANICAL, ſomething that relates to mechanics, or is regulated by the nature and laws of motion.

In which ſenſe we ſay mechanical powers, mechanical properties or affections, mechanical principles, reaſoning, knowledge, &c.

Mechanical *Affections*, are ſuch properties in matter, as reſult from their figure, bulk, and motion.

Mechanical *Cauſes*, are thoſe founded on ſuch affections.

Mechanical *Force*. See Force.

Mechanical *Solutions*, are accounts of things on the ſame principles.

Mechanical *Philoſophy*, is the ſame with what we otherwiſe call the *corpuſcular philoſophy; viz.* that which explains the phenomenon of nature, and the operations of corporeal things, on the principles of mechanics; *viz.* the motion, gravity, figure, arrangement, diſpoſition, greatneſs, or ſmallneſs of the parts which compoſe natural bodies. See Corpuscular.

Mechanical *Powers*, (ſo called,) are thoſe machines which are uſed for raiſing greater weights, or overcoming greater reſiſtances than could be effected by the natural ſtrength without them; the power of ſtrength being applied to one part of the machine, and another part of the machine applied to the weight or reſiſtance.

There are two principal problems that ought to be reſolved in treating of each of them.

The firſt is, to determine the proportion which the power and weight ought to have to each other, that they may juſt ſuſtain one another, or be in equilibrio.

The ſecond is, to determine what ought to be the proportion of the power and weight to each other in a given machine, that it may produce the greateſt effect poſſible, in a given time.

As to the firſt problem, this general rule holds in all powers; ſuppoſe the engine to move, and reduce the velocities of the power and weight to the reſpective directions in which they act; find the proportions of thoſe velocities; then if the power be to the weight as the velocity of the weight is to the velocity of the power; or, which amounts to the ſame thing, if the power multiplied by its velocity, gives the ſame product as the weight multiplied by its velocity, this is the caſe wherein the power and weight ſuſtain each other, and are in equilibrio; ſo that in this caſe the one would not prevail over the other, if the engine was at reſt; and if it is in motion, it would continue to proceed uniformly, if it were not for the friction of its parts, and other reſiſtances.

The ſecond general problem in mechanics is, to determine the proportion which the power and weight ought to bear to each other, that when the power prevails, and the machine is in motion, the greateſt effect poſſible may be produced by it in a given time. It is manifeſt, that this is an enquiry of the greateſt importance, though few have treated of it. When the power is only a little greater than that which is ſufficient to ſuſtain the weight, the motion is too ſlow; and though a greater weight is raiſed in this caſe it is not ſufficient to compenſate the loſs of time. When the weight is much leſs than that which the power is able to ſuſtain, it is raiſed in leſs time; and this may happen not to be ſufficient to compenſate the loſs ariſing from the ſmallneſs of the load. It ought, therefore, to be determined when the product of the weight, multiplied by its velocity, is the greateſt poſſible; for this product meaſures the effect of the engine in a given time, which is always the greater in proportion as the weight which is raiſed is greater, and as the velocity with which it is raiſed is greater. For other conſiderations neceſſary to be regarded in the conſtruction and uſe of machines, we refer to the articles MACHINE and MACHINERY.

The ſimple machines by which power is gained, are ſix in number, *viz.* the *lever*, the *wheel and axle*, or *axis in peritrochio*, the *pulley* (or rather ſyſtem of pullies), the *inclined plane*, the *wedge*, and the *ſcrew*. Of theſe, all ſorts of mechanical engines conſiſt; and in treating of them, ſo as to ſettle their theory, we muſt conſider them as mechanically exact, and moving without friction. Although theſe machines are treated of at large under their proper heads, it may not be amiſs to give a ſhort account of them all here.

1. A *lever* is an inflexible bar, turning upon a ſupporting prop as its centre of motion, which muſt be firm enough to bear the lever and the weight with which it is charged. There are three kinds of levers, and in each of them the velocity of each point is directly as its diſtance from the prop.

A lever is ſaid to be of the firſt kind when the prop is between the weight and the power. Here the power and weight balance each other, when the power is in proportion to the weight as the diſtance of the weight from the prop is to the diſtance of the power from it; ſo that if a weight be twenty pounds, and at one foot from the prop, a power of one pound at twenty feet from the prop will balance the weight, ſuppoſing the lever itſelf to have no weight. To this ſort of lever may be reduced all iron crows, ſciſſars, pinchers, candle-ſnuffers, and the like.

A lever is ſaid to be of the ſecond kind, when the weight is between the prop and the power. Here the lever and weight balance each other when the power is in proportion to the weight as the diſtance of the weight from the prop is to the diſtance of the power from it. Of this ſort are doors turning on hinges, oars, and ſuch knives as are fixed at the point.

A lever is ſaid to be of the third kind when the power is between the weight and the prop. In this, the power and weight balance each other, when the power is in proportion to the weight, as the diſtance of the weight from the prop is to the diſtance of the power from it: but this lever is never uſed where power is wanted to be gained; for in it, the intenſity of the power applied, muſt always exceed the intenſity of the weight to be raiſed, or reſiſtance to be overcome. Of this ſort are the bones of our legs and arms, and the wheels of clocks and watches. See LEVER and BALANCE.

2. In the *wheel and axle*, where the power is applied to the wheel, and the weight drawn up by a rope winding round the axle, the velocity of the power is to the velocity of the weight, as the circumference of the wheel is to the circumference of the axle, and the advantage gained by the machine is in the ſame proportion: for the power and weight balance each other when the power is in proportion to the weight, as the circumference of the axle is to the circumference of the wheel. This machine is the principal part of a common *crane*. See AXIS in *Peritrochio*.

3. A *pulley*, that only turns on its axis, and does not riſe with the weight, ſerves only to change the direction of the power; for it gives no mechanical advantage thereto. But when, beſides the upper pullies, which turn round in a fixed frame, or block, there is a block of pullies moving equally faſt with the weight, the velocity of the weight is to the velocity of the power as one is to twice the number of pullies in the moveable block: and the power and weight balance each other when the power is in proportion to the weight, as one is to twice the number of pullies in the moveable block. See PULLEY.

4. An *inclined plane* is like one-half of a wedge which has been cut in two equal parts lengthwiſe. A weight raiſed, or a reſiſtance moved, by an inclined plane, moves only through a ſpace equal to the height of that machine, in the time that a power drives it through a ſpace equal to its whole length. Therefore, the velocity of the power is in proportion to the velocity of the weight, as the length of the machine is to its thickneſs or height at the back; and the power and weight balance each other when the power is in proportion to the weight, as the thickneſs of the plane is to its length. All edge tools, which are chamfered (or ground down only on one ſide to the edge), are inclined planes, as far as the chamfer goes from the edge. See *Inclined* PLANE.

5. A *wedge*, in the common form, is like two inclined planes, joined together at their baſes; and the thickneſs of theſe planes (oppoſite their ſharp edges) makes the back of the wedge, to which the power of the ſledge or hammer is applied in cleaving of wood.

When two equal reſiſtances act perpendicularly againſt oppoſite ſides of the wedge, and a power acts perpendicularly againſt the back of the wedge, the velocity of the power is in proportion to the velocity of the reſiſtance on either ſide, as the length of the ſide is to half the thickneſs of the back: and the power balances the reſiſtance of the wood, when the power is in proportion to the reſiſtance, as half the thickneſs of the back of the wedge is to the length of either of its ſides, if the ſharp edge goes to the bottom of the cleft in the wood. But when the wood ſplits before the wedge, as it generally does, the power balances the reſiſtance, when the former is to the latter as half the thickneſs of the wedge (when it is driven quite into the wood) is to the whole length of the cleft below the back of the wedge. See Wedge.

6. The *ſcrew* may be conſidered as if it were an inclined plane, wrapt round a cylinder. In this machine, the power muſt turn the cylinder quite round, in the time that the weight or reſiſtance (as in a common preſs) moves through a ſpace equal to the diſtance between the threads or ſpirals of the ſcrew. Therefore, the velocity of the power is in proportion to the velocity of the weight or reſiſtance, as the circumference of a circle, deſcribed by the power, is to the diſtance between the ſpirals of the ſcrew; and the power and reſiſtance balance each other, when the former is to the latter as the diſtance between the ſpirals is to the circumference of the circle deſcribed by the power. This machine, beſides the advantage peculiar to itſelf, has generally the benefit of the wheel and axle, on account of the winch or lever by which it is turned. See Screw.

Of theſe ſix ſimple machines, all the moſt compound engines in the world are made. As the ſcrew includes the inclined plane, and two equally inclined planes make the wedge, we have all the mechanical powers combined together in a common jack, if it be turned by the fly; for then we have alſo the lever, the wheel and axle, and the pullies.

Thus, in a frame A B C D, (*Plate* XXXII. *Mechanics*, *fig.* 5.) faſtened by the nut O upon the ſtand O O, and held together by the pillars V W and B *q*, is adapted firſt the piece E F, whoſe fans or flies may be put in motion by the wind, or drawn by a hair faſtened at F, which repreſents the lever and balance: at right angles to this piece is joined the perpendicular ſpindle G H, having upon it the endleſs ſcrew H, which may be alſo conſidered as a wedge. This endleſs ſcrew or worm takes the ſkew teeth of the wheel K, which is the axis in peritrochio, and, in turning round, winds up the ſtring L M upon its axis, which paſſing round the pullies at M and N, or drawing by a tackle of five, raiſes the weight P. But as the ſcrew has no progreſſive motion on its axis, it cannot here be ſaid to comprehend the inclined plane; therefore, in order to make this machine take in all the mechanical powers, we may add the inclined plane, *r q* Q R, by making it reſt on the ground at Q R, and on the pillar *q* B, at *q r*, and thereby the force of the power drawing at F, will be farther increaſed in the proportion of Q T to T S. The whole force gained by this machine is found by comparing the ſpace gone through by the point F, with the height through which the weight is raiſed, in any determinate number of revolutions of F. An hundred pounds weight at P will be eaſily raiſed by the hair of a man's head drawing at F.

If an engine conſtructed in this manner be uſed for raiſing a weight, by means of a power applied to the fly, the power will balance the weight, if it be in proportion to the weight as the velocity of the weight is to the velocity of the fly. Now, conſidering how faſt the fly moves with reſpect to the motion of the weight, it is evident, that a crane, conſtructed in the manner of a common jack, would be an engine of very great power. But then the time loſt in raiſing the weight would alſo be very great: for, in any machine or engine whatever, the time loſt in working it will be as great as the power gained by it.

If machines or engines could be made without friction, the leaſt degree of power added to that which balances the weight would be ſufficient to raiſe it. In the lever, the friction is next to nothing; in the wheel and axle it is but ſmall; in the pullies it is very conſiderable; and in the inclined plane, wedge, and ſcrew, it is very great. The univerſal law or principle in all mechanical machines or engines, made to gain power, is, that the power gained will be always as great as the velocity of the power exceeds the velocity of the weight or reſiſtance: and, upon this principle, it is eaſy to compute the power, force, or advantage, of any ſimple machine or compound engine whatever.

E gr. If the body A (*Plate* XXXII. *Mechanics*, *fig.* 6.) be triple the body B, and each of them be ſo fixed to the extremities of a lever A B, whoſe fulcrum or fixed point is C, as that the diſtance of B C be triple the diſtance C A; the lever cannot be inclined on either ſide, but the ſpace B E, paſſed over by the leſs body, will be triple the ſpace A D, paſſed over by the great one. So that their motions or moments will be equal, and the two bodies in equilibrio.

Hence that noble challenge of Archimedes, *datis viribus, datum pondus movere;* for as the diſtance C B may be increaſed infinitely, the power or moment of A may be increaſed infinitely. So that the whole of mechanics is reduced to the following problem.

Any body, as A, *with its velocity* C, *and alſo any other body, as* B, *being given; to find the velocity neceſſary to make the moment or quantity of motion, in* B, *equal to the moment of* A, *the given body.* Here, ſince the moment of any body is equal to the rectangle under the velocity, and the quantity of matter; as B : A :: C : to a fourth term, which will be *c*, the celerity proper to B, to make its moment equal to that of A. Wherefore in any machine or engine, if the velocity of the power be made to the velocity of the weight, reciprocally as the weight is to the power, ſuch power will always ſuſtain, or, if the power be a little increaſed, it will move the weight.

Let, for inſtance, A B be a lever, whoſe fulcrum is at C, and let it be moved into the poſition *a* C *b*. Here, the velocity of any point in the lever is as the diſtance from the centre. For let the point A deſcribe the arc A *a*, and the point B the arc B *b*; then theſe arcs will be the ſpaces deſcribed by the two motions: but ſince the motions are both made in the ſame time, the ſpaces will be as the velocities. But it is plain, the arcs A *a* and B *b* will be to one another as the radii A C and C B, becauſe the ſectors A C *a* and B C *b* are ſimilar: wherefore the velocities of the points A and B are as their diſtances from the centre C.

Now if any powers be applied to the ends of the lever A and B, in order to raiſe its arms up and down; their force will be expounded by the perpendiculars S *a* and *b* N; which, being as the right ſines of the former arcs, *a* A and B *b*, will be to one another alſo as the radii A C and C B; wherefore the velocities of the powers are alſo as their diſtances from the centre. And ſince the moment of any body is as its weight, or gravitating force, and its velocity, conjunctly; if different powers of weights be applied to the lever, their moments will always be as the weights and the diſtances from the centre conjunctly. Wherefore, if to the ſame lever there be two powers or weights applied reciprocally proportional to their diſtances from the centre, their moments will be equal; and if they act contrarily, as in the caſe of a ſteel-yard, the lever will remain in an horizontal poſition, or the balance will be in equilibrio. And thus it is eaſy to conceive how the weight of one pound may be made to equibalance a thouſand, &c.

Hence alſo it is plain, that the force of the power is not at all increaſed by engines; only the velocity of the weight, in either lifting or drawing, is ſo diminiſhed by the application of the inſtrument, as that the moment of the weight is not greater than the force of the power. Thus, for inſtance, if any force can raiſe a pound weight with a given velocity, it is impoſſible by any engine to effect, that the ſame power ſhall raiſe two pound weight with the ſame velocity: but by an engine it may be made to raiſe two pound weight, with half the velocity, or 1000 times the weight with $\frac{1}{1000}$ of the former velocity.

We ſhall here introduce into one view, an account of the principal methods that have occurred to us of explaining and demonſtrating the fundamental property of the ſeveral mechanical powers. It has been already obſerved, that, with regard to the lever, when any two forces act againſt each other on its arms, they will continue in equilibrio, if their quantities are inverſely as the diſtance between the points to which they are applied, and the point or fulcrum round which the lever turns. The demonſtration commonly aſcribed to Archimedes is founded upon this principle, that when any cylindric or priſmatic body is applied upon a lever, it has the ſame effect as if its whole weight was united and applied at the middle point of its axis. Let A B, *Plate* XXXII. *Mechanics*, *fig.* 7, be a cylinder, of an uniform texture, C its middle point; and it is manifeſt, that if the point C be ſupported, the equal halves of the cylinder, C A and C B, will balance each other about the point C, and the body will remain in equilibrio. Let the cylinder A B be diſtinguiſhed into any unequal parts, A D and D B; biſect A D in E, and D B in F; then a power applied at E, equal to the weight of the part A D, with a contrary direction, will ſuſtain it; and a power applied at F, equal to the weight of the part D B, with a contrary direction, will ſuſtain that part; ſo that theſe two powers acting at E and F, reſpectively equal to the weights of A D and D B, have preciſely the ſame effect as a prop at C, ſuſtaining the whole cylinder A B, and may be conſidered as in equilibrio with a power, acting at C, equal to the whole weight of the cylinder. But the diſtance $CE = CA - AE = \frac{1}{2}AB - \frac{1}{2}AD = \frac{1}{2}DB$; and, in like manner, the diſtance $CF = CB - BF = \frac{1}{2}AB - \frac{1}{2}DB = \frac{1}{2}AD$; conſequently C E is to C F as D B to A D; that is, as the power applied at F to the power applied at E, theſe being in equilibrio with the weight of the whole cylinder applied at C. From which it appears, that powers applied at E and F, which are to each other in the proportion of C F to C E, ſuſtain one another about the centre C.

It has been objected by M. Huygens and others, to this demonſtration of Archimedes, that when the whole cylinder is diſtinguiſhed into two ſegments, part of the weight of the greater ſegments acts on the ſame ſide of the fulcrum with the leſſer ſegment; and, therefore, when the whole weight of the greater ſegment is contracted into its middle point on one ſide of the fulcrum, and acts altogether againſt the leſſer ſegment, it requires ſome proof to ſhew, that this contracted weight will be balanced by the weight of the leſſer ſegment. M. Huygens propoſed a method of his own, depending on a poſtulatum aſſumed in common with Archimedes, and needing demonſtration, *viz.* that when equal bodies are placed on the arms of a lever, the one which is fartheſt from the fulcrum will prevail and raiſe the other up.

Sir Iſaac Newton demonſtrates the fundamental propoſition concerning the lever, from the reſolution of motion: let C, *fig.* 8, be the centre of motion in the lever K L; let A and B be any two powers applied to it at K and L, acting in the directions K A and L B. From the centre of motion, C, let C M and C N be perpendicular to thoſe directions in M and N; ſuppoſe C M to be leſs than C N, and from the centre C, at the diſtance C N, deſcribe the circle N H D, meeting K A in D. Let the power A be repreſented by D A, and let it be reſolved into the power D G acting in the direction C D, and the power D F perpendicular to C D, by completing the parallelogram A F D G. The power D G, acting in the direction C D from the centre of the circle, or wheel, D H N, towards its circumference has no effect in turning it round the centre, from D toward H, and tends only to carry it off from that centre. It is the part D F only that endeavours to move the wheel from D towards H and N, and is totally employed in this effort. The power B may be conceived to be applied at N as well as at L, and to be wholly employed in endeavouring to turn the wheel the contrary way, from N towards H and D. If, therefore, the power B be equal to that part of A which is repreſented by D F, theſe efforts, being equal and oppoſite, muſt deſtroy each other's effect; that is, when the power B is to the power A, as D F to D A, or (becauſe of the ſimilarity of the triangles, A F D, D M C) as C M to C D or as C M to C N, then the powers muſt be in equilibrio; and thoſe powers always ſuſtain each other that are in the inverſe proportion of the diſtances of their directions from the centre of motion; or when the product of the one power multiplied by the diſtance of its direction from the centre, is equal to the product of the power on the other ſide multiplied by the like diſtance from it.

Mr. Maclaurin propoſes a new method of demonſtrating the law of equilibrium in the lever, which ſeems, he ſays, to be founded on the plaineſt and moſt evident principles: theſe principles are the following, *viz.* that if equal powers act at equal diſtances on different ſides of the fulcrum or centre of motion, with directions oppoſite and parallel to each other, they will have the ſame effect: and that, if gravity be ſuppoſed to act in parallel lines, and the fulcrum be between the bodies, whoſe powers are eſtimated, it muſt bear the ſum of their weights; becauſe the lever being loaded with thoſe weights, it muſt give way, if the fulcrum does not ſuſtain their ſum: but if the powers are on the ſame ſide of the fulcrum, in which caſe one of them muſt pull upwards whilſt the other pulls downwards, that there may be an equilibrium, it is then only loaded with the difference of the powers.

Suppoſing, therefore, firſt, two equal powers, A and B, *fig.* 9, acting in the directions A F, B H, to carry a body C, upon the lever A B, placed at C at equal diſtances from them; it is evident that, in this caſe, each of the powers A and B ſuſtains one-half of the weight C, by dividing it equally between them. Imagine now that the power A is taken away, and that, inſtead of reſting upon it, the end A of the lever reſts upon a prop at A; it is manifeſt that the power B, and the prop at A ſuſtain, as before, each one-half of the weight C; the prop now acting, in every reſpect, as the power at A before; and, the equilibrium continuing, it appears that, in this caſe, a power B equal to one-half of the weight C ſuſtains and balances it, when the diſtance of C from the prop A is one-half of the diſtance of B from the ſame; that is, when B is to C, as C A to B A, or $B \times BA = C \times CA$. From this ſimple inſtance we ſee, that powers act upon a lever not by their abſolute force only, but that their effect neceſſarily depends upon the diſtance of the point where they act from the prop, or centre of motion; and particularly, that a power balances a double power which acts at half its diſtance from the prop, on the ſame ſide of it, with an oppoſite direction.

The caſe when the two powers act on the different ſides of the prop, follows from this, by the principles already laid down. For let B H and C G (*fig.* 10.) repreſent the directions and forces with which the powers B and C act upon the lever; upon B A produced take A E equal to A C, or $\frac{1}{2}$ A B, and in place of the power C G ſubſtitute an equal power E K at E, with an oppoſite direction; and, by the firſt of thoſe principles, this power E K will have the ſame effect as C G, only the prop or centre of motion A will now ſuſtain the ſum of the forces E K and B H, by the ſecond of thoſe principles. But the equilibrium between the powers B H and E K will continue as it was before, between B H and C G; ſo that the powers B H and E K will be in equilibrio, when the power B H is one-half of E K, and the diſtance of E K from the prop A is one-half of the diſtance of B H from the ſame; that is, when the power at B is to the power at E, as A E to A B, or $B \times BA = E \times EA$. In this caſe, the prop A being loaded with both the powers B and E, which act with the ſame direction, its re-action muſt be equal to their ſum, $EK + BH = 3\,BH$, and muſt be in the oppoſite direction A F. In place of this re-action, let us now (*fig.* 11.) ſubſtitute a power A F at A, equal to thrice B H; and in place of the power E K, let us ſubſtitute a prop at E, ſuſtaining that end of the lever B E; and ſince the equilibrium continues as before, it follows that the prop or centre of motion, being at E, the power B H ſuſtains the power A F, which is triple of B H, when the diſtance of B H from the prop E is triple of the diſtance of the power A F from the ſame, that is, when $BH \times BE = AF \times AE$.

If we ſuppoſe the power E K to remain (*fig.* 12.) but the end B of the lever E B to reſt upon a prop, then the powers A F and E K will ſuſtain and balance each other, the prop at B now coming in place of the power B H; in which $AF = 3\,BH$, and $EK = 2\,BH$; ſo that A F is to E K as 3 to 2; and the diſtances E B and A B being in the ſame proportion, it appears that when two powers in the proportion of three to two act upon a lever on the ſame ſide of the prop, or centre of motion, with oppoſite directions, at diſtances in the proportion of two to three, they then ſuſtain each other. We have demonſtrated therefore, that when the powers are in the proportion either of two to one, or of three to one, or of three to two, and the diſtances of their application from the centre of motion are in the inverſe proportion, then thoſe powers balance each other, or are in equilibrio.

Upon B E produced (*fig.* 13.) take $EL = EA$; and in place of the power A F ſubſtitute a power $LM = AF$, but with a contrary direction; this power L M will have the ſame effect to turn the lever round the centre of motion E as A F had; conſequently it will be in equilibrio with the power B H, as A F was. Therefore, when two powers L M and B H, in the proportion of three to one, act upon a lever with the ſame direction, they are in equilibrio, if their diſtances from the centre of motion L E and E B be in the ratio of one to three: that is, when $LM \times LE = BH \times BE$. In this caſe, the powers L M and B H acting with the ſame direction, the prop E muſt ſuſtain their ſum $LM + BH = 4\,BH$, by the ſecond principle above premiſed. Therefore a power at L, as 3, and a power acting at B with the ſame direction, as 1, are ſuſtained by a power acting at E, with a contrary direction, as 4. From which it follows, by ſubſtituting in the place of the power L M a prop at L, that a power at B, as 1, ſuſtains a power at E, as 4, acting with a contrary direction, when B L is to E L as 4 to 1; that is, when the powers are inverſely as their diſtances from the prop, or centre of motion. By ſubſtituting the prop at B in the place of the power B H, it appears that a power L M at L, as 3, ſuſtains a power, acting with an oppoſite direction at E, as 4, when their diſtances L B and E B, from the prop B, are to each other as 4 to 3, or when $LM \times LB = EK \times EB$. By taking upon L B produced $Be = BE$ (*fig.* 14.), and in place of the power at E, ſubſtituting an equal power at *e* with a contrary direction, it appears, that a power at L, as 3, ſuſtains a power acting at *e*, with the ſame direction, as 4, when the diſtance L B is to the diſtance *e* B, as 4 to 3. In this caſe, the prop at B ſuſtains the ſum of the powers acting at L and *e*, that is, a power equal to ſeven times B H. From which it follows, by ſubſtituting a prop at L or *e*, in place of the powers that act there, that a power at *e*, as 4, ſuſtains a power at B, as 7, about the centre of motion L, when their diſtances from it, *e* L, B L, are to each other as 7 to 4: and that a power at L, as 3, ſuſtains the power at B, as 7, about the centre of motion *e*, when their diſtances from it, L *e* and B *e*, are to each other as 7 to 3.

By proceeding in this manner it appears, that when the powers are to each other as number to number, and when their diſtances from the centre of motion are in the inverſe ratio of the ſame numbers, then the powers ſuſtain each other, or are in equilibrio. From which it is eaſy to ſhew, in general, that when the powers are to each other in any ratio, though incommenſurable, and the diſtances of their application from the centre of motion in the ſame inverſe ratio, then they are in equilibrio; becauſe the ratio of incommenſurable quantities may be always limited to any degree of exactneſs at pleaſure, between a greater and a leſſer ratio of number to number. To Mr. Maclaurin's demonſtration it has been objected, that it cannot be applied when the arms of the lever are incommenſurable, and as it cannot conclude generally, it muſt, therefore, be imperfect.

Dr. Hamilton, having obſerved that theſe ſeveral methods of demonſtrating the fundamental property of the lever are liable to objections, propoſes a new proof, depending on the following poſtulatum, *viz.* if a force be uniformly diffuſed over a right line, ſo that an equal part of the force acts upon every point of the line, and if the whole force acts according to one and the ſame plane, this force will be ſuſtained, and the line kept in equilibrio, by a ſingle force applied to the middle point of the line equal to the diffuſed force, and acting in a contrary direction. He alſo premiſes this lemma: if a right line be divided into two ſegments, the diſtances between the middle of the whole line and the middle points of the ſegments, will be inverſely as the ſegments. This is ſelf-evident when the ſegments are equal; and, when they are unequal, ſince half of the whole line is equal to half of the greater and half of the leſſer ſegment, it is plain that the diſtance between the middle of the whole line and the middle of one ſegment, muſt be equal to half of the other ſegment, ſo that theſe diſtances muſt be to each other inverſely as the ſegments.

Let the line G H, then, *fig.* 15, whoſe middle point is D, be divided into the unequal ſegments G L and L H, whoſe middle points are C and F, and let two forces or weights, A and B, which are to each other as the ſegments G D and L H, be applied to their middle points C and F, and let them act perpendicularly on the line G H: then, (by the lemma) the weights A and B will be to each other inverſely as C D and F D (the diſtances of the points C and F, to which they are applied, from the middle of the whole line); if then a third force or weight E, equal to the ſum of the forces A and B, be applied to the point D, and acts on the line in an oppoſite direction; I ſay theſe three forces will ſuſtain each other, and keep the line in equilibrio. For let us ſuppoſe the force E to be removed, and inſtead of it another force, equal alſo to the ſum of A and B, to be uniformly diffuſed over the whole line G H, and to act directly againſt the forces A and B, then the part of this force which acts on the ſegment G L, will be equal to the force A, and therefore will be ſuſtained by it (poſtulatum);

latum); and the other part, which is diffuſed over the ſegment L H, will be equal to and ſuſtained by the force B, ſo that the forces A and B will ſuſtain this diffuſed force and keep the line in equilibrio. Let now two other forces act alſo on this line in oppoſite directions, one of them the force E acting on the point D, as it was firſt ſuppoſed to do, and the other an uniformly diffuſed force equal to E (and conſequently equal to the other diffuſed force), then theſe two additional forces will alſo balance each other, and therefore the equilibrium will ſtill remain. So that the two forces A and B, and a diffuſed force acting on one ſide of the line ſuſtains the force E, and a diffuſed force acting on the other ſide: but it is manifeſt, that in this equilibrium, the two diffuſed forces acting on oppoſite ſides are perfectly equivalent, and therefore if they are taken away from both ſides, the equilibrium muſt ſtill remain. Hence it appears that the three weights or forces A, B, and E, any two of which are, (by the conſtruction) to each other inverſely as their diſtances from the third, will ſuſtain each other and keep the line on which they act in equilibrio; which is the firſt and moſt ſimple caſe of the property of the lever; for here the directions of the weights are ſuppoſed to be perpendicular to the line on which they act, and it is evident that, if one of the points C, D, or F be fixed or conſidered as a fulcrum, the weights acting on the other two points will continue to ſupport each other. The ſecond caſe of the property of the lever is eaſily deduced from the firſt; for when two weights act on the arms of a lever in oblique directions, and are to each other inverſely as the perpendicular diſtances of the lines of direction from the centre of motion, then by the reſolution of forces, it is eaſily proved that the parts of thoſe forces which act perpendicularly on the arms of the lever, and which only are exerted to turn the lever, are to each other inverſely as the lengths of thoſe arms; and therefore by the firſt caſe they muſt balance each other.

From what has been above demonſtrated, it appears, that the powers with which any two forces move or endeavour to move the arms of a lever, are as the rectangles, under lines proportional to the forces, and the perpendicular diſtances of their lines of direction from the fulcrum; and alſo that when two bodies acting on the arms of a lever ſuſtain each other, if one of them be removed farther from the fulcrum, it will preponderate; but if it be brought nearer to the fulcrum, the other weight will prevail: becauſe the product to which its force is proportional will be increaſed in the firſt caſe, and diminiſhed in the ſecond.

When a weight is to be raiſed by means of an axle and wheel, it is faſtened to a chord that goes round the axle, and the power, which is to raiſe it, is hung to a chord that goes round the wheel. If then the power be to the weight as the radius of the axle to the radius of the wheel, it will juſt ſupport that weight; as will eaſily appear from what was proved of the lever. For the axle and wheel may be conſidered as a lever, whoſe fulcrum is a line paſſing through the centre of the wheel and middle of the axle, and whoſe long and ſhort arms are the radii of the wheel and axle which are parallel to the horizon, and from whoſe extremities the chords hang perpendicularly. And thus an axle and wheel may be looked upon as a kind of perpetual lever, on whoſe arms the power and weight always act perpendicularly, though the lever turns round its fulcrum. And in like manner, when wheels and axles move each other by means of teeth on their peripheries, ſuch a machine is really a perpetual compound lever; and, by conſidering it as ſuch, we may compute the proportion of any power to the weight it is able to ſuſtain by the help of ſuch an engine. And ſince the radii of two contiguous wheels, whoſe teeth are applied to each other, are as the number of teeth in each, or inverſely as the number of revolutions, which they make in the ſame time: we may, in the computation, inſtead of the ratio of theſe radii, put the ratio of the number of teeth on each wheel; or the inverſe ratio of the number of revolutions they make in the ſame time.

The moſt natural method of explaining the effects of the pulley, that is, of computing the proportion of any power to the weight it can ſuſtain by means of any ſyſtem of pullies, is, by conſidering that every moveable pulley hangs by two ropes equally ſtretched, which muſt bear equal parts of the weight: and, therefore, when one and the ſame rope goes round ſeveral fixed and moveable pullies, ſince all its parts on each ſide of the pullies are equally ſtretched, the whole weight muſt be divided equally amongſt all the ropes by which the moveable pullies hang. And conſequently if the power which acts on one rope be equal to the weight divided by the number of ropes, or double the number of moveable pullies, that power muſt ſuſtain the weight.

The ſeveral caſes in which the wedge is applied may be comprehended in one general propoſition: let the equicrural triangle A B C (*fig.* 16.) repreſent a wedge, the lines A B and C B will be the ſides of the wedge, A C its baſe, or back, and its height will be the line P B biſecting the baſe A C, and alſo the vertical angle A B C.

When any two reſiſting forces act on the ſides of a wedge, in directions which make equal angles with the ſides, (as they are always ſuppoſed to do,) a power acting perpendicularly at P on the baſe of the wedge will keep the reſiſting forces in equilibrio, when it is to the ſum of theſe forces, as the ſine of half the vertical angle of the wedge, to the ſine of the angle which the directions of the forces contain with the ſides of the wedge.

For let E and F be two bodies acting on the ſides of the wedge, and let them be firſt ſuppoſed to act in the directions E P and F P perpendicular to the ſides; then ſince the power P acts perpendicularly on the baſe A C, if theſe three forces keep the wedge in equilibrio, they will be to each other, as the ſides of a triangle to which their directions are parallel, or (which is the ſame thing) as the ſides of the triangle A B C, to which their directions are perpendicular. Therefore, the power P is to the ſum of the reſiſting forces which it ſuſtains as A C, the baſe of the wedge, to the ſum of the ſides, or as P A, half the baſe, to A B, one of the ſides; but P A is to A B as the ſine of P B A, half the vertical angle of the wedge, to the radius which is the ſine of a right angle, and the directions of the reſiſting forces are ſuppoſed in this caſe to contain a right angle with the ſides of the wedge.

Let now the reſiſting bodies E and F be ſuppoſed to act on the wedge in directions parallel to the lines D P and O P, which make oblique angles with its ſides, draw E G and F K perpendicular to thoſe lines. From what has been proved, it appears that the power P is to the force with which it is able, by means of the wedge, to protrude the reſiſting bodies in the directions P E and P F, as the ſine of half the vertical angle to the radius; let this protruding force be expreſſed by the line P E, and let it be reſolved into two forces expreſſed by the lines P G and G E, the former of theſe only will act in oppoſition to the reſiſting bodies, therefore the whole protruding force of the power is to the force with which it acts againſt the reſiſting bodies E and F in the directions P D and P O as P E to P G, or (becauſe the triangles E P G and D P E are ſimilar) as P D to P E, that is, as the radius to the ſine of the angle P D E; compounding, therefore, the ratio of the ſine of half the vertical angle to the radius, with the ratio of the radius to the ſine of the angle P D E, the power P, when the wedge is kept in equilibrio, will be to the force with which it protrudes the reſiſting bodies in directions oppoſite to thoſe in which they act, as the ſine of half the vertical angle to the ſine of the angle P D E or P O F, which the directions of the reſiſting forces contain with the ſides of the wedge.

Hence, when the directions in which reſiſting bodies act on a wedge are given, we may eaſily find two lines that will expreſs the proportion between the reſiſtance and the power which ſuſtains it by means of the wedge. For from P, the middle point of the wedge, draw the line P D meeting one of the ſides, and parallel to the direction in which the reſiſting force acts on that ſide, then the power will be to the reſiſtance as P D to P B the height of the wedge. For P D and P B are to each other as the ſines of the oppoſite angles, in the triangle P B D, that is, as the ſines of half the vertical angle, and the angle which the direction of the reſiſting force contains with the ſide of the wedge.

From what has been demonſtrated we may deduce the proportion of the power to the reſiſtance it is able to ſuſtain, in all the caſes in which the wedge is applied.

Firſt, when, in cleaving timber, the wedge fills the cleft, then the reſiſtance of the timber acts perpendicularly on the ſides of the wedge; therefore, in this caſe, when the power which drives the wedge is to the coheſive force of the timber as half the baſe to one ſide of the wedge, the power and reſiſtance will be in equilibrio.

Secondly, when the wedge does not exactly fill the cleft, which generally happens becauſe the wood ſplits to ſome diſtance before the wedge: let E L F repreſent a cleft, into which the wedge A B C is partly driven; as the reſiſting force of the timber muſt act on the wedge in directions perpendicular to the ſides of the cleft, draw the line P D in a direction perpendicular to E L, the ſide of the cleft, and meeting the ſide of the wedge in D; then the power driving the wedge, and the reſiſtance of the timber, when they balance, will be to each other as the line P D to P B, the height of the wedge.

Thirdly, when a wedge is employed to ſeparate two bodies that lie together on a horizontal plane, for inſtance two blocks of ſtone; as theſe bodies muſt recede from each other in horizontal directions, their reſiſtance muſt act on the wedge in lines parallel to its baſe C A; therefore, the power which drives the wedge will balance the reſiſtance, when they are to each other as P A, half the breadth of the wedge, to P B its height; and then any additional force, ſufficient to overcome the reſiſtance ariſing from the friction of the bodies on the horizontal plane, will ſeparate them from each other.

With reſpect to the inclined plane: let the line A B, (*fig.* 17.) repreſent the length of an inclined plane, A D its height, and the line B D we may call its baſe. Let the circular body G E F be ſuppoſed to reſt on the inclined plane, and to be kept from falling down it by a ſtring C S tied to its centre C. Then the force with which this body ſtretches the ſtring will be to its whole weight as the ſine of A B D, the angle of elevation, to the ſine of the angle which the ſtring contains with a line perpendicular to A B, the length of the plane. For let the radius C E be drawn perpendicular to the horizon, and C F perpendicular to A B, and from E draw E O parallel to the ſtring, and meeting C F in O: then, as the body continues at reſt, and is urged by three forces, to wit, by its weight in the direction C E, by the re-action of the plane in the direction F C, and by the re-action of the ſtring in the direction E O; the re-action of the ſtring, or the force by which it is ſtretched, is to the weight of the body as E O to C E; that is, as the ſine of (the angle E C O, which is equal to) A B D, the angle of elevation, to the ſine of the angle E O C, equal to S C O, the angle which the ſtring contains, with the line C F perpendicular to A B, the length of the plane.

When, therefore, the ſtring is parallel to the length of the plane, the force with which it is ſtretched, or with which the body tends down the inclined plane, is to its whole weight, as the ſine of the angle of elevation to the radius, or as the height of the plane to the length. And in the ſame manner it may be ſhewn, that when the ſtring is parallel to B D, the baſe of the plain, the force with which it is ſtretched is to the weight of the body as A D to B D, that is, as the height of the plane to its baſe. If we ſuppoſe the ſtring, which ſupports the body G E F, to be faſtened at S, and that a force by acting on the line A D, the height of the plane, in a direction parallel to the baſe B D, drives the inclined plane under the body, and by that means makes it riſe to a direction parallel to A D: then, from what was proved in the third caſe of the wedge, it will appear, that this force muſt be to the weight of the body as A D to B D, or rather in a proportion ſomewhat greater; if it makes the plane move on and the body riſe.

From this laſt obſervation we may clearly ſhew the nature and force of the ſcrew; a machine of great efficacy in raiſing weights, or in preſſing bodies cloſely together. For if the triangle A B D be turned round a cylinder whoſe periphery is equal to B D, then the length of the inclined plane B A will riſe round the cylinder in a ſpiral manner, and form what is called the thread of the ſcrew, and we may ſuppoſe it continued in the ſame manner round the cylinder, from one end to the other; and A D, the height of the inclined plane, will be every where the diſtance between two contiguous threads of this ſcrew, which is called a convex ſcrew. And a concave ſcrew may be formed to fit this exactly, if an inclined plane every way like the former be turned round the inſide of a hollow cylinder, whoſe periphery is ſomewhat larger than that of the other. Let us now ſuppoſe the concave ſcrew to be fixed, and the convex one to be fitted into it, and a weight to be laid on the top of the convex ſcrew: then, if a power be applied to the periphery of this convex ſcrew to turn it round, at every revolution the weight will be raiſed up through a ſpace equal to the diſtance between the two contiguous threads, that is, to the line A D, the height of the inclined plane B A; therefore, ſince this power applied to the periphery acts in a direction parallel to B D, it muſt be to the weight it raiſes as A D to B D, or as the diſtance between two contiguous threads, to the periphery of the convex ſcrew.

The diſtance between two contiguous threads is to be meaſured by a line parallel to the axle; if we now ſuppoſe that a handſpike or handle is inſerted into the bottom of the convex ſcrew, and that the power which turns the ſcrew is applied to the extremity of this handle, which is generally the caſe; then as the power is removed farther from the axis of motion, its force will be ſo much increaſed, and therefore ſo much may the power itſelf be diminiſhed. So that the power which, acting on the end of a handle, ſuſtains a weight by means of a ſcrew, will be to that weight, as the diſtance between two contiguous threads of the ſcrew, to the periphery deſcribed by the end of the handle. In this caſe we may conſider the machine as compoſed of a ſcrew and a lever, or, as ſir Iſaac Newton expreſſeth it, *Cuneus a vecte impulſus.*

Profeſſor Vince, premiſing that Dr. Hamilton's demonſtration depends upon this propoſition, that when a body is at reſt, and acted upon by three forces, they will be as the three ſides of a triangle parallel to the directions of the forces, allows this principle to be true, when the three forces act at any point of a body; but, conſidering the lever as the body, the three forces act at different points, and therefore the principle, as applied by the author, is certainly not applicable. If in this demonſtration we ſuppoſe a plane body, in which the three forces act, inſtead of ſimply a lever, then the three forces being actually directed to the ſame point of the body, the body would be at reſt. But in reaſoning from this to the caſe of the lever, the ſame difficulties would ariſe, as in the proof of ſir I. Newton. But admitting that all other objections could be removed, the demonſtration fails when any two of the forces are parallel. Another demonſtration is founded upon this principle, that if two nonelaſtic bodies meet with equal quantities of motion, they will, after impact, continue at reſt; and hence it is concluded, that if a lever which is in equilibrio be put in motion, the motions of the two bodies muſt be equal; and therefore the preſſures of theſe bodies upon the lever at reſt, to put it in motion, muſt be as their motions. Now in the firſt place, this is comparing the effects of preſſure and motion, the relation of the meaſures of which, or whether they admit of any relation, we are totally unacquainted with. Moreover, they act under very different circumſtances; for in the former caſe, the bodies acted immediately on each other, and in the latter, they act by means of a lever, the properties of which we are ſuppoſed to be ignorant of. When forces act on a body, conſidered as a point, or directly againſt the ſame point of any body, we only eſtimate the effect of theſe forces to move the body out of its place, and no rotatory motion is either generated, or any cauſes to produce it, conſidered in the inveſtigation. When we, therefore, apply the ſame propoſition to inveſtigate the effect of forces to generate a rotatory motion, we manifeſtly apply it to a caſe which is not contained in it, nor to which there is a ſingle principle in the propoſition applicable. The demonſtration given by Mr. Landen, in his Memoirs, is founded upon ſelf-evident principles, nor does our author ſee any objections to his reaſoning upon them. But as his inveſtigation conſiſts of ſeveral caſes, and is beſides very long and tedious, ſomething more ſimple is ſtill much to be wiſhed for, proper to be introduced in an elementary treatiſe of mechanics, ſo as not to perplex the young ſtudent either by the length of the demonſtration, or want of evidence in its principles. What the ingenious Profeſſor propoſes to offer will, he hopes, render the whole buſineſs not only very ſimple, but alſo perfectly ſatisfactory.

The demonſtration given by Archimedes would be very ſatisfactory and elegant, provided the principle on which it is founded could be clearly proved; *viz. that two equal powers at the extremities, or their ſum at the middle of a lever, would have equal effects to move it about any point.* Now, that the effects will be the ſame, ſo far as reſpects any *progreſſive* motion being communicated to the lever when at liberty to move freely, is ſufficiently clear; but there is no evidence whatever that the effects will be the ſame to give the lever a *rotatory* motion about any point, becauſe a very different motion is then produced, and we are ſuppoſed to know nothing about the efficacy of a force at different diſtances from the fulcrum to produce ſuch a motion. Beſides, the two motions are not only different, but the *ſame* forces are known to produce *different* effects in the two caſes; for in the former caſe the two *equal* powers at the extremities of the arms produce *equal* effects in generating a *progreſſive* motion; but in the latter caſe they do *not* produce *equal* effects in generating a *rotatory* motion. We cannot therefore reaſon from one to the other. The principle, however, may be thus proved.

Let A, C, (*fig.* 18.) be two equal bodies placed on a ſtraight lever, A P, moveable about P; biſect A C in B, produce P A to Q, and take B Q = B P, and ſuppoſe the end Q to be ſuſtained by a prop. Then as A and C are ſimilarly ſituated in reſpect to each end of the lever, that is, A P = C Q, and A Q = C P, the prop and fulcrum muſt bear equal parts of the whole weight; and therefore the prop at Q will be preſſed with a weight equal to A. Now take away the weights A and C, and put a weight at B equal to their ſum; and then the weight at B being equally diſtant from Q and P, the prop and fulcrum muſt ſuſtain equal parts of the whole weight, and therefore the prop will now alſo ſuſtain a weight equal to A. Hence if the prop Q be taken away, the moving force to turn the lever about P in both caſes muſt evidently be the ſame; therefore the effects of A and C upon the lever to turn it about any point are the ſame as when they are both placed in the middle point between them. And the ſame is manifeſtly true if A and C be placed without the fulcrum and prop. If, therefore, A C be a cylindrical lever of uniform denſity, its effect to turn itſelf about any point will be the ſame as if the whole were collected into the middle point B; which follows from what has been already proved, by conceiving the whole cylinder to be divided into an infinite number of laminæ perpendicular to its axis, of equal thickneſſes.

The principle, therefore, aſſumed by Archimedes is thus eſtabliſhed upon the moſt ſelf-evident principle, that is, that *equal* bodies at *equal* diſtances muſt produce *equal* effects; which is manifeſt from this conſideration, that when *all* the circumſtances in the cauſe are equal, the effects muſt be equal. Thus the whole demonſtration of Archimedes is rendered perfectly complete, and at the ſame time it is very ſhort and ſimple. The other part of the demonſtration we ſhall here inſert, for the uſe of thoſe who may not be acquainted with it.

Let X Y (*fig.* 19.) be a cylinder, which biſect in A, on which point it would manifeſtly reſt. Take any point Z, and biſect Z X in B, and Z Y in C; then, from what has been proved, the effects of the two parts Z X, Z Y to turn the lever about A is the ſame as if the weight of each part were collected into B and C reſpectively, which weights are manifeſtly as Z X, Z Y, and which therefore conceive to be placed at B and C. Now $AB = AX - XB = \frac{1}{2}XY - \frac{1}{2}XZ = \frac{1}{2}YZ$; and $AC = AY - YC = \frac{1}{2}XY - \frac{1}{2}ZY = \frac{1}{2}XZ$; conſequently $AB : AC :: \frac{1}{2}YZ : \frac{1}{2}XZ :: YZ : XZ ::$ the weight at C : the weight at B.

The property of the ſtraight lever being thus eſtabliſhed, every thing relative to the bent lever immediately follows. See Maclaurin's Account of ſir Iſaac Newton's Phil. Diſc. book ii. chap. 3. Hamilton's Phil. Eſſ. eſſ. 1. or Phil. Tranſ. liii. p. 116. Phil. Tranſ. vol. lxxxiv. art. v. p. 33, &c.

Mechanical is alſo applied to a kind of *reaſoning*, which of late has got great ground, both in phyſics and medicine; thus denominated, as being conformable to what is uſed in the contrivance, and accounting for the properties and operations of machines. See Medicine.

Mechanical is alſo uſed, in *Mathematics*, to ſignify a conſtruction or proof of ſome problem, not done in an accurate and geometrical manner, but coarſely and unartfully, or by the aſſiſtance of inſtruments; as are moſt problems relating to the duplicature of the cube, and the quadrature of the circle.

Mechanical *Arts*. See Arts.

Mechanical *Curve*. See *Tranſcendental* Curve.

Mechanical *Pathology*, the ſyſtem of medicine adopted by Borelli, Pitcairn, and others, at the end of the ſeventeenth and beginning of the eighteenth centuries, by which they endeavoured to explain the phenomena of diſeaſe upon the principles of mechanical philoſophy; principles which were very partially applicable to the operations of animal life; the ſyſtem, therefore, was exploded by the more philoſophical reſearches into the laws of the ſenſorial power, or nervous energy, peculiar to living beings, by the pathologiſts of ſucceeding times. See MEDICINE, *Hiſtory of*, near the end.

MECHELEN, in *Geography*, a town of France, in the department of the Lower Meuſe, and chief place of a canton, in the diſtrict of Maeſtricht. The place contains 906, and the canton 7736 inhabitants, on a territory of 390 kiliometres, in 17 communes.

MECHLIN. See MALINES.

MECHOACAN, a province or large diſtrict, in the domain of Mexico, bounded on the N. by part of Guaſteca, or Panuco, and the provinces of Zacatecas and Guadalajara, on the E. by another part of Guaſteca, and Mexico proper, and on the S. by the latter and the South ſea, which, together with Xaliſco or New Galicia, bounds it alſo on the W. and N.W. It extends about 210 miles along the coaſt, and ſtill further inland. The air is ſingularly healthy, and the ſoil very fertile. In this province are mines of ſilver, and, as it has been ſaid, ſome of gold and copper. Among its productions we may reckon maize and cotton, the cacao or chocolate nut, the root mechoacan, ſeveral odoriferous gums, and balſam, ſarſaparilla, ambergris, vanillas, caſſia, honey, wax, &c. The natives, ſince they have been incorporated with the Spaniards, have acquired the knowledge of ſeveral trades, and are curious in the manufacture of cabinets, weaving ſilk, and earthen pottery; and they particularly excel in making images of ſmall feathers, equal to the moſt exquiſite painting. The country is infeſted with foxes, ſquirrels, lions, wild dogs, and tygers; but it has alſo a numerous breed of excellent horſes for the ſaddle or harneſs. The ſea, as well as its lakes and rivers, ſupply abundance of excellent fiſh. In this province there are two conſiderable lakes one of which gave name to the lake, implying "fiſhery," as it uſed anciently to ſupply the capital. This lake is ſituated on the N. of Paſquaro, the capital of the province, while Valladolid, or Mechoacan, has only the biſhopric. According to Alcedo, it is about 12 leagues in circumference, probably about 40 Engliſh miles, perhaps equalling that of Tezeuco, though repreſented in our maps as of far inferior ſize. The fiſh is exquiſite; and many Indians dwell in pictureſque iſlets, occupied in fiſhing, or bringing to the capital in canoes fiſh, fruits, flowers, and pot-herbs. Mechoacan was formerly a kingdom, but the Spaniards have reduced it into a biſhopric, in which are about 200 towns of converted natives. As in this province there are ſcarcely any harbours that deſerve the name of ports, the greateſt part of the trade is carried on by land.

MECHOACAN, or *Valladolid*, a city of Mexico, in the province of Mechoacan, and a biſhop's ſee, ſituated on a river near the W. ſide of a lake, which abounds with fiſh. It is large and well decorated; 108 miles W. of Mexico. N. lat. 20° 5'. W. long. 102° 11'.

MECHOACAN, *Mechoacanna*, called alſo *white jalap*, *white rhubarb*, and *American ſcammony*, a medicinal root, taking its name from a province of Mexico, from whence it is brought in thin tranſverſe ſlices, like jalap, but larger and whiter. (See JALAP.) Mechoacan ſcarcely yields one-ſixth part ſo much reſin as jalap does. It is a ſpecies of bindweed. See CONVOLVULUS.

Mechoacan was firſt introduced about the year 1524, and uſed as a purgative before jalap, though the latter is now in more general uſe, as being found more efficacious: yet mechoacan is the milder and more gentle of the two, and on that account is preferable. The ſeat of its action is chiefly in the extreme parts; for which reaſon it is accounted good in arthritic pains. It has the advantage of needing no preparation, or corrective; and of purging in its own proper ſubſtance, as it grows.

It purges ſerous humours from all parts of the body; and helps the dropſy, jaundice, the rheumatiſm, working with gentleneſs, and without griping; and, therefore, it is fit for weakly tender conſtitutions; but by reaſon that a larger quantity muſt be given than moſt people are willing to take, it is grown very much out of uſe. The doſe in ſubſtance is from one drachm to two or more.

M. Boulduc found, by analyſing it, that it contains twelve times as much ſalt as reſin; but neither the ſaline nor reſinous extract purge ſo freely as the ſubſtance, even though taken in larger doſes; nor do they even purge ſo eaſily.

In the choice of mechoacan, prefer thoſe pieces which are the browneſt within, and whoſe ſubſtance is the cloſeſt, and moſt compact.

MECKENHEIM, in *Geography*, a town of France, in the department of the Rhine and Moſelle, ſeated on the Erfft; 7 miles S.S.W. of Bonn. N. lat. 50° 40'. E. long. 6° 57'.

MECKLENBURG, a town of the duchy of the ſame name, anciently the capital of the Obotrites, and called by ſome old hiſtorians, probably on account of its extent, "Megapolis." Formerly it contained three convents, and in 1058 a biſhopric was founded. Since the founding of Wiſmar, it has ſunk into a village; 2 miles S. of Wiſmar.

MECKLENBURG, *Duchy of*, might formerly be ſaid to conſiſt of three parts, *viz.* Schwerin, Güſtrow, and Strelitz. But now only thoſe of Schwerin and Strelitz are preſerved, and the duchy of Mecklenburg Güſtrow has fallen to the houſe of Schwerin, and, becoming incorporated with it, has loſt its diſtinctive name. Wiſmar, which was formerly ceded to the Swedes, was afterwards purchaſed of the king of Sweden, and now belongs to this branch of the houſe of Mecklenburg. This principality is bounded on the N. by the Baltic, on the E. by Pomerania, on the S. by Brandenburg, and on the W. by the territory of Lubeck and principality of Luneburg. When the Vandals, in a conſiderable number, quitted this country in the fifth century, the Wends occupied their habitations, and became intermixed with the inhabitants that remained. Of theſe Wends, the moſt conſiderable tribe was that of the Obotrites, which had its own particular princes. From theſe deſcended Prebiſlau, who, in the 12th century, embraced the Chriſtian religion, and rebuilt Mecklenburg, the ancient capital of the Obotrite princes, and took his name from it. His ſon, Henry Borwin, was father of two princes, one of whom, *viz.* John, was the founder of the Mecklenburg line, and the other, *viz.* Nikolot, that of Wenden: but when this latter became extinct, the principality of Wenden devolved to the Mecklenburg branch, which was raiſed to the dignity of duke by the emperor Charles IV. At the peace of Weſtphalia, in 1648, Wiſmar was ceded to the Swedes; but the dioceſes of Schwerin and Ratzeburg were converted into temporal principalities. The Güſtrow line failed, and, after ſome diſputes, a compromiſe took place at Hamburgh in 1701, on condition that the principality of Güſtrow ſhould be added to that of Schwerin, and that the principality of Ratzeburg, with ſome other territories, ſhould be annexed to that of Strelitz. At the ſame time, the right of primogenitureſhip, and the lineal ſucceſſion, were eſtabliſhed in both houſes, and the compact was ratified by the emperor Leopold. Two lines of the dukes of Mecklenburg are ſtill ſubſiſting. The Schwerin line commenced in duke Frederic William; and the Strelitz line commenced in duke Adolphus Frederic II. The annual revenues of the Schwerin line are conſiderable; and they were formerly rated at 300,000 rix-dollars *per annum*. The duke of the Mecklenburg Strelitz line is ſaid to receive about 126,000 rix-dollars. The two duchies are divided into three circles, *viz.* Mecklenburg, Wenden, and Stargard.

The accounts of the ſoil and produce of this country are various and contradictory, even among the Mecklenburghers themſelves. According to the remonſtrance of the nobility in 1718 to the imperial court againſt the contribution exacted from them, the country was repreſented as full of lakes, which were almoſt wholly unproductive, and as abounding with heaths, moors, woods, fens, and quarries. The ſoil was ſaid to be ſandy, and capable of producing only a ſmall quantity of rye and oats, and the paſtures and meadows afforded but poor food for their ſheep. The arable lands, even when well manured, produce for the moſt part only barley, and very little wheat. The account given by Cluvier and Frank, who have deſcribed the country, is very different. About $\frac{1}{10}$th of the country, they ſay, is ſandy, but the worſt of the ſandy land produces excellent rye, and, when ſuffered to lie fallow, affords good ſheep-walks; but the country in general is repreſented as incomparable, and not exceeded by Pomerania or Holſtein. When well tilled and dunged, it yields barley and wheat, generally five, ſix, or eight-fold. The country is interſperſed with delightful eminences, pleaſant and profitable woods; nor is it deſtitute of good fruit trees. Several foreſts have been aſſorted, fens drained, and, together with the moors and quarries, improved into arable and paſture land. The commons and meadows, not inferior to thoſe of Holſtein and Pomerania, afford graſs in ſuch plenty, that the country exports annually ſome thouſands of cattle: the lakes and rivers, by their abundance of fiſh, yield large revenues.

The principal rivers are the Elbe, Stor, Reckenitz, and Havel. In both duchies, excluſive of Roſtock, are 45 great and ſmall cities. The inhabitants of both duchies are Lutherans. In the country alſo there are ſome congregations of Calviniſts; and in Schwerin the Roman Catholics are permitted the free exerciſe of their worſhip. The towns have German ſchools, and Roſtock has an univerſity. The country is not deſtitute of woollen manufactures, tanners, leather-dreſſers, tobacco-ſpinners, and other trades. The exports of the country are corn, flax, hemp, hops, wax, honey, cattle, butter, cheeſe, wool, and ſeveral kinds of wood.

Mecklenburg, a county of Virginia, bounded S. by the ſtate of North Carolina; containing 8332 free inhabitants, and 8676 ſlaves.—Alſo, a county of North Carolina, in the diſtrict of Saliſbury, bounded S. by the ſtate of South Carolina; containing 10,317 inhabitants, of whom 1931 are ſlaves. Its chief town is Charlotte.

MECKLEY, a country of Thibet, occupying the ſpace between Bengal and China, is bounded on the E. by China; on the S. by Ava, or the Birman empire; and on the W. by thick foreſts, which ſeparate it from Bengal; it is about 350 miles in length, and 170 in breadth, ſubject to the king of the Birman empire. N. lat. 22° 30′ to 27° 20′. E. long 93° 20′ to 98° 40′. See Arracan.

MECKMUHL, a town of Wurtemberg, on the Jaxt; 32 miles N.N.E. of Stuttgart. N. lat 49° 20′. E. long. 9° 23′.

MECOBANISH, a lake of Canada. N. lat. 48° 58′. W. long. 83° 45′.

MECON, or Menan, a large river of Aſia, which riſes in the mountains of Thibet, between the 34th and 35th degrees of N. latitude, and purſuing a ſoutherly courſe bearing eaſtward, it paſſes through the Chineſe province of Yun-nan, the kingdom of Laos, Cambodia, &c., and runs into the Eaſtern ſea, about 200 miles S. of the city of Cambodia. At firſt this river is called "Kiou-long," and retains this name till it enters Laos, when it takes the name of Mecon: when it enters Cambodia, it receives the name of the country, till at the city of Cambodia, it ſeparates into two branches, the eaſtern of which is called Cambodia, or the Japaneſe river, and the weſtern Oubequeme.

MECONIUM, Μεκωνιον, from μηκων, *poppy*, in *Pharmacy*, is the juice of the heads or capſules of poppy, or papaver ſomniferum, drawn by inciſion, and dried.

Opium differs from the meconium, which, by the ancients, was made of the expreſſed juice or decoction of the poppies, and it was deemed by them much more inactive in its operation than the opium. See Opium.

The college of London directs an extract of white poppy to be prepared by decoction of the poppy capſules in water, and ſubſequent inſpiſſation. For this purpoſe, take a pound of white poppy capſules bruiſed, and a gallon of boiling water. Macerate for 24 hours; then boil down to four pints, ſtrain the hot liquor, and evaporate it to a proper conſiſtence. This differs from opium, which is believed to be the concrete milky juice which exudes on making inciſions into the freſh capſules, though probably ſome additions are made to it. Six grains of this extract are about equivalent to one of opium; but much of the comparative narcotic power of the plant itſelf may depend upon the influence of climate. The ſeeds are firſt to be ſeparated from the capſules, for they produce no narcotic effect; they yield oil and mucilage, and readily rub into an emulſion.

A decoction of poppy, decoctum pro fomento, P. L. 1787, fotus communis, P. L. 1745, is thus prepared: take of white poppy capſules bruiſed four ounces, and of water four pints; boil for a quarter of an hour and ſtrain. For various purpoſes, eſpecially fomentation, advantage is derived from the ſolution of the narcotic matter contained in poppy heads; this may, therefore, be conſidered as an uſeful addition, and as reducing into form a decoction in very common uſe.

Meconium is alſo a black thick excrement, gathered in the inteſtines of a child during the time of geſtation.

In colour and conſiſtence it reſembles pulp of caſſia. It is alſo thought to reſemble meconium, or juice of poppy; whence it takes its name. See Infant.

MECRAN, or Mekran, in *Geography*, a large province of Perſia, extending to the Indian deſerts, is bounded on the N. by Segeſtan and Candahar; on the E. by Hindooſtan: on the S. by the Indian ſea; and on the W. by Kerman. This is the ancient Gadruſtan, or Gedroſia. A chain of mountains croſſes it, and divides it into two almoſt equal parts. This province has been always unfertile, and full of deſerts; and claſſical geography, ſays Pinkerton, here preſents only one mean town, called Pura, probably Borjian, on the moſt W. frontier. The extenſive ſea-coaſt on the Indian ocean, far from being the ſeat of commerce, ſcarcely preſents one harbour, being almoſt an uniform line of ſterility, inhabited by Arabs, like moſt of the ſouthern coaſts of Perſia, which are divided by mountains and deſerts from the fertile and cultivated land. Travellers in their journies are often ſtopped, and ſometimes overwhelmed by deep and moving ſands. In this province water is ſcarce, and it has few rivers. The capital is Kidge.

MECRINHOS, a town of Portugal, in the province of Tras los Montes; 24 miles S.E. of Mirandela.

MECZARA, a town of Africa, in the kingdom of Tambut.

MEDA, a town of Portugal, in the province of Beira; 20 miles N.E. of Pinhel.

MEDACO, a town of Africa, in the country of Meetka. N. lat. 14° 30′. E. long. 23° 20′.

MEDAL, Medalia, a ſmall figure, or piece of metal, in form of a coin, deſtined to preſerve to poſterity the portrait of ſome great man, or the memory of ſome illuſtrious action.

Scaliger derives the word from the Arabic *methalia*, a coin whereon is impreſſed the figure of a human head. Menage and Voſſius rather derive it from *metallum*. Du Cange obſerves, that the obolus was anciently called *medalia quaſi medietas nummi;* as being half of another coin.

Medals may be diſtinguiſhed by the metal of which they are made; which is commonly one of the three metals, *aurum*, *argentum*, and *æs*, ſignified by the three A's, which, on ſeveral coins, are placed after the name of the mint-maſter, *viz.* gold, ſilver, and copper, or braſs.

The moſt uſual purity of coined gold amounts to about 22 carats, two carats being deducted from the ſtandard of the utmoſt purity, which is fixed at 24 carats, and conſiſting of alloy. See Coin.

The moſt ancient gold coins exiſting, thoſe of Lydia and other ſtates in Aſia Minor, are not of the pureſt gold. Many of the earlieſt coins ſeem to be formed of the metal anciently called "electrum;" and conſiſting of gold and ſilver. But when Philip of Macedon coined the firſt gold of Greece, procured from the mines of Philippi in Thrace, the art of refining gold had attained great perfection, for his coins are of the utmoſt purity. They are rivalled, however, by thoſe of his ſon Alexander, and of other princes and cities within a few centuries of that age. The gold coins of the Egyptian Ptolemies are 23 carats three grains fine, with only one grain alloy. The Roman gold coinage is very pure from the earlieſt times, and remained in this ſtate till the reign of Severus. Pliny ſays, that moſt gold was found mixed with ſilver; of which the latter amounted to one-fifth. The metal was called "electrum." The moſt ancient ſilver is, like the gold, leſs pure than that of ſucceeding time, and this was particularly the caſe with that of the Greeks. The Roman ſilver was rather inferior to the preſent ſtandard, even from the beginning; but in the time of Severus very bad ſilver appeared, and continued till that of Diocletian. The braſs of the ancients, when pure, which is rather uncommon, conſiſted of two kinds; the red, or what the ancients called Cyprian braſs, which we call copper, and the yellow, or braſs. As medals of theſe metals are generally covered with patina, the difference has not excited attention; though in Roman coins braſs was double the value of copper; and the Greeks, it is ſuppoſed, followed the ſame rule.

The ancients had alſo numerous coins made of mixed metals. The firſt mixture was that of gold and ſilver, and called "*Electrum;*" which ſee. The next metal of value was Corinthian braſs, which was employed in the fabrication of vaſes and other ornamental toys; but it does not appear, according to Mr. Pinkerton, that they ever ſtruck a ſingle medal in this metal. The real fact is, that the coins, which ſome medallic authors have called Corinthian braſs, are only ſtruck as a modification of common braſs. The zinc which is mingled with the copper in the furnace for the manufacture of braſs, gives it a great variety of hues in proportion to the quality of the zinc, or of the copper. The beſt and fineſt of theſe hues belongs to what is now termed "Prince's metal," which ſeems to have been that which the firſt medalliſts called Corinthian braſs. Of Egyptian coins, ſtruck under the Roman emperors, ſome were at firſt of tolerable ſilver; but by degrees they degenerated into a metal, called by the French Medallic writers "Potin," being a mixture of copper and tin, with a little ſilver. Theſe coins are remarkably thick; but many of them are elegantly executed, in a peculiar ſtyle, with uncommon reverſes. There are, likewiſe, braſs coins of Egypt, of three ſizes, from the earlieſt Roman emperors there, and of a different fabrication. Some coins of that which is called large braſs, are of the mixtures now called pot-metal and bell-metal. After the time of Valerian and Gallienus coinage of braſs, with a ſmall addition of ſilver, is that authorized by the ſtate, being that of the "denarii aerii." The coins of lead or copper, plated with gold or ſilver, are thoſe of Roman forgers. Coins have been found in lead of undoubted antiquity. Some ſuch of Tigranes are mentioned as genuine by Jobert; but they are now well known to be forgeries. An ancient writer informs us, that tin money was iſſued by Dionyſius, one of the Sicilian tyrants; but no ſuch coins have been found. In Rome leaden coins muſt have been pretty ancient, for Plautus mentions them in one or two paſſages of his plays; and a few imperial ones have been found, but they are chiefly trial-pieces, in order to enable the artiſt to judge of the progreſs of the dye. Others are thoſe which have been plated by forgers, but the covering worn off.

It has been ſaid that there are alſo ſome medals compoſed of two different metals, not by melting them together, but either by plating over braſs or iron with ſilver; a ſort of falſe money, which had its riſe in the triumvirate of Auguſtus; or by laying a rim of a different metal round the edge of a medal. Thoſe of the latter ſort are called by antiquaries *contorniati*, from the French *contour*, which ſignifies the outline that defines a figure. See Contourniated.

It is conſidered as a certain rule in this ſcience, ſays Pinkerton, that none of the ancient money was caſt in moulds, except the moſt ancient and very large Roman braſs, vulgarly called weights, and other Italian pieces of that ſort. All other caſt coins are forgeries of ancient or modern times: for this was a manœuvre of the ancient forgers, as we learn from ſeveral Roman moulds which have been found, and which have led the unſkilful to imagine that the ancients firſt caſt their money in dyes, and then ſtamped it, to make the impreſſion more deep and ſharp. Dr. Jennings, in his "Introduction to the Knowledge of Medals, &c." 1764, 12mo., has fallen into this miſtake, beſides ſeveral others which are noticed by Mr. Pinkerton. The ancients, though ſtrangers to the art of impreſſing legends upon the edge of their money, like the "DECUS ET TUTAMEN" upon our crown pieces, and to the fine indentation obſervable on our gold, yet knew ſomething of crenating the edges of their coin. This they did by cutting out regular notches on the edges. Some of the Syrian coins, and of the Roman conſular, with a few other early ones, are ornamented in this manner. The former were caſt in this ſhape, then ſtruck; the latter was done by inciſion to prevent forgery, by ſhewing the inſide of the metal. They were anciently called "ſerrati," and Tacitus ſays, that the Germans preferred them to other Roman coins. But this was alſo imitated by the old forgers; and Mr. Pinkerton has in his poſſeſſion a ſerrated conſular coin, of which the inciſions, like the reſt, are plated with ſilver over copper.

Medals may again be diſtinguiſhed by their different ſizes. The ſize of the ancient medals is from three inches to one-fourth of an inch in diameter. Thoſe of the larger ſize or volume are called *medallions*. The others, which are very various, are ranked into three claſſes, *viz.* large, middle, and ſmall; and the claſs is determined, not ſo much by the breadth and thickneſs of the medal itſelf, as by the ſize of the

the head that is ſtamped upon it. The ſhape of medals is rather roundiſh than perfectly round. No Roman or Etruſcan coins have been found of the globular form, or indented on the reverſe, like the early Greek. The firſt Greek coins are ſmall pieces of ſilver, while the Roman are large maſſes of copper. The former are ſtruck; the latter are caſt in moulds.

Medal, *the Parts of a*, are the two ſides; one whereof is called the *face*, *head*, or *obverſe*, the other the *reverſe*.

On each ſide is the area, or field, which makes the middle of a medal; the rim, or border; and the exergue, which is beneath the ground whereon the figures repreſented are placed. (See Exergum.) On the two ſides are diſtinguiſhed the type, and the inſcription or legend. The type, or device, is the figure repreſented; the legend is the writing, eſpecially that around the medal; though, in the Greek medals, the inſcription is frequently in the area. See Legend.

What we find in the exergue is frequently no more than ſome initial letters, whoſe meaning we are uſually unacquainted with; though ſometimes too they contain epochas, or words that may be accounted an inſcription. The exergue contains ſometimes the date of the coin, expreſſing in what conſulſhip of the emperor it was ſtruck: as cos III. upon the reverſe of an Antoninus. Sometimes it ſignifies the place where it was ſtruck, and to which the coin properly belonged, as S M. AL. for *ſigna Moneta Alexandriæ*, upon the reverſe of a Licinius. Sometimes the name of a province, the reduction of which the medal is deſigned to celebrate; as Judæa in the reverſe of a Veſpaſian.

On the face of medals we have commonly the portrait of ſome great and illuſtrious perſon; uſually, if not always, in profile. The coins of the kings of Macedon are the moſt ancient of any yet diſcovered on which portraits are found; and Alexander I., who began his reign about 500 years B.C. is the earlieſt monarch whoſe medals have yet been diſcovered. Then follow thoſe kings and queens who reigned in Sicily, Caria, Cyprus, Heraclea, and Pontus. To theſe ſucceeds the ſeries of kings of Egypt, Syria, the Cimmerian Boſphorus, Thrace, Bithynia, Parthia, Armenia, Damaſcus, Cappadocia, Paphlagonia, Pergamus, Galatia, Cilicia, Sparta, Pæonia, Epirus, Illyricum, Gaul, and the Alps. This ſeries extends from the time of Alexander the Great to the birth of Chriſt, comprehending a period of about 330 years. The laſt ſeries of ancient kings deſcends to the fourth century, and includes ſome of Thrace, the Boſphorus, and Parthia, thoſe of Commagene, Edeſſa or Oſrhoene, Mauritania, and Judæa. The portraits of the kings above enumerated are found on medals ſtruck with Grecian characters.

The Roman emperors preſent a moſt diſtinct ſeries from Julius, the firſt of them, to the deſtruction of Rome by the Goths, or even to a much later period, if the coins after this were not ſo barbarous as to deſtroy the beauty of the ſeries while they add to its perfection. Of modern coins many proper ſerieſes might be formed, conſiſting of the kings and other potentates of the different countries. Medals of illuſtrious men in modern times are not likewiſe wanting to form a collection.

The kings, upon Greek coins, have generally the diadem, without any other ornament. The ſide face is alway preſented; though upon very ancient Greek coins of cities, and Roman conſular coins, full faces are found of amazing relief and expreſſion. Sometimes ſeveral heads are found on the ſame coin, either impreſſed on both ſides, or only upon one. Thus the beautiful gold coin of Ptolemy Philadelphus, king of Egypt, bears his own head and that of Arſinoe, his queen, on one ſide; and thoſe of his father and mother, Ptolemy I. and Berenice, on the other. Coins are found alſo of Antony and Cleopatra, Nero and Agrippina, Agrippina and Germanicus, and many others, both Greek and Roman. Sometimes two or more heads are found upon one ſide, while the other bears a reverſe in the uſual way. Theſe heads are either *adverſe*, that is, oppoſite to each other, face to face; or *joined*, and both looking one way. Of the adverſe are coins of Licinius, father and ſon, and others. Joined heads are found on the fineſt Greek coins, as in that of Ptolemy above-mentioned, and in the Roman are Commodus and Marcia his concubine, and others. Sometimes real portraits are joined with ideal ones, as Carauſius and Apollo, Poſthumus and Hercules, &c. Sometimes three heads are found upon one ſide, as in that of Valerian, with his ſons Gallienus and Valerian, &c. All ſuch coins are very rare and valuable.

As for the ornaments of portraits, the chief is the diadem, or "vitta," which was a ribbon worn about the head, and tied in a floating knot behind, anciently the ſimple, but ſuperlative, badge of kingly power. It is obſervable upon the Greek monarchic medals, from the earlieſt ages to the laſt; and is almoſt an infallible ſign of the portrait of a prince. In the Roman coins it is ſeen on the conſular one with Numa and Ancus; but never after, as Mr. Pinkerton apprehends, till the time of Licinius.

The Romans had ſuch an abhorrence of this badge of kingly diſtinction, that their emperors had, for two centuries, wore the radiated crown, peculiar to the gods, before they dared to aſſume this tyrannic badge. However, in the family of Conſtantine the diadem became common, but diveſted of its ancient ſimplicity; being ornamented on either ſide with a row of pearls, and various other decorations. The radiated crown, at firſt, as in the poſthumous coins of Auguſtus, a mark of deification, was, in little more than a century after, put upon moſt of the emperors' heads in their ſeveral medals. The crown of laurel, at firſt the honorary prize of conquerors, was afterwards commonly worn, at leaſt in their medals, by all the Roman emperors from Julius, who was permitted by the ſenate to wear it always, in order to hide the baldneſs of his forehead. In the lower empire, the laurel is often held by a hand above the head, as a mark of piety. Agrippa appears on his coins with the roſtral crown, a ſign of naval victory or command, being made of gold, in reſemblance of prows of ſhips tied together. He is likewiſe ſeen with the mural or turreted crown, the prize of firſt aſcending the walls of an enemy's city. The oaken, or civic crown, is frequent on reverſes, as of Galba and others; and was the badge of having ſaved the life of a citizen, or of many citizens. (See Crown.) Beſides the diadem, the Greek princes ſometimes appear with the laurel crown. The Arſacidæ, or kings of Parthia, wear a kind of ſaſh round the head, with their hair in rows of curls like a wig. Tigranes, and the kings of Armenia, wear the tiara. Xerxes, a petty prince of Armenia, appears on a coin in a conic cap, with a diadem around it. Juba, the father, has a ſingular crown like a conic cap, all hung with pearls.

The ſucceſſors of Alexander aſſumed different ſymbols of deity on the buſts of their medals; ſuch as the lion's ſkin of Hercules, ſurrounding the head of the firſt Seleucus; the horn placed behind the ear, an image of their ſtrength and power, or of their being the ſucceſſors of Alexander, called the ſon of Jupiter Ammon; the wing, placed in like manner behind the ear, ſymbolic of the rapidity of their conqueſts, or of their deſcent from the god Mercury, &c. Pyrrhus, as Plutarch informs us, had a creſt of goat's horns to his helmet; and the goat was a ſymbol of Macedon. The ſucceſſors of Alexander might take this badge on that account. The helmet alſo appears on coins, as in thoſe of Macedon under the Romans, which have Alexander's head, ſometimes covered with a helmet. Probus has the helmet: and Conſtantine I. has helmets of different forms, curiouſly ornamented.

The Greek queens have the vitta or diadem. Moſt queens of Egypt have the ſceptre. The Roman empreſſes never appear with the diadem, the variety of their head-dreſſes compenſating the want of it. The remarkable part of the Roman head-dreſs among the ladies was the "Sphendona," or ſling, on the crown of the head, which was of gold, and ſo prominent, as to be even remarkable on a coin. Sometimes the buſt of an empreſs is ſupported by a creſcent, denoting that ſhe was the moon, as her huſband was the ſun of the ſtate. There are other ſymbolic ornaments of the head obſervable on ſome Roman coins. Such is the veil, or rather toga, drawn over the head, and ſeen on the buſts of Julius Cæſar, when Pontifex Maximus, and others. Latterly the veil was only a mark of conſecration, and is common on coins of empreſſes, as Fauſtina and others. In the coins of Claudius Gothicus, it is firſt found as a mark of the conſecration of an emperor; and it was continued in thoſe of Conſtantius I., Maximian I., and Conſtantine I. Theſe coins, ſays Mr. Pinkerton, rank with thoſe that are valuable for their rarity.

The "nimbus," or glory, now peculiar to the ſaints, was formerly applied to emperors. A nimbus appears round the head of Conſtantine II., in a gold coin of that prince, and of Flavia Maxima Fauſta, in a gold medallion; and of Juſtinian in another. But the idea is as ancient as the reign of Auguſtus. Havercamp gives a ſingular coin, which has upon the reverſe of the common piece with the head of Rome, URBS ROMA, in large braſs. Conſtantine I., ſitting amid victories and genii, with a triple crown upon his head for Europe, Aſia, and Africa: legend SECURITAS ROMÆ. This medal, ſays Pinkerton, might haply have afforded a curious argument, in an ignorant age, for Conſtantine's donation to the pope, and for the papal triple crown. But in fact the univerſal ſpiritual power of the pope was totally unknown till the 12th century; before which time his election was obliged to be confirmed by the exarch of Ravenna, and afterwards by the emperor of Germany; and his temporal power is ſo late as the beginning of the 16th century, only commencing in the crimes of Borgia. The buſt alone is generally given on ancient coins; but ſometimes half the body, or more; in which latter caſe the hands often appear, with tokens of majeſty in them. Such is the globe, ſaid to have been introduced by Auguſtus, to expreſs poſſeſſion of the world; the ſceptre, ſometimes confounded with the conſular ſtaff; the roll of parchment, ſymbolic of legiſlative power; and the handkerchief, expreſſing that of the public games, where the emperor gave the ſignal. Some princes hold the thunderbolt, ſhewing that their power on earth was equal to that of Jupiter in heaven. Others hold an image of victory.

The reverſes of medals contain figures of deities at whole length, with their attributes and ſymbols; public buildings and diverſions; allegorical repreſentations; ceremonies civil and religious; hiſtorical and private events; figures of ancient ſtatues; plants, animals, and other ſubjects of natural hiſtory: ancient magiſtracies, with their inſignia; and, in ſhort, almoſt every object of nature or art. Some reverſes bear the portrait of the queen, the ſon, or the daughter of the prince who appears on the obverſe. Such are highly eſteemed by antiquaries, not merely becauſe coins ſtamped with portraits on both ſides are valuable, but becauſe they identify the perſonage on the reverſe to have been the wife, the ſon, or the daughter, of ſuch a particular prince, and thus help in the adjuſtment of a ſeries. Some medals with two portraits are very common; ſuch are Auguſtus reverſe of Caligula, and M. Aurelius reverſe of Antoninus Pius. The reverſes of the Roman coins have more of art and deſign than the Greek; but the Greek have more exquiſite relief and workmanſhip than the other. In the very ancient coins, no reverſe is found except a rude mark ſtruck into the metal, as of an inſtrument with four blunt points, on which the coin was ſtruck. Afterwards, by degrees, we ſee ſome little image of a dolphin, or other animal, inſerted into one of the departments of the rude mark, or into a hollow ſquare. Then follows a perfect reverſe of a horſe, or the like, with a ſlight mark, and at length without any mark, of the hollow ſquare. Some ancient Greek reverſes are ſtruck in intaglio, not in cameo, hollow, not in relief. Such are thoſe of Caulonia, Crotona, Metapontum, and ſome other ancient cities of Græcia Magna. Theſe reverſes ſometimes bear the ſame type in intaglio, which the obverſe has in cameo; and ſometimes they are quite different. When complete reverſes appear on the Greek coins, about 500 years B.C. they are of exquiſite relief, minute finiſh, and beauty. The very muſcles of men and animals are ſeen, and will bear inſpection with the largeſt magnifier, as ancient gems.

Of Roman coins, the reverſes are very uniform, the prow of a ſhip, a car, or the like, till about 100 years B.C., when various reverſes appear on their conſular coins in all metals. The variety and beauty of the Roman imperial reverſes are well known. The medalliſt much values thoſe which have a number of figures, as the "Puellæ Fauſtinianæ" of Fauſtina, a gold coin no larger than a ſixpence, which has twelve figures:—that of Trajan, "Regna adſignata," which has four:—the "Congiarium" of Nerva, with five:—the "Allocution" of Trajan, with ſeven; of Hadrian, with ten; of Probus, with twelve. Some Roman medals, to which no peculiar name has been appropriated by medalliſts, have ſmall figures on both ſides, as the "Apolloni Sancto" of Julian II. Others have only a reverſe, as the noted "Spintriati," which have numerals I. II. &c. on the obverſe.

The figures of deities and perſonifications on the Roman coins, are commonly attended with their names, beſides being diſtinguiſhed with their attributes. Theſe names, without an adjunct, are put down merely becauſe it was neceſſary that the coin ſhould have a legend. Thus, in a coin of Lucilla, Venus, though well known by the apple which ſhe always holds in her hand, has nevertheleſs the name round her, VENUS, without any addition. But an adjunct is moſt commonly added, and this renders the inſertion of the name very proper and neceſſary, as in the inſtance of a Neptune, with NEPTUNO REDUCI:—a Venus, with VENERI VICTRICI, and others ſimilar. The like may be ſaid of the coins with a figure of Modeſty, PUDICITIÆ AUGUSTÆ; of Virtue, VIRTUS AUGUSTI, &c.; for it is the legend which appropriates the virtue to the emperor or empreſs, and thus leaves no doubt as to the meaning of the reverſe.

In the Greek coins, a ſuperior delicacy is obſerved by not expreſſing the name of the deity, but leaving it to the eaſy interpretation of fixed ſymbols. This remarkable difference is obſervable in the earlieſt coins of the two countries, on which only the buſt of the deity or perſonification is given.

The Romans have almoſt always the name, as PIETAS, LIBERTAS, &c., while the Greeks content themſelves with giving Ceres with her wheaten garland; Jupiter with his mild countenance, laurel crown, and beard; Minerva with her helmet, &c. &c.

Mr. Pinkerton has given an account of the ſymbols found on the Greek coins, and alſo of thoſe very few on the Roman, which are not immediately illuſtrated by the legend of the medal. The principal deities ſymbolized in the Greek coins, as divided into male and female, are as follow: 1. JUPITER, in the firſt rank of gods, occurring frequently on reverſes of Alexander the Great, and eaſily known by his eagle and thunderbolt: when the buſt only occurs on obverſes of coins, it is known by the laurel crown, and placid bearded countenance. Jupiter Ammon is diſtinguiſhed by the ram's horn twiſting round his ear. 2. NEPTUNE ſeldom occurs on the coins of Greece; but when he appears, he is well known by the trident, or the dolphin, and is ſometimes drawn by ſea-horſes. His buſt has a trident behind. 3. APOLLO is frequently ſeen on the reverſes of the Syrian princes, and is known by the harp, the branch of laurel, or the tripod; ſometimes he has a bow and arrows. When the buſt only occurs, he has a fair young face, and is covered with laurel; and in the character of the ſun, his head is ſurrounded with rays. 4. MARS, often ſeen on Greek civic medals, is diſtinguiſhable by his armour, and ſometimes by a trophy on his ſhoulders. The buſt is known by the helmet and ferocious countenance. 5. MERCURY appears with the "caduceus," or wand twined with ſerpents, and the "marſupium," or purſe, which he holds in his hand. He is delineated as a youth, with a ſmall cap in his hand, and wings behind his ears and at his feet. The buſt is known by the cap, which reſembles a ſmall hat, and the wings. 6. ÆSCULAPIUS is remarkable on account of his buſhy beard, and his leaning on a club with a ſerpent twiſted round it. He is ſometimes ſeen with his wife Hygeia, or Health, and their little ſon Teleſphorus, or Convaleſcence, between them. 7. The attributes of BACCHUS are the tiger, the ſatyrs around him, the "thyrſus," or rod twiſted with ivy or vine, and the crown compoſed of one of thoſe plants. His buſt is known by the latter ſymbol, and by the diadem and horn. 8. The club, lion's ſkin, and ſinewy ſtrength, reveal HERCULES; with ſometimes the addition of a cup, denoting that wine inſpires courage, and the poplar tree, ſymbolic of vigour. He often appears as breaking the neck of the Nemæan lion, by cruſhing it in his arms. His buſt is common on the obverſe of coins of Alexander the Great, and other princes, and thoſe of Sicilian cities: it is that of a youth without a beard; with the lion's ſkin wrapped around it; and on the coins of Alexander has been erroneouſly taken for the portrait of that prince. He is ſometimes drawn with a beard, and called Hercules; without it he is denominated the young Hercules. 9. SERAPIS, one of the fantaſtic gods of Egypt, is known by his buſhy beard, and the meaſure upon his head. APIS appears as a bull, with a flower of the λοτος, lotos, the water-lily of the Nile. Macrobius ſays it was a ſymbol of creation; and Jamblichus ſays that Oſiris was ſuppoſed to have his throne in it. (See LOTOS and LOTUS.) 10. HARPOCRATES, the god of ſilence, is known by the familiar token of putting his finger to his mouth. He has ſometimes the "ſiſtrum" in his left hand, which is a ſymbol common to moſt of the Egyptian deities. 11. CANOPUS is very common on the coins of Egypt, in the ſingular ſhape of a human head, placed upon a kind of pitcher. (See CANOPUS.) 12 To the above-mentioned ſymbolized gods we may ſubjoin the ΙΕΡΑ ΣΥΝΚΛΗΤΟΣ, and ΙΕΡΟΣ ΔΗΜΟΣ, the holy ſenate, and holy people, ſo frequent on Greek imperial coins. Theſe ideal perſons are commonly ſeen in the ſame image of an ancient bearded head, crowned with laurel: ſometimes both appear as youths.

Among the female deities, the firſt in dignity is, 1. JUNO known by the peacock, a bird ſacred to her from the fable of Argus. As the goddeſs of marriage, ſhe is veiled to the middle, and ſometimes to the toes. Her buſt is that of a beautiful young woman, ſometimes without any badge, which ſufficiently diſtinguiſhes her, as the reſt of the goddeſſes have badges; and ſometimes with a diadem. 2. The ſymbols of MINERVA conſiſt in her armour, with a ſpear in her right hand, and the "ægis," or ſhield with Meduſa's head, in the other; an owl commonly ſtanding by her. Her buſt is diſtinguiſhable by the helmet, which ſhe always wears: this is very common on the gold coins of Alexander the Great. 3. DIANA is manifeſt by the creſcent, by her bow and arrows, and often by her hounds. The Epheſian Diana, common upon Greek imperial coins, appears with a number of "mammæ," being ſuppoſed the ſame with univerſal nature; ſhe is ſupported by a couple of deer, and bears on her head a pannier of fruit. The buſt of Diana is known by the creſcent on her brow, and ſometimes by the bow or quiver engraven on one ſide. 4. VENUS is declared by the apple in her hand, the prize of beauty. Sometimes ſhe may be known by her total want of dreſs, without any other ſymbol. Her buſt is diſtinguiſhable by her ſupreme beauty, and is often adorned with pearls around the neck. We may here mention that CUPID ſometimes appears on the Syrian coins, in half-length, as the painters call it, and is known by his infancy and wings. 5. CYBELE has the turreted crown and lion; or is ſeen in a chariot drawn by lions. Her buſt is known by the firſt mentioned attribute. 6. CERES has the torches in her hands, with which ſhe is fabled to have gone in ſearch of her daughter Proſerpine. She has ſometimes two ſerpents by her, and is ſometimes drawn in a chariot by them. Her buſt is readily known by the wheaten garland, and is moſt common on coins of Sicily, an iſland celebrated for its fertility. Her daughter, Proſerpine, is alſo common with the name ΚΟΡΗ, or the *girl*. 7. ISIS, an Egyptian goddeſs, has the ſiſtrum in her hand, and a bud, or flower, on her head, ſymbolic of the eternal bloom of the inhabitants of heaven. The flower is ſaid to be that of the *αβροτονον*, or ſouthern-wood; but moſt probably it is a ſpecies of amaranth. 8. ASTARTE, a Sidonian goddeſs, appears on a globe, ſupported by a chariot of two wheels, and drawn by two horſes.

Mr. Pinkerton enumerates other deities that are leſs frequent on Greek coins; ſuch are Saturn with his ſcythe, or his buſt with a hook on thoſe of Heraclea:—Vulcan's head, with his tongs:—Adranus, a Sicilian god, with his dog:—Anubis of Egypt, with his dog's head:—Atis, in the Phrygian bonnet:—Caſtor and Pollux, with a ſtar on the head of each:—Dis, having an old face with diſhevelled hair and beard, and a hook:—Flora, crowned with flowers, on coins of Marſeilles:—Nemeſis, with a wheel:—and Pan with ſmall horns and brutes' ears. Some ſymbols are figurative of perſons or circumſtances: ſuch are vaſes, with ſprigs of plants iſſuing out of them, ſymbolic of ſolemn games:—the ſmall cheſt, or hamper, with a ſerpent leaping out of it, exhibiting the myſtic rites of Bacchus, coins with their image being called "Ciſtophori:"—the anchor, on Seleucian medals, aſcertaining their having been ſtruck at Antioch, where an anchor was found in digging the foundation of the city, though at a conſiderable diſtance from the ſea:—Apollo ſitting upon a ſingular ſeat, reſembling a hamper inverted, perhaps a tripod with a covering of network,

work, on different coins of the princes of Syria:—the bee, a mark of Ariſteus, ſon of Apollo and Cyrene, much worſhipped in the iſles of the Adriatic and Ægean ſeas:—the laurel of Apollo:—ivy and grapes of Bacchus:—the poppy of Ceres and of Proſerpine:—corn of Ceres:—owl and olive of Minerva:—dove of Venus:—and torch of Diana, Ceres, and Proſerpine. The μυδρος, *mudrus*, or conic ſtone, was a token of the Sun, of Belus, and of Venus.

The moſt remarkable ſymbols of countries and cities on Greek coins are the flowers of the pomegranate for Rhodes:—owl for Athens:—pegaſus for Corinth:—wolf's head for Argos:—bull's head for Bœotia:—minotaur's head, and the labyrinth, for Crete:—horſe's head for Pharſalia:—lion for Marſeilles:—tortoiſe for Peloponneſus:—ſphinx for Scio:—three legs joined for Sicily:—and a horſe for Theſſaly. The badge of Byzantium was the creſcent, which appeared early on the coins of Byzantium, with the legend ΒΥΖΑΝΤΙΝΗ ΣΩΤ.; the preſerver of Byzantium. The occaſion was this; when Philip of Macedon beſieged Byzantium, and was proceeding to ſtorm it in a cloudy night, the moon ſhone out, and diſcovered his approach, ſo that the inhabitants obſerved and repulſed him. The Turks, upon entering Conſtantinople, found this ancient badge in many places; and ſuſpecting ſome magical power in it, aſſumed the ſymbol and its power to themſelves; ſo that the creſcent is now the chief Turkiſh enſign. (See CRESCENT.) The bull is very frequent on Greek coins, ſignifying, as Mr. Pinkerton ſuggeſts to be the moſt probable opinion, a river, on which the country or town was ſituated: accordingly, the river Achelous is called Βουκρανος, or bull-headed, by Sophocles in Trachin, v. 13: and Cephiſus is ſaid to have ταυρομορφον ομμα Κηφισου πατρος by Euripides, Ion. v. 1261. The Latin poets peak of the horns of rivers; thus Horace deſcribes the Aufidus, "Sic tauriformis volvitur Aufidus." The bull was a token of fertility, but the horns ſeem to allude to the force of the ſtream, &c. See CORNUCOPIA.

On Roman coins the deities and perſonifications have not only attributes, but their names likewiſe in the legend of the medal, ſo that it is not neceſſary to dwell upon the explanation of them. Some, however, it may not be improper to mention. On the reverſes of Roman colonial coins, eaſily diſtinguiſhed by their rude fabric, and the name of the colony on them, commonly beginning with COL., when an enſign ſtands alone, and without any perſons, it ſhews a colony drawn from one legion; but when the enſigns or banners appear in the like circumſtances, they evince the colony to have been drawn from as many legions as there are enſigns. A bull on theſe coins often repreſents Apis as a ſymbol of ſtrength and ſecurity: ſuch was, probably, the bull upon the reverſe of the common coin of India, with two ſtars over him, and the legend SECURITAS REIPUB. The caduceus marks peace and concord; the cornucopia, abundance; the pontifical hat, the prieſthood. They all appear upon a reverſe of Julius, and are ſymbols of the concord of the empire, and the plenty which attended his power: the laſt ſymbol merely denotes that Cæſar was Pontifex Maximus. The "parazonium" on Roman coins was a baton of command, and not a pointleſs dagger, as it has been deſcribed by many antiquaries. In later times the globe on an altar, with three ſtars, is ſuppoſed to typify the world preſerved by the gods for the three ſons of Conſtantine I. The fort and the gate are ſymbols of ſecurity. The altar is a well-known mark of piety: the tripod was a portable altar, uſed in temples for liquid offerings, as the altar was for ſolid ſacrifice. A dolphin is ſometimes twined among the legs of the tripod; the dolphin was ſacred to Apollo, as appears from Servius on the 3d Æneid. The "lectiſternia" alſo appear on medals. (See LECTISTERNIUM.) The inſtruments of ſacrifice appear on many Roman coins: ſuch are the "ſeceſpita," or oblong hatchet, or large knife for killing the victim:—the "aſperſorium," a veſſel for holy water, with which the prieſt ſprinkled the aſſiſtants:—the "ſimpullum," or veſſel for pouring wine on the ſacrifice:—the "patina," or "patera," a diſh for the fat, and other portions ſacred to the gods:—and the "acerra," or little coffer for incenſe. The "lituus," or wand twiſted round at the top, ſomewhat like the epiſcopal ſtaff, is a badge of the augurſhip, as the "apex," or cap with ſtrings, and terminating with a tuft, is of the pontificate. (See LITUUS.) The "thenſa," or divine chariot, which carried the image of a deity in ſacred proceſſions, (improperly termed "carpentum" by ſome,) is a badge of conſecration of an empreſs; as is alſo the peacock, which was the bird of Juno, the queen of heaven. Theſe ſometimes appear without the legend "conſecratio," as the thenſa on a coin ſtruck under Tiberius for the conſecration of Livia, the wife of Auguſtus, called Julia, S. P. Q. R. IULIÆ AUGUST.; and the peacock on that moſt rare gold coin of Julia, the daughter of Titus, the front of which has her buſt, IULIA AUGUSTA, and the reverſe a peacock, DIVI TITI FILIA. The eagle is the ſign of conſecration of an emperor.

The palm-tree, on both Greek and Roman coins, is ſymbolic of Phœnicia, where that tree flouriſhed; as the ſilphium is of Cyrene, from the earlieſt times down to thoſe of the Roman empire. Pinkerton's Eſſays, vol. i.

The titles are generally found upon the face of the medal. Theſe are titles of honour, as Imperator, Cæſar, Auguſtus, given to all the Roman emperors after Octavianus; Dominus, firſt aſſumed by Aurelian, and uſed by his ſucceſſors (ſee DOMINUS): other titles are aſcribed to particular perſons on account of their virtues, as Pius to Antoninus, aſſumed alſo by Commodus, with the addition of Felix; Pater Patriæ, firſt beſtowed on Cicero for diſcovering and defeating the conſpiracy of Cataline, and afterwards aſſumed by the emperors; Juſtus, the title of Peſcennius; Beatiſſimus and Feliciſſimus of Diocleſian; Optimus and Clemens, decreed to Trajan by the ſenate; Maximus, aſſumed by Conſtantine; and Invictus, by Victorinus. In the lower empire, Stauracius firſt, and then Michael Ducas, and others, aſſumed the proud addition of ΒΑΣΙΛΕΥΣ, or king; which was followed by that of ΔΕΣΠΟΤΗΣ, or deſpot. Other titles are the names of offices; as COS. for conſul, with a number annexed to it, ſignifying how many times the perſon had been thus elected: Tribunitia poteſtas, with the year of the tribuneſhip commonly expreſſed after the title, as TRIB. POT. X. or XVI. &c. The office of Pontifex maximus, expreſſed by P. M. was aſſumed by the emperors, and generally expreſſed among their titles, from Auguſtus to Conſtantine, by whom it was refuſed: it was re-aſſumed by Julian, and laid aſide by Gratian. Julius Cæſar aſſumed the title of Dictator perpetuus; Claudius, that of Cenſor; and Domitian made himſelf Cenſor perpetuus.

The large early copper coins only bear ROMA in the reverſe. Afterwards we find the names and titles of the Quæſtor or Director of the public treaſury, the Triumviri who managed the mint, the Prætor, the curule Edile, the Edile of the people, the Præfect of the city, the Pontifex Maximus, Augur, Quindecimvir ſacris faciundis, Flamen Martialis and Quirinalis, Septemvir Epulonum, and latterly, Triumvir Reipublicæ conſtituendæ, and ad Frumentum emundum. Of the great magiſtrates out of Rome, who had moneyers with them, in order, from bullion and the ſpoil of the enemies, to coin money for paying the troops engaged in foreign ſervice, we have the names and titles of Imperator, Proconſul, Proprætor, Legatus, Legatus pro Prætore, Quæſtor, Proquæſtor, Legatus Claſſis, Triumvir Coloniæ deducendæ, or reficiendis ſacris ædibus. All theſe titles appear on the reverſes of what are called conſular coins; while the obverſe bears the head of a deity, generally without a legend. In time the magiſtrates put the head of ſome illuſtrious anceſtor on the coins, with his name; as Numa, Ancus Martius, Quirinus or Romulus, Brutus, Ahala; Caius Cœlius Caldus, obverſe of Caldus III. vir, and the like. This led the way to Cæſar, who firſt put his own head on his coins, when made perpetual Dictator; with the legend of names and titles on the obverſe, and not on the reverſe as before. The inſcription VOT. V. MVLT. X. VOT. X. MVLTIS XX. occurs on many reverſes of Roman medals, and moſt commonly marked on a ſhield, or within a crown of laurel. This Du Cange interprets to refer to the artifice of Auguſtus, who pretended to lay down his power, and reſume it for 10 years longer as at the requeſt of the ſenate. This term, he ſays, was by ſucceeding emperors ſhortened to five; and ſolemn vows were entered into by their ſubjects for their ſafety to the end of that period; nay, that the double of that period might be allotted to their reign, again to be prolonged, on the wiſhes of their people, to a future date. This inſcription is alſo found upon coins of Criſpus, and other Cæſars, or heirs of the empire; and it hence appears, that the honour of ſuch ſolemnities was alſo conferred on them, who created Cæſars. The "Vota Decennalia," as on coins of Pertinax and of Papianus, were only vows to perform the Decennalia, if the emperor ſhould reign 10 years; whereas "Primi Decennales," or "Secundi Decennales," imply theſe games to have been actually performed; and the emperor to have reigned 10, or 20 years. On coins of Lucilla, Hadrian, Severus, Caracalla, and others, we find VOTA PVBLICA, with a ſacrifice; ſhewing that the vows were undertaken, with that rite, as they were afterwards performed with ſolemn games and rejoicings. Coins of Conſtantine II., and of Conſtans, only bear SIC. X. SIC. XX. to expreſs the wiſhes of the people, that, as the emperors had happily reigned 10 years, ſo they might reign 20. There were alſo "Vota Quinquennalia" for the emperor reigning five years, and games called "Quinquennalia" performed when he had accompliſhed that period. From Aurelius Victor, in his life of Gordian III., it appears that Nero introduced this practice; which is mentioned by Tacitus, and by Lampridius in his life of Diadumenus. There were alſo "Vota Novi Anni," as appears from Spartian's life of Hadrian, and from Dio, l. 58; and there is a coin of Antoninus with S. P. Q. R. A. N. F. F. OPTIMO PRINCIPI, Senatus populuſque Romanus annum novum fauſtum felicem, &c. *i. e.* the ſenate and people of Rome wiſh a proſperous and happy new year to the beſt of princes. See LEGEND.

MEDALS, *Greek*, claim that place in a cabinet from their antiquity, which their workmanſhip might enſure to them, independently of that adventitious conſideration. The invention of coinage, as we have elſewhere obſerved, is aſcribed by Herodotus to the people of Lydia, upwards of 1000 years before the Chriſtian era. The abbé Barthelemy, cited by Mr. Pinkerton, arranges the following ſtages of the progreſs of coinage. 1. Coins without any impreſſion. 2. Thoſe with a hollow indented mark or marks on one ſide, and impreſſion in relief on the other. This claſs, it is ſuggeſted, ſeems to extend from about the year 900 before our era, to about 700. 3. Such as have an indented ſquare divided into ſegments, with a ſmall figure in one of the ſegments, the reſt being vacant; and impreſſions on the obverſe, as uſual. Theſe may extend to the year 600 B.C. 4. Thoſe which are ſtruck hollow on the reverſe, while the obverſe is in relief commonly with the ſame figure; which coins may be conſidered as of equal age with thoſe in the laſt claſs. 5. Coins in which a ſquare dye is uſed, either on one or both ſides. Theſe were diſcontinued about the year 420 B.C. 6. Complete coins both in point of obverſe and reverſe. Some of theſe occur in Sicily, where this art was carried to a perfection unknown in any other country, ſo early as the time of Gelo, who began his reign in the year 491 B.C. Coins of moſt remote antiquity, ſays Froelich, quoted by Pinkerton, may be diſtinguiſhed by theſe infallible marks. 1. Their oval circumference, and globous ſwelling ſhape. 2. Antiquity of alphabet. 3. The characters being retrograde; or the firſt diviſion of the legend in the common ſtyle, while the next is retrograde. 4. The indented ſquare. 5. The ſimple ſtructure of the mintage. 6. Some of the very old coins are hollowed on the reverſe, with the image impreſſed on the front. 7. The dreſs, ſymbols, &c. are often of the rudeſt deſign and execution. The coins of Poſidonia, Crotona, Sybaris, and two or three other cities, bear theſe marks of profound antiquity. Some Perſian pieces, with the archer upon one ſide, and the hollow ſquare upon the other; and ſeveral coins of the firſt kings of Macedon, are examples. In the Britiſh Muſeum, there is a medal of ſilver aſcribed to Leſbos, of this deſcription. In a ſhort time the Greeks aſſumed great elegance; and it is obſerved by Mr. Pinkerton, that innumerable of the medals of cities, which, from the character, we muſt judge to be of the higheſt antiquity, have a ſurpriſing ſtrength, beauty, and relief, in their impreſſions. About the time of Alexander the Great, the art ſeems to have attained to its very higheſt perfection. Of the Greek medals, thoſe of cities are the moſt ancient. The civic medals are generally ſtamped on the obverſe, with the head of the genius of the city, or ſome favourite deity; while the reverſe often preſents ſome ſymbol uſed by the city, at the time when the piece was ſtruck. The legend contains the initials, monogram, or whole characters of the name of the city. Some connoiſſeurs prefer the regal coins of Greece; others the civic. The former intereſt by their portraits; the latter by their variety. The former are perhaps more important to ancient hiſtory; and the latter to ancient geography. The civic coins are intereſting, as they preſent us with a view of the cuſtoms, religion, &c. of ancient cities; they likewiſe afford a kind of political barometer of the wealth and power of each city and country. *E.G.* The numerous and beautiful gold coins of Cyrene, a country, from its remote ſituation, little known in hiſtory, afford ſufficient proofs of its great power and wealth. The ſmall civic coins of gold, electrum, and ſilver, ſtruck in Aſia Minor, are perhaps ſome of the earlieſt; though if we judge from workmanſhip, theſe coins are ſo exquiſite, that the coins of Greece, from their rudeneſs, ſeem to claim priority of era; and Mr. Pinkerton ſuggeſts, that it is dubious whether Greece or Lydia firſt invented coinage.

The Greek monarchic coins are often of the ſame conſtruction with the civic; only that they bear the name of the prince on the reverſe; many ſuch occur with the buſt of ſome deity in front, for one which preſents the image of the prince. The moſt ancient ſeries is that of Macedon, commencing, as we have obſerved already, with Alexander I., who began his reign 501 years before our era. With Philip, the Macedonian coins begin to be beautiful. Thoſe of Alexander the Great are wonderful. The head of Minerva on his gold, affords a variety of exquiſite faces; and the coins of Alexander and his father, exceed all that were ever executed, except thoſe of Sicily, Græcia Magna, and the ancient ones of Aſia Minor. Sicilian coins are famous for workmanſhip, even from Gelo's time. The coins of the Syrian kings, ſucceſſors of Alexander, almoſt equal his in beauty. Thoſe of Antiochus VI. are peculiarly exquiſite, both for the beauty of the coin and that of the king. The Egyptian Ptolemies have fine relief, but do not equal the Syrian in delicacy and finiſh. The family coin of Ptolemy Philadelphus, before mentioned in this article, is extremely fine and intereſting. There is a coin of Alexander, ſon of Neoptolemus, king of Epirus, with a head of Jupiter Dodonæus, crowned with oak, of miraculous workmanſhip, and thought to be done in Magna Græcia, when he came to aſſiſt the Tarentines. This has been engraven by Bartolozzi. Even the earlier Parthian coins of the Arſacidæ are worthy of the Grecian workmen, whoſe they are, as is evident from the Greek legends impreſt on them, in many of which theſe monarchs aſſume the title of ΦΙΛΕΛΛΗΝΟΣ, or lover of the Greeks. It is to the Greek coins that were ſtruck before the Roman empire ſwallowed up the Greek cities and ſovereignties, that the high praiſe beſtowed by good judges upon the Greek mint, muſt be chiefly confined; for the Grecian imperial medals are not equal to the former, though they do not always yield to the Roman.

In the ſeries of Grecian imperial coins, we meet with very uncommon portraits and reverſes. In attention to the fair ſex, the people of Mitylene, the chief city of Leſbos, and the birth-place of Sappho, have peculiarly diſtinguiſhed themſelves. Thoſe Greek coins of cities, which have the head of an emperor or empreſs, are called Imperial Greek coins; but thoſe which have no ſuch impreſſions are claſſed with Grecian civic coins, though ſtruck under the Roman power. Of imperial Greek coins none occur in gold; but there are thoſe of ſilver of Antioch, Tyre, Sidon, Tarſus, Berytus, Cæſarea, and one or two other trading cities in that opulent and commercial region. Thoſe of Antioch preſent, now and then, the genius of the city ſitting, with the river Orontes flowing beneath her feet, as on coins of Syrian monarchs. Syrian ſilver coins ſometimes bear the club of Hercules, the founder, or the famous Tyrian ſhell-fiſh, whence the Tyrian purple, our crimſon, was derived. Sidon gives the car of Aſtarte, or a head of the goddeſs: Tarſus has ſometimes only a monogram, expreſſing the name of the city. Cæſarea, in Cappadocia, abounds in ſilver of various ſizes; and ſilver coins of Lycia appear to be of good work, and good metal; the reverſe having two harps and an owl ſitting on them. Silver coins of Gelon, a town of Sarmatia, much reſemble the Syrian; and have the ΔΗΜΑΡΧ. ΕΞΟΥΣΙΑΣ, with an eagle holding a ſtag's foot. The Greek imperial braſs coins are ſo abundant, that it is hardly neceſſary to ſpecify any of them. Thoſe of Antioch, generally with a Latin legend on the obverſe, and Greek on the reverſe, are ſo numerous as to furniſh a ſeries of almoſt all the emperors; being apparently ſtruck for the purpoſe of paying the forces in the Eaſt. Thoſe of Ceretapa, in Phrygia, are diſtinguiſhed by their good workmanſhip, as alſo are thoſe of Bithynia and Phrygia. On thoſe of Tarſus are curious views of objects, almoſt in perſpective; and there is a ſingular coin of Gangra in Paphlagonia, with a view of two caſtles and houſes between them. This is in the late Dr. Hunter's collection. The coins of Egypt under the Roman emperors, being marked with Greek legends, range with the Greek imperial medals; they are remarkable for thickneſs, and baſeneſs of metal. Thoſe of the ſilver ſeries are at firſt about the ſize of an half crown, but three times as thick; after the time of Commodus, they declined both in ſize and baſeneſs, and became reduced to the ſize nearly of a ſixpence, and the metal is only bad braſs waſhed with ſilver. The ſilver coins of Egypt are not ſo well done from Auguſtus to Nero, as afterwards. From Nero to Commodus, they are often admirable, and of a ſtyle of workmanſhip that can be called neither Greek nor Roman. The reverſes are extremely various and ſingular, exhibiting the capricious religion and manners of the people. From Commodus the Egyptian ſilver gradually declines till the reign of Conſtantius I., when it ends. The ſeries conſiſts of 1000 coins, or more. Many ſcarce portraits of emperors and of empreſſes decorate the ſeries. The Egyptian braſs coins of the Roman period claim notice. Until Veſpaſian there are only two ſizes, equal to the ſecond and third Roman braſs. Veſpaſian indulged the Egyptians with the privilege of iſſuing large braſs, as uſed in Rome itſelf. All the Egyptian Othos, the moſt common coins of that prince in braſs, are of the ſecond ſize; and bear for reverſe an head of Iſis, or Serapis, with L.A. or year firſt. Some have names of towns, and in Dr. Hunter's cabinet, there is a fine one of Cebennutus in firſt braſs, of Domitian, who appears decorated with a wheaten, as Gallienus does in Roman gold. On the braſs coins of Egypt, a female figure, with part of a ſhip in her hand, and the Pharos behind, is very common, probably expreſſive of Alexandria. One of Antoninus Pius, in third braſs, preſents to us Iſis ſitting on the flower of the lotus. With this emperor very fine work begins in the Egyptian braſs. The 12 coins of this prince, with the 12 ſigns are very curious, and publiſhed by Barthelemy, Mem. de l'Acad. xli. The laſt braſs coins of Egypt, are of Marcia Otacilia Severa, wife of Philip the Elder, A.D. 244. The genuine braſs coins of Egypt are thinner than the ſilver, and of a diſtinct fabric.

MEDALS, *Roman*. It was in the reign of Servius Tullus that the firſt Roman coins appeared, which were large pieces of braſs, rudely impreſſed, only on one ſide, with the figure of an ox, a ram, or ſome other animal, whence, it is ſaid, money was denominated "pecunia." Theſe ſymbols were derived from the Tyrrheni or Etruſcans, a people of Italy, originally Lydians. In proceſs of time the impreſſion of the *as* was changed to that of a buſt of Janus, upon the front, and the prow of a ſhip on the reverſe; and for more general uſe, pieces of inferior weight and value were coined. See AS and MONEY.

The Roman coins, conſidered as medals in a cabinet, comprehend the two grand diviſions of *conſular* and *imperial* coins. The Roman *conſular* coins ſeldom or never bore the names or titles of conſuls till towards the cloſe; nevertheleſs they are not improperly called conſular, becauſe they were ſtruck in the conſular times of Rome. They are alſo called coins of families; and are always arranged alphabetically in families, according to the names which appear on them. The braſs conſular coins are rather unintereſting; as they conſiſt chiefly of large unwieldy pieces, with types of inſipid ſimilarity. Few of them have any imagery or ſymbol. The large ancient pieces are generally kept in boxes apart, by thoſe who are verſed in them. (See AS.) The next coinage to that of braſs was that of ſilver, which took place, according to Pliny, in the 485th year of Rome, that is, about 300 years after the firſt braſs coinage, and 266 years B.C. The denarius was the firſt and the laſt form which it aſſumed, for the other ſizes are ſo ſcarce, that it is certain very few were ſtruck. (See DENARIUS.) Until the age of Julius no portrait of a living perſonage appears upon any Roman medal; Cæſar was indeed the firſt who aſſumed that high honour, and a competent judge aſſerts, that the plan of engraving on coins the names of great men and magiſtrates was only introduced about the time of Marius and Sylla. The reverſes of ſome few conſular medals are fraught with much erudition and curious matter. On a coin of the family of Æmilia, we have this legend, M. LEPIDUS PONT. MAX. TVIOR REGIS,

gis, and Lepidus appearing in the dreſs of a conſul, and putting the crown on the head of young Ptolemy, whom his father had left to the tutorage of the Roman people. On the obverſe is the turreted head of the city of Alexandria in Egypt, with ALEXANDRIA. In the ſame family there is a medal, with a youth on horſeback, carrying a trophy, with this legend, M. LEPIDUS ANNORUM XV. PRÆTEXTATUS HOSTEM OCCIDIT CIVEM SERVAVIT. Again, L. Æmilius Paulus, on a coin of the ſame family, appears dedicating a trophy for his victory over Perſeus, who, with his two children, ſtand by, their hands being tied behind their backs. Portraits of Bacchus, Jugurtha, the laſt Philip of Macedon, the 1ſt and 2d Brutus, Metellus, Marcellus, Regulus, Sylla, Pompey, Caldus, and others appear on conſular coins. Rome and Italy are perſonified; Victory crowns Rome; with other ſpecimens of that fine perſonification afterward diſplayed on the imperial coins. Gold was firſt coined at Rome, 62 years after the application of the mint to ſilver. The general gold coin is the *Aureus*, which ſee. The conſular coins, whoſe number is eſtimated at 200 in braſs, and 2000 in ſilver, extend not to above 100 in gold, of which moſt are curious. The beautiful Pompey with his ſons on the reverſe, and the Brutus with his brother Lucius, commonly claſſed with imperial coins, ſhould rank with the conſular. Moſt of the gold conſular coins are of great beauty and high value. Of conſular medals father Joubert reckons about fifty or ſixty of gold; two hundred and fifty of copper; and near a thouſand of ſilver. Goltzius has deſcribed them in a chronological order, according to the Faſti Conſulares; and Urſinus has diſpoſed them genealogically, according to the order of the Roman families. M. Patin has collected an entire ſeries of them, in the ſame order with Urſinus; and only computes one thouſand and thirty-ſeven conſulars, which relate to one hundred and ſeventy-eight Roman families. M. Vaillant, and M. Morel, have alſo publiſhed on the ſame ſubject. See the ſequel of this article. The Roman *imperial* coins claim our attention from a variety of conſiderations; and more particularly from the extent of the Roman empire, and from our own connection with it. The Roman coins may be called thoſe of the emperors of Europe, and intereſt us like thoſe of our own country. Some have diſtinguiſhed the imperial coins into thoſe of the *upper* and *lower empire;* the upper empire commenced under Julius Cæſar, and ended about the year of Jeſus Chriſt two hundred and ſixty; the lower empire comprehends near one thouſand two hundred years; *viz.* till the taking of Conſtantinople. It is the cuſtom, however, to account all the imperial medals, till the time of the Palæologi, among the antique; and yet we have no imperial medals of any conſiderable beauty, later than the time of Heraclius, who died in 641.

After the time of Phocas and Heraclius, Italy became a prey to the Barbarians; ſo that the monuments we have remaining of thoſe two emperors, finiſh the ſet, or ſeries of imperial medals. To theſe are added the medals of the lower empire, and of the Greek emperors; whereof a ſeries may be made as low as our times, taking in the modern ones. M. Patin has made an ample collection of the imperial medals, till the time of Heraclius.

The Gothic medals make part of the imperial ones; they are ſo called, as having been ſtruck in the times of the Goths, and in the declenſion of the empire, and ſavouring of the ignorance and barbarity of the age.

Cæſar, who begins the imperial ſeries, was conqueror of Gaul; Claudius of Britain. As to the braſs coinage it has been already obſerved, that at the time of Marius and Sylla, about 50 years before that of Cæſar, ſome elegance and variety commence in the Roman coinage. In the times of Julius Cæſar this elegance was carried to a great height. In the family of Marcia, there is a beautiful As, with the heads of Numa and Ancus; the reverſe Victory in a porch, and the prow at her feet. Indeed it is only in the half ounce As that variety can be found. Sylla, as we are informed by Cicero, and by gold coins remaining, introduced great confuſion into the coinage; and it is not improbable, that the braſs had its ſhare, by alteration of ſizes and types. The imperial braſs is of three ſizes, *large*, *middle*, and *ſmall*. The *large* braſs form a ſeries of ſurpriſing beauty and vaſt expence. In this ſeries the various colours of the patina have the fineſt effect; and the great ſize of the portraits and figures conſpires to render it the moſt important of all the Roman coinage. It even exceeds the gold in value.

The ſeries of the *middle* braſs exceeds the former in number; but doth not preſent ſuch elegance of work, or of types. Many coins are common in ſecond braſs, which are rare in firſt; but very few examples occur to the contrary. Hence this ſeries yields much to the former in price, as well as in dignity. However, many rare and curious coins occur in this ſeries. There is a Tiberius, with this inſcription on the reverſe, TRIB. POT. XXXVIII. A Gallienus, obverſe with his head, bearing a laurel over a turret on his forehead, GENIUS P R. reverſe with this inſcription ANT. URB. S. C. Coins of Fauſtina the elder are common in this ſize; but thoſe without DIVA are very ſcarce, and always bear ANTONINI PII AUG.; a circumſtance, which ſeems to indicate, that moſt of theſe coins were ſtruck by her good huſband, after her death. In the firſt and ſecond braſs there are many coins, which particularly intereſt us as Britons, becauſe they relate to the hiſtory of this iſland. Such are the triumphal arch of Claudius, inſcribed DE BRITANN., alſo occurring in gold and ſilver; the ADVENTUI AUG. BRITANNIÆ, and EXERC. BRITANNICUS of Hadrian; the coins of Antoninus Pius, Commodus, Severus, with a victory, VICTORIA BRITAN., but eſpecially thoſe perſonifying the country *Britannia*.

The *ſmall* braſs ſeries abounds with curious coins. Till the times of Valerian and Gallienus, they are generally ſcarce; but afterward extremely common. In the former period portraits of the emperors are rare in ſmall braſs, but in the latter many are found which occur in no other ſeries, as moſt of the uſurpers, Zenobia, Vaballathus, and many others. All real braſs coins have the S. C. till the time of Gallienus; as the ſenate alone had the power of ſtriking braſs, while the emperor himſelf had that of gold and ſilver. When the S. C. therefore is wanting, the coin was certainly once plated. With Pertinax A.D. 192, there is a temporary ceſſation in the ſmall braſs; nor after him do any princes occur in that ſeries till Valerian, A.D. 254, excepting Trajanus Decius A.D. 250, only. After Valerian, the ſeries is continuous, and common. The braſs coinage declined in ſize from the time of Severus, and Trajanus Decius in vain attempted to reſtore it; and Valerian and Gallienus were forced to iſſue denarii ærei of billon, and ſmall aſſaria. The ſeries of large and of middle braſs are of two fixed and known ſizes; the former about that of our crown, and the latter of our half-crown, till after Severus they gradually leſſen. But the ſmall braſs takes in all the parts of the As, and every braſs coin not larger than our ſhilling in ſize belongs to this ſeries. Our limits will not allow our enumerating the coins of this ſeries, but we refer to Pinkerton's Eſſ. vol. i. p. 272, &c. The ſeries in ſmall braſs extends from the beginning to the cloſe of the Roman empire, nay, far into the Byzantine, cloſing with Conſtantine Pogonatus, A.D. 670.

The ſilver imperial coins are very numerous and various. This ſeries is as complete as any, and of far cheaper purchaſe, very few emperors being ſcarce in ſilver. Moſt types even of the large braſs and gold are found in the ſilver, which thus unites the advantages of all metals. Sometimes the ſilver and gold coins, as being of one ſize, are ſtruck from the ſame dye, as the young Nero, reverſe a votive ſhield EQUEST. ORDO PRINC. JUVENT. and others. One of the rareſt ſilver coins is that of Gneius Pompey, ſon of the great Pompey, in Dr. Hunter's collection. It is ſuppoſed to have been ſtruck in Spain, before the battle of Munda, ſoon after which he was ſlain.

The imperial gold forms a ſeries of wonderful beauty and perfection; but it is only attainable by men of princely fortunes. In theſe the workmanſhip is carried to the greateſt height; and the richneſs of the metal ſurpaſſed by that of the types. As gold refuſes ruſt, the coins are generally in the ſame ſtate as they came from the mint. The number of Roman gold imperial coins may amount to 5000; the ſilver to 10,000; and the braſs to 30,000. The whole of the different ancient coins may amount to about 80,000; but the calculation cannot be very accurate.

Before we cloſe this account of Roman medals, the *colonial* ought to be mentioned. As Roman colonies were ſettled in various parts of the empire, their coins have ſometimes Greek, ſometimes even Punic legends; though generally that on one ſide of ſuch is Latin. But thoſe with Latin legends only are far more numerous. Some of theſe coins are elegant, though moſt are rude and unintereſting. The colonial coins only occur in braſs; thoſe in firſt braſs are very rare till the time of Severus. They begin with Julius and Antony. The Spaniſh colonial coins ceaſe with Caligula, who took away this privilege from Spain. The colonial coins of Corinth are the moſt various and beautiful; preſenting triumphal arches, temples, gates, ſtatues, baths, and figures of gods and goddeſſes. Other remarkable colonial coins are of Emerita, of Illice, of Tarraco. The coins of Caſſandria in Macedon are generally ſmall braſs, with the head of Jupiter Ammon on the reverſe, and furniſh that ſeries with many fine heads of emperors, with Latin legends, from Claudius to Severus, but always with the ſame reverſe. Many ſcarce portraits are found in colonial coins of that ſize; as the two Agrippinas, Agrippa, Cæſar, Druſus Cæſar, Octavia Neronis, Cæſonia, Meſſalina, and others. It is remarkable, that while Spain had perhaps 50 colonies, Camalodunum is the only one in Britain of which there are coins. There is one of Claudius, reverſe a team of oxen, COL. CAMALODON. AUG. The ſmalleſt imperial ſilver alone are quinarii, the gold being ſemiſſes and trientes, and the braſs at firſt ſmall parts of the As, and latterly only the half aſſarion. Theſe, inſtead of being denominated quinarii, might, more properly, be called "minimi;" as including the very ſmalleſt coins of all metals and denominations. The Roman coins have had a moſt extenſive ſpread; ſome of them have been found in the Orkneys; and they have likewiſe been found in numbers in the moſt remote parts of Europe, Aſia, and Africa, at that time diſcovered.

As for the medals of other ancient nations, beſides Greece and Rome, ſome notice ſhould be taken of them; premiſing that by *ancient* coins, all preceding the ninth century, or age of Charlemagne, are meant; and all poſterior to that period are *modern*. No coins are found which can even be imagined to belong to Aſſyrian, Median, or Babylonian kings. The oldeſt coins found in their empire are palpably Perſian and ſimilar to the Greek. The Phœnicians do not appear to have coined money, till after the Greeks had ſet the example. No Phœnicians were ever found of much antiquity; and not one, without both obverſe and reverſe, nor are any of them older than about 400 years before our era. Weight alone was uſed in the famous cities of Tyre and Sidon, as we learn from ſcripture; and in Egypt coinage was unknown, not a coin with a hieroglyphic being found; and in the mouths of the mummies there are only thin broad pieces of unſtamped gold, to pay Charon's fare. India appears to have no claim to an early uſe of coinage. No Indian or Chineſe coins exiſt till within a late period; and thoſe of both countries are ſo rude as hardly to deſerve being collected. Upon the whole the Lydian coins ſeem to be the moſt ancient in Aſia. Next to theſe are the Perſian, well known from the archer on them, and from Mithras the Perſian deity, the dreſs of the princes and other marks. None of theſe coins can be older than 570 years before our era, when the Perſian empire began. The famous darics were iſſued by Darius Hyſtaſpes, who began to reign 518 or 521 years B.C. See DARIC.

Of Perſian coins, there is a ſecond ſeries, that of the Saſſanidæ, beginning about 210, when Artaxerxes overturned the Parthian monarchy. The Parthian coins have all Greek legends, but thoſe later Perſian bear only Perſian characters: they are large and thin, with the king's buſt on one ſide, and the altar of Mithras on the other, generally with a human figure on each ſide. The letters on Perſian coins ſeem to partake of the ancient Greek, Gothic, and Alanic. The later Perſian coins extend to the year 636, when Perſia was conquered by the Arabian caliphs.

The Hebrew ſhekels are of ſilver, and originally didrachms, but, after the Maccabees, about the value of the Greek tetradrachm; and the braſs coins, with the Samaritan characters, are moſt of them later than the Chriſtian era, and generally the fabrications of modern Jews. F. Souciet has a diſſertation on the Hebrew medals, commonly called Samaritan medals, in which he diſtinguiſhes between the genuine and the ſpurious: and ſhews, that they are true Hebrew coins, ſtruck by the Jews, on the model of the ancients; and that they were current before the Babyloniſh captivity. The ſame impreſſion of a ſprig on one ſide, and a vaſe upon the other, runs through all the coins of this nation. The Phœnician coins are of Phœnicia, and the Punic of Carthage; and they are rendered intereſting by the ancient civilization and great power of the Phœnicians and Carthaginians. The alphabets, which are nearly allied, have been illuſtrated by their relation to the Syriac, Chaldaic, and Hebrew. The ſame may be ſaid of the Palmyrene coins and inſcriptions. (See PALMYRA.) The Etruſcan coins are inſcribed with the Etruſcan character, which is ſatisfactorily explained by its connection with the Pelaſgic, or oldeſt Greek and Latin. The Spaniſh coins are inſcribed with two or three different alphabets allied to the old Greek, or to the Punic. The ancient coins of Spain are numerous, and evidently not all ſtruck by the Punic colonies, for the legends are in different characters. The ancient coins of Gaul are alſo numerous, and many of them in baſe gold, but unhappily the moſt ancient have no legends at all.

In ſpeaking of the coins of Britain, Cæſar ſays of the natives, "they make uſe of braſs inſtead of gold coin, or iron rings reduced to a certain weight inſtead of (our braſs) coins." Mr. Pinkerton underſtands his meaning to be, that our anceſtors uſed braſs, apparently coined, as a ſuperior metal, in like manner as more advanced nations uſed gold; and that *pro nummis*, inſtead of the braſs coinage of Rome, (*nummus* being a peculiar name of the braſs ſeſtertius,) they uſed iron rings, examined and reduced to a certain weight. Rude coins of copper, much mingled with tin, are frequently found in England, and may perhaps (as Pinkerton intimates) be the copper coins uſed by our anceſtors; for Cæſar's expreſſion merely infers, that their copper was in the form of coins. Theſe pieces are of the ſize of a didrachm, the common form of the "nummus aureus" among the ancients. We have many coins of Cunobelin, who was king of the Trinobantes, and educated, as it has been ſaid, in the court of Auguſtus. He is mentioned by Suetonius and Dio. Theſe coins of Cunobelin are the only ones apparently Britiſh. Moſt of them yet found have CVNO on one ſide, with an ear of wheat, a horſe, a kind of head of Janus, or ſome ſuch ſymbol, and often CAMV, thought to be the initials of Camudolanum, on the other ſide, with a boar and tree, and a variety of other badges. They have likewiſe frequently the word TASCIA upon them, which has not yet been ſatisfactorily explained; but it has abſurdly, as Mr. Pinkerton conceives, been thought to be the name of the Moneyer, as the putting of the name of the Moneyer on coins was a late practice, unknown till the ſixth century, and gradually introduced a century after the Roman mints had ceaſed in Europe, with the empire, and when private perſons contracted with the kings for the little mints, and put their names to identify the mintage. In old German *taſg* is a purſe: and the figure thought to be the mock moneyer *Taſcio* is Vulcan making a helmet. All the kings of France down to Charlemagne range in this diviſion. Liuva I. who began his reign in the 567th year of our era, and the other kings of the Weſt Goths in Spain, appear upon their coins encircled with Roman characters. Other Gothic kings, who reigned in Italy and other countries, after the fall of the Roman empire in the Weſt, likewiſe uſe the Roman language in their coinage. They moſt commonly occur in the ſize of medals termed ſmall braſs. Many coins alſo occur with legends, which, though meant for Latin characters, and in imitation of Latin coins, are ſo perverted as to be illegible. Such are in general termed *Barbarous* medals. Pinkerton's Eſſ. vol. i.

MEDALS, *Conſervation of*, is a matter among medalliſts of peculiar importance. When a medal is in the leaſt defaced in figures, or in legend, the true judge will reject it, hardly excepting even the rareſt coins. Nothing contributes ſo much to the conſervation of braſs or copper coins as that fine ruſt, ſometimes called "ærugo," appearing like varniſh, which their lying in a particular ſoil occaſions. Gold admits no ruſt but iron mold, when lying in a ſoil impregnated with iron. Silver takes many kinds; but chiefly green and red, which yield to vinegar. In gold and ſilver the ruſt is prejudicial, and ought to be removed; whereas in braſs and copper it is preſervative and ornamental; a circumſtance remarked by the ancients, as the "pocula adorandæ rubiginis" of Juvenal may prove, and that exquiſite Greek phraſe, which terms "patina" χαλκου ανθος, the flower of braſs. "This fine ruſt," ſays Pinkerton, "which is indeed a natural varniſh not imitable by any effort of human art, is ſometimes a delicate blue, like that of a turquoiſe; ſometimes of a bronze brown, equal to that obſervable in ancient ſtatues of bronze, and ſo highly prized; and ſometimes of an exquiſite green, a little on the azure hue, which laſt is the moſt beautiful of all. It is alſo found of a fine purple, of olive, and of a cream colour, or pale yellow: which laſt is exquiſite, and ſhews the impreſſion to as much advantage, as paper of cream colour, uſed in all great foreign preſſes, does copper-plates and printing. The Neapolitan patina is of a light green; and when free from excreſcence or blemiſh, is very beautiful. Sometimes the purple patina gleams through an upper coat of another colour, with as fine effect as a variegated ſilk or gem. In a few inſtances a ruſt of deeper green is found; and it is ſometimes ſpotted with the red or bronze ſhade, which gives it quite the appearance of the Eaſt Indian ſtone called blood-ſtone. Theſe ruſts are all, when the real product of time, as hard as the metal itſelf, and preſerve it much better than any artificial varniſh could have done; concealing at the ſame time not the moſt minute particle of the impreſſion of the coin." Medals are ſubject to various blemiſhes. Sometimes the letters are diſplaced, as is commonly the caſe in thoſe of Claudius Gothicus; ſometimes the coins, for want of being well fixed in the dye, ſo as to have ſlipped at every ſtroke of the hammer, preſent a double or treble image. Of theſe laſt many are found, in which the portrait is deranged, while the reverſe is diſtinct, and others have the portrait perfectly well ſtruck, while the reverſe confuſes the eye by its double or triple contours. Ancient coins are ſubject to another blemiſh, which rather recommends them to the curious than otherwiſe. It is when, after having ſtruck a coin, the workmen, through forgetfulneſs, put another into the dye, without withdrawing the firſt. Hence, the portrait of the other piece being commonly upward, and in the upper part of the dye, the ſecond coin is impreſſed with it by the dye, and at the ſame time made hollow on the other ſide with the form of the portrait already ſtamped on the former medal. Some coins are found with a ſmall ſtamp impreſſed on a part of them, bearing ſometimes a minute head, or ſome letters, as AVG. or N. PROB. or the like. Such are called "countermarked" by medalliſts; and being very rare are the more valued, ſo that ſuch muſt not be rejected or blemiſhed. Theſe countermarks are thought to infer, that an alteration had been made in the value of the coin; as was the caſe with the countermarked coins of Henry VIII. and of Mary of Scotland in modern times. Other coins are found with holes pierced through them; and ſometimes with a ſmall ring faſtened. Such were worn as ornaments of the head, neck, and wriſt; either by the ancients themſelves, as bearing images of favourite deities, or in modern times, when the Greek girls thus decorate their perſons. Coins of genuine antiquity are often found ſplit on the edges, or even in the middle, by the force of the hammer. This, ſo far from being regarded as a fault, is looked upon as a great merit by the collector; being conſidered as a proof that the coin is undoubtedly of ancient fabric. Silver coins often acquire a particular yellow tarniſh, giving them the appearance of having been gilt; but it is merely owing to their being depoſited in a ſoil, whence a peculiar vapour ariſes, or ſome ſimilar circumſtance. Mr. Pinkerton has given the following hints concerning the method of cleanſing coins from any prejudicial ruſt. "Gold is cleaned by any acid: ſpirit of nitre eats every thing but gold, and is therefore an effectual cleanſer of that metal. The green, blue, or red ruſt, may be removed from ſilver, by ſteeping in vinegar for a day or two: but a more effectual way is to boil with a mixture of three parts tartar, and one ſea-ſalt in water. On gold and ſilver the ruſt is always in ſpots, and never forms an entire incruſtation, as on braſs and copper; whence it is always regarded as a blemiſh in the former metals. Very different is the caſe with braſs and copper, and they are never to be cleanſed, for coins in theſe metals would be diſeſteemed if rendered bright, and would be full of ſmall holes, occaſioned by the ruſt. But ſometimes braſs and copper coins are found wholly obſcured with ruſt; and one of the beſt ways of clearing them, if uſed by a ſkilful hand, is a graver. Another way is to boil in water for twenty-four hours, with three parts tartar, and one part alum, (not ſea-ſalt as in ſilver,) and then cleanſe with bran. But it is a dangerous buſineſs to cleanſe coins; and ought always to be committed to a ſkilful hand, or let alone."

See Joubert des Medial. ſect. viii. Act. Erud. Lipſ. 1694, p. 226.

Some authors imagine, that the ancient medals were uſed for money. M. Patin has a chapter expreſs to prove, that they had all a fixed regular price in payments, not excepting even the medallions. F. Joubert is of the ſame opinion. Others, on the contrary, maintain, that we have no real money of the ancients; and that the medals we now have, never had any courſe as coins. Between theſe two extremes there is a medium, which appears by much more reaſonable than either of them. See MONEY.

MEDALS *and Coins, Modern,* as contradiſtinguiſhed from thoſe that are denominated *ancient*, comprehend, as we have already obſerved, all thoſe that have been ſtruck ſince the time of Charlemagne, or the commencement of the 9th century. Mr. Pinkerton, of whoſe valuable "Eſſay on Medals" we have been allowed to avail ourſelves in the compilation of this article, has divided the ſubject into "Modern Coins" and "Modern Medals." He obſerves, that down to the revival of literature in the beginning of the 16th century, modern coins are ſo very rude, that curioſity ſuggeſts the ſole inducement to examine them. Without dates or epochs they cannot ſerve one purpoſe of utility. The very portraits found on them are ſo uncouth, that the human face divine is hardly diſcernible. The reverſes always bear a moſt beautiful croſs garniſhed with pellets, or a diſh of ſome ſuch exquiſite flavour. Yet ſuch is the luſt of curioſity, of completing a ſeries, or of ſelf-love indulged in the extreme, by poſſeſſing a bauble which nobody elſe does, that ten or twenty guineas are often given for one of theſe pretty little things. To us, however, as Britons, the ſtudy of theſe coins may be regarded as peculiarly intereſting, as they furniſh monuments illuſtrating, or relating to, perſons or actions, in the glory of which the common paſſion of national vanity warmly intereſts our affections. Thus, the noble of Edward III., on which he appears in a ſhip, as aſſerting the Britiſh dominion of the ocean, would, though uncouth in the execution, which it by no means is, juſtly command our higheſt regard and attention; and doubtleſs any patriot, or any Briton, would, even in theſe days, place moſt juſtly a higher value upon this coin, than upon the moſt perfect medal which Grecian ſkill has produced. Upon the ſame principle, the coins of Edward the Black Prince are intereſting; and, indeed, the whole Engliſh ſeries muſt be intereſting to every one who feels himſelf particularly concerned in Engliſh hiſtory.

In this place modern coins are regarded merely as they appear in a cabinet; but for their commercial value, we refer to other articles, ſuch as COIN, MONEY, &c. Beginning with the moſt eaſtern part of Aſia, the coins of *Japan* firſt attract notice. Theſe are thin plates of gold and ſilver, large and oval, ſtamped with little ornaments and characters. The only coins of *China* are in copper, about the ſize of a farthing, with a ſquare hole through the middle, in order to their being ſtrung for the convenience of enumeration or of carriage. They bear an inſcription in Chineſe characters, expreſſing the year of the prince's reign, without his name, diſtinguiſhed as the "*Happy* year," "*The Illuſtrious* year," and the like. It is ſaid, that Canghi, the emperor, who died in 1722, after a reign of 61 years, formed a complete cabinet of Chineſe coins, and appointed a Mandarin to keep it. The coins of *Tartary*, which are poſterior to Genghis-Khan, are rude, and generally preſent only inſcriptions. In *Thibet*, *Pegu*, and *Siam*, the coins are various; but evidently of late origin, and generally bearing inſcriptions on both ſides. Such alſo are thoſe of many ſmaller ſtates in Eaſtern Aſia. In the country ſo celebrated anciently by the name of *India*, the Mahometan faith is predominant, as it is in moſt countries of Weſtern Aſia. The precept of Mahomet, which forbids the repreſentation of any living creature, has had a pernicious effect upon the arts. It is doubtful whether or not any Indian coins exiſt before the time of the Moguls, or the 13th century. Some old coins have been found near Calcutta, of gold, ſilver, copper, and tin, all mingled in one baſe mixed metal. On one ſide they bear a warrior with a ſword, and on the other an Indian female idol. The later coins of India are well known, ſuch as the pagoda, rupee, and caſh, the moſt common copper, whence our word. All theſe coins are very thick, like the old Egyptian. On one remarkable ſet of rupees, are preſented the twelve ſigns, a lion on one of them, a bull on another, &c. &c. The Portugueſe, Engliſh, French, and Dutch, ſometimes ſtruck coins in their ſettlements with Perſian inſcriptions on one ſide and Latin on the other. Rupees and caſh are known of Elizabeth, of Charles II., of the year 1730, and of other periods. The coins of *Perſia* have continued on the Arabian model, even after the Arabian caliphs loſt their dominion in that country, and bear on both ſides pious inſcriptions from the Koran. The Perſian copper, however, has the ſun and lion, the arms of Perſia, on one ſide. Of Mannus, and ſome other petty kings in *Arabia*, we have coin during the imperial period of Rome. The braſs coins of Haroun Al Raſchid, the Charlemagne of Aſia, and his contemporary, and of other powerful princes who reſided at Bagdad, have an Arabic inſcription on the reverſe; the obverſe is a mere tranſcript of any old Greek or Roman coin that fell in the way of the Moneyer. The gold and ſilver coins have many inſcriptions. The later Arabian coins, which are ſilver, bear the name and titles of the prince on one ſide, and ſome ſentence from the Koran, or the like, upon the other. The more modern are in the ſhape of a fiſh-hook, with Arabic inſcriptions. The coins of *Turkey* reſemble thoſe of Perſia and Arabia, having merely inſcriptions on both ſides. The coins of Africa, comprehending Morocco, Fez, Tripoli, Algiers, &c. are upon the Mahometan plan of mere inſcriptions. Paſſing over Abyſſinia, and the interior kingdoms of Africa, as little known, and the civilized empires of America, Mexico on the N., and Peru on the S., where coinage was not practiſed, we ſhall proceed to the coins of Europe. In *Italy*, when the Roman empire in the weſt ceaſed with Romulus, in the year 476, the Gothic kings ſtruck coins till Teias, the laſt of them, was conquered in 552 by Narſes, the general of Juſtinian. Then the exarchs of Ravenna, viceroys for the Byzantine emperors, iſſued copper with FELIX RAVENNA, &c.; but the gold and ſilver of the Greek emperors ſufficed for Italy. After Charlemagne, about the year 780, made a great revolution in Italy, there are coins of him ſtruck in Rome and Milan. In the next century the modern coins of Italy begin with the ſilver pennies of various ſtates. The papal coins originate with Hadrian I. 772—795, to whom Charlemagne gave leave to coin money. The ſilver pennies continued till a late period, with the name of the pope on the one ſide, and SCUS PETRUS on the other. On theſe coins there are rude portraits of ſome of the popes. Afterwards, when the pope ceaſed to have power in Rome, from Paſchal II. till Benedict XI. in 1303, there are pennies of the Roman ſenate and people, bearing on one ſide Peter, ROMAN. PRINCIPE, on the other Paul, SENAT. POPUL. Q. R. In the middle ages the chief biſhops of Italy, France, and England, ſtruck coins, as well as the pope. The firſt gold coin is of John XXII. 1316. The coins of Alexander VI., Julius II., and Leo X. are remarkable for elegance. The coins of *Milan* begin with Charlemagne, a croſs, reverſe the monogram of Carolus, with MEDIOL., and they are found of the other emperors to the 13th century. Theſe coins are of ſilver. In *Naples* there are coins of duke Sergius, 840, and biſhop Athanaſius, 880: and they are followed by thoſe of ſeveral others. The coinage of *Venice* begins in the 10th century, with ſilver pennies, marked VENECI. In 1280 the firſt Venetian gold appears; and the firſt copper in 1471. The ſilver groats are as old as 1192. *Florence* ſurpaſſes all the cities of Italy in the dignity of her coinage. Some ſilver pieces occur from the 12th century, or an earlier period; but in 1252, the famous gold coins, called Florins, from the flower of the lily upon them, appeared; and were imitated by the popes, France, and England, as being the firſt gold coins ſtruck in Europe, after the eighth century, for during five centuries no gold worthy of notice was ſtruck in Europe. The florins of Florence have on one ſide St. John the Baptiſt ſtanding, S. JOHANNES. B. on the other a large fleur-de-lis, FLORENTIA; and the coins of the popes, France, and England reſembling them, have the ſame types, but different legends. They weigh a drachm, and are no leſs than 24 carats fine, according to Italian writers; being intrinſically worth about 12*s*. The firſt coins of *Genoa* are of Conrad the emperor, 1129, DUX JANVÆ. Thoſe of the dukes of *Savoy* begin in the ſame century. The patriarchs of *Aquileia* iſſued coins from 1204 till 1440. *Ferrara* has coins of marquiſes from 1340. In France, the coins of the firſt race from Clovis 490, till its termination in 751, are chiefly gold trientes, well wrought, with the heads of the kings. Some ſolidi and ſemiſſes alſo appear. Theſe coins, which properly belong to the claſs of *ancient* coins, have on the obverſe the king's head and name, but ſometimes the name of the Moneyer; the reverſe has a croſs with the name of the town. The coins of the ſecond race, beginning with Pepin in 750, and extending to Hugh Capet in 987, commence the *modern* claſs. Theſe are no leſs barbarous than the others are elegant: they are almoſt all ſilver pennies, and very ſeldom bear the head of the king. Thoſe of Charlemagne have only CAROLUS in the field, while the reverſe bears R. F. or ſome ſuch inſcription. One piece alone, ſtruck at Rome, has a rude buſt of him. The third race, beginning with Hugh in 987, and extending to the revolution, are unfortunate in their coins, till the time of St Louis, in 1226, when the groat appears, and the coinage began to improve. The groat, or groſſo, ſo called in compariſon with the penny, paſſed from Italy to France, Germany, and England. In the time of St. Louis, deniers of billon were iſſued, and were followed by other pieces of the ſame metal, as the liard or hardi of three deniers, the maille or obole of half a denier, the pougeoiſe or pite of one quarter. In the time of Henry III. 1574, copper was firſt uſed in French coinage. Other remarkable coins of France are the blancs, or billon groats, firſt iſſued in 1348; the ecus a la couronne, or crown of gold, the moſt famous French coin, ſo called from the crown on one ſide, and begun by Charles IV. in 1384; the teſton, or piece with the king's head, of Louis XII.; the elegant Henri of Henry II. which has Gaul ſitting in armour, with a victory in her hand, OPTIMO PRINCIPI; exergue GALLIA. The firſt Louis d'or is of 1640. *Spain* vies with France in the elegance of her early ſeries, which conſiſts almoſt wholly of trientes of gold finely executed. On one ſide they bear the head of the king, with his name, and on the other a croſs with the name of the town. While the Moors, or Arabs, poſſeſſed Spain, from the eighth to the 13th century, and Granada in particular till the end of the 15th, ſuch was the influence of the Mahometan faith, that the Moreſque coins of Spain only preſent us with inſipid inſcriptions on both ſides: they are chiefly in gold; and the inſcriptions are in the old Arabic character, uſed in Mahomet's time, called the Cuphic. From Charlemagne the coinage of *Germany* commences; and the ſeries of emperors is thought to be nearly complete. The coinage of *Denmark* begins with Canute the Great, in 1014. After Canute, we find coins of Harold and Hardicanute, then of Magnus Bonus in 1041, with Runic reverſes and of neat workmanſhip. But without enumerating thoſe of Sueno II., which rarely have the buſt, with an arched crown, and on the reverſe curious ornaments of a teſſellated form running acroſs the field, with the IIIII on either edge of the ornaments; and thoſe of Harold I. in 1074, with generally two heads; the rude coins of Nicolas or Niel, of Waldemar I. and of his ſucceſſors; thoſe of Olaf in 1376, bearing a grinning full face, with a crowned O on the other ſide; and the billon coins of Eric in 1426:—we paſs into *Sweden*, which is ſaid to have begun her coinage under Biorno in 818, on the plan of that of Charlemagne; theſe coins have a croſs, though Biorno was not a Chriſtian; the next coins are of Olaf, OLVF REX SVEVORVM, &c. &c. the ſeries proceeding till Margaret in 1387. From her time to that of Guſtavus Vaſa, in 1520. the coins are of Daniſh monarchs, ſtruck for Sweden. Of Guſtaf Waſe, or Guſtavus Vaſa, and his ſucceſſors, there are many fine coins. In 1634 ducats were coined with the buſt of Guſtaf Adolf, who died in 1632; reverſe the arms of Sweden, with the chymic types of mercury and ſulphur. In 1716, and the two following years, the ſmall copper coins with Saturn, Jupiter, Mars, &c. were iſſued by Charles XII. to paſs for dollars, on account of his want of money. The coins of *Norway* begin with Olaf, in 1066, and are followed by thoſe of Magnus, Harald, &c. &c. Of Denmark, Sweden, and Norway there are alſo eccleſiaſtic coins, as of Germany, France, &c. ſtruck by the chief biſhops. *Bohemia*, the moſt weſterly Slavonic kingdom, boaſts the earlieſt coinage; the firſt coins are thoſe of duke Boleſlaus I. in 909, with his head and name. The coinage of *Poland* is nearly as ancient as that of Bohemia; and it may be obſerved in general, that the coinage of the Slavonic kingdoms follows the model of the German. The coins of *Ruſſia* are of very late date. None of her coins ſeem to be more ancient than the 13th century. The firſt Ruſſian coins have rude figures of animals on one ſide; and a man, ſtanding, with a bow or ſpear, on the other. Some have St. George and the dragon, and various other types. Such are all kopeks, or ſilver pennies. The rouble or dollar, and its half, begun under Ivan or John in 1547. Thoſe of the falſe Demetrius, in 1605, are very ſcarce. In 1230, the knights of the Teutonic order, having conquered the Pagan inhabitants of *Pruſſia*, coined ſilver pennies on the German plan, at Culm. In the next century were ſtruck ſhillings, groats, and ſchots, the laſt being the largeſt and very rare; they have the Pruſſian ſhield, an eagle ſurmounting a croſs, within a roſe-ſhaped border, MONETA DOMINORUM PRUSSIE; reverſe a croſs fleurie, within a like border, HONOR MAGISTRI JUSTITIAM DILIGIT. In the ſame century gold coins were ſtruck. In 1525 the money was ſo debaſed, that 12 or 13 marks were worth but one mark of ſilver. The coins of Brandenburg and Poland are the later coins of Pruſſia.

We ſhall now proceed to give a brief enumeration of the coins of *Britain*. The Heptarchic coins are only of two ſorts; the ſilver ſkeatta or penny, and the copper or billon ſtyca; the latter being known only in Northumbria, and being a very ſmall piece, worth about half a farthing. The ſilver penny may be regarded as the general heptarchic coin. The ſkeattas were ſtruck in Kent, and the other ſtates of the

Heptarchy from the ſixth to the eighth century, or from about the year 500 till 700. No heptarchic pennies occur till after the year 700; but ſkeattas, which Dr. Combe, by cauſing two plates of them to be engraved, has brought into notice, are found with the name of Ethelbert I., king of Kent, A. D. 560—616, and of Egbert, alſo king of Kent, A. D. 664. The heptarchic pennies are, therefore, almoſt all of the eighth century, or from 700 till 832, when Egbert terminated the ſeven kingdoms. The coins of the chief monarchs preſent almoſt a complete ſeries, from Egbert 832 to Edgar 959. Of Ethelbald 857, and Edmund Ironſide, A. D. 1016, there are no coins. Moſt of them bear rude portraits, and the reverſes have views of cathedrals and other buildings, &c. The inſcriptions are alſo ſometimes curious. Eccleſiaſtic coins alſo appear of the archbiſhops of Canterbury, Wulfred, A. D. 804, Ceolnoth, 830, and Phlegmund, 889. The Norman conqueſt in 1066 made no alteration in the Engliſh penny, the only coin. The old Engliſh penny, or anglicus, Mr. Pinkerton obſerves, was a coin celebrated all over Europe in the middle ages, and almoſt the only money known in the northern kingdoms. In neatneſs of fabric, and in purity of metal, it is ſuperior even to the Italian and French coins of that period. The ſeries of Engliſh pennies extends almoſt without any failure from Egbert to the preſent reign. The kings wanting are John and Richard I. The Rev. Mr. Southgate, generally learned and peculiarly ſkilled in medals, has in his cabinet as neat and complete a ſeries of this knid as is perhaps to be found. Several uniques, or almoſt ſuch, are found there in the beſt preſervation; ſuch as the French penny of Richard I., the penny of Richard III., the full-faced penny of Henry VIII. in fine ſilver, and others. The firſt Engliſh pennies weigh $22\frac{1}{2}$ grains troy: toward the cloſe of Edward III. the penny weighs but 18 grains, and in the reign of Edward IV. it fell to 12. In Edward VI's. time, 1551, the penny was reduced to eight grains, and after the 43d of Elizabeth to $7\frac{23}{31}$ grains, at which weight it continues to this day. The next coins in antiquity, purſuing the ſilver coinage, are the halfpennies and farthings, firſt ſtruck by Edward I. about 1280, ſome having been previouſly iſſued in Ireland by John. The firſt were continued down to the commonwealth, ſince which time none have been ſtruck in ſilver: the farthings ceaſed with Edward VI. To theſe ſucceeds the groat, from Fr. gros, a large piece, introduced by Edward III. in 1354. The half-groat, or two-pence, is of the ſame date. Next to the groat is the teſtoon, or ſhilling, firſt coined by Henry VII., in 1503. The appellation of teſtoon was derived from the teſte, tête, or head of the king upon it. The ſhilling was at firſt a German appellation, ſchelling; coins of that name having been ſtruck at Hamburgh in 1407. The crown was publiſhed by Henry VIII. in ſilver, whereas it had before appeared only in gold; whence the old phraſe "crowns of gold;" and the half-crown, ſixpence, and three-pence, by Edward VI. Elizabeth, in 1558, coined three-halfpenny, and in 1561 three-farthing pieces, but they were dropped in 1582 From the 43d of Elizabeth, 1601, the denominations, weight, and fineneſs of Engliſh ſilver remain the ſame to the preſent time. It was about the year 1257 that Henry III. formed the deſign of a gold coinage, and ordered it to be current in the kingdom: however, no more than two ſpecimens of it have reached us. It is called a gold penny, but larger than a ſilver one. But it is from Edward III. that the ſeries of gold coinage commences, for no more occurs till 1344, when that prince firſt ſtruck florens, ſo called from the beſt gold then coined at Florence. The floren was then worth 6*s.*, but is now intrinſically worth 19, from the increaſed value of gold, and diminution of ſilver coins. The half and quarter of the floren were ſtruck at the ſame time, and of the ſame proportional value. In the ſame year the noble was announced, of 6*s.* 8*d.* value, and conſequently forming half a mark, being then the moſt general ideal mode of money. This was attended by its half and quarter; the proportion of ſilver to gold being then 1 to 11. This coin, together with its ſubdiviſions, continued the only gold coins till the angels of Edward IV. 1465, ſtamped with the angel Michael and the dragon, and the angelets, half the angel, or 3*s.* 4*d.* was ſubſtituted in their place. Henry VIII. in 1527, added to the gold denominations the crown and half-crown, at their preſent value; and, in the ſame year, gave ſovereigns of 22*s.* 6*d.* and ryals of 11*s.* 3*d.*, angels of 7*s.* 6*d.*, and nobles at their old value of 6*s.* 8*d.* In 1546, the ſame ſovereign, making the value of ſilver to gold as 1 to 5. ſtruck ſovereigns of the former value of 20*s.*, and half-ſovereigns in proportion. The gold crown of Henry VIII. is about the ſize of our ſhilling, and the half-crown of a ſixpence, but thin, as all hammered money was in modern times. His gold coin, like his ſilver, is much debaſed. Theſe coins continued, with a few variations, till Charles II. eſtabliſhed the preſent ſorts of gold coin. Till Edward VI. our monarchs appear upon their gold coin at full, or three quarters, length; that prince being the firſt whoſe buſt only is ſeen. Silver, which had been to gold for ſome time as 1 to 4, was again reduced in 1551 to its old proportion of 1 to 11. Upon the union of the crowns, James I. of England gave the ſovereign the name of unite, it being then of 20*s.* value. Of him are likewiſe roſe ryals of 30*s.* and ſpur ryals of 15*s.* angels of 10*s.* and angelets of 5*s.*; till his ninth year, when gold was raiſed in the proportion of 1*s.* in 10*s.* Silver, which had fallen in its proportion to gold from the degree of 1 to 12, now ſunk further, as 1 to $13\frac{1}{2}$ in weight. The gold crown and half-crown continued to this prince incluſive, and the crown to his ſucceſſor. The ſovereign, which had been commonly termed the broad-piece, under the commonwealth aſſumed the uninvidious name of the twenty-ſhilling piece, which it retained till it was ſupplanted by that of the guinea. The commonwealth likewiſe ſtruck ten-ſhilling and five-ſhilling pieces in gold. Oliver publiſhed none but forty-ſhilling and twenty-ſhilling pieces, and very few even of theſe; the former in particular being moſtly patterns. The guinea, ſo called from the Guinea-gold out of which it was firſt ſtruck, was proclaimed in 1663. and to paſs for 20*s.*; but it never went for leſs than 21*s.* by tacit and univerſal conſent. It is only twenty-two carats fine, and two alloy, which is the ſtandard of our gold coinage to this day. Charles II. likewiſe iſſued half-guineas, double-guineas, and five-guinea pieces, which have been all continued through every reign to the preſent time, though the latter two are not in common circulation. Geo. I. publiſhed quarter-guineas, an example imitated by his preſent majeſty; but theſe laſt of George III. were found ſo troubleſome and apt to be loſt, that they were ſtopped within a year or two when received at the bank of England, and thus ſilently annihilated. Pieces of 7*s.* were likewiſe coined, and have been continued: they are known by the lion above the helmet. The laſt coinage is that of copper. The firſt money coined in ancient Britain ſeems to have been copper. But the Saxons never thought of coining except in the inſtance of the ſtyca. While copper coin continued to be wanting in the Engliſh authoriſed money till the year 1672, with a few ſmall exceptions after the time of Elizabeth, we need not much wonder that in more remote periods its deficiency was not at all felt. The known averſion of that queen, and of the nation in general, to a copper coinage, was owing to the counterfeit money called "black money," being always of copper mixed or waſhed with about a fifth part of ſilver. The term of "black money" evidently aroſe from contradiſtinction to "white money," which is yet a name for that pure ſilver which it was made to imitate. When it is conſidered, therefore, that the baſe money was always of copper, it is no wonder that the idea of a copper coinage ſhould be confounded with that of an impoſition of authoriſed bad money. In 1594, when the practice of coining tokens, upon the returning which to the iſſuer, current coin, or value was obtained, had got to a great length, government had ſerious thoughts of a copper coinage; and a ſmall copper coin was ſtruck, of about the ſize of a ſilver two-pence, with the queen's monogram on one ſide, and a roſe on the other, the running legend being THE PLEDGE OF—A HALF-PENNY. The queen, however, retaining her averſion to a copper coinage, the ſcheme proved abortive; nor was it revived till the ſucceeding reign, when, on the 19th of May 1613, king James's royal farthing tokens commenced by proclamation. They are moſtly of the ſame ſize with the above, and have upon one ſide two ſceptres in ſaltier, ſurmounted with a crown, and the harp upon the other. Their legend is the king's common titles running upon each ſide. Theſe pieces, which were iſſued merely as pledges or tokens, for which government was obliged to give other coin if required, were not favourably received; but continued in a kind of reluctant circulation through this reign and the beginning of the next. In 1635 Charles I. ſtruck thoſe with the roſe inſtead of the harp. But their currency was ſtopped by the number of counterfeits and the king's death in 1648; and then the tokens of towns and tradeſmen again took their run, and increaſed prodigiouſly till 1672, when farthings, properly ſo called, were firſt publiſhed by government. After many trials for improving the copper coinage, and the iſſuing of many copper farthings, current half-pence and farthings firſt began in 1670 to be ſtruck at the Tower; but they were not proclaimed till Auguſt 1672. Theſe continued till the laſt year of Charles II., 1684, when diſputes ariſing about the copper, tin farthings were coined with a ſtud of copper in the centre, and inſcribed round the edge as the crown pieces, with NUMMORUM FAMULUS, 1685 or 1686. Half-pence of the ſame kind were iſſued in 1685, and tin continued to be coined till the year 1692. But in 1693 the tin was called in, and the copper coinage commenced anew. All the farthings of the following reign of Anne are trial pieces, except that of 1714, her laſt year. They are beautifully executed; but the one whoſe reverſe is Peace in a car, PAX MISSA PER ORBEM, is the moſt eſteemed. It is obſervable with regard to the copper coinage, that the intrinſic worth of the metal is not one-half of its currency. The pound of copper, worth 10*d.*, yields 46 half-pence, or 23 pence, when coined. Hence forgeries even of good metal yield a large profit, and the whole kingdom ſwarms with counterfeit copper, inſomuch that not a fiftieth part of that currency is legitimate; an evil which requires remedy. Before we cloſe this ſubject of the Engliſh coinage, we ſhall mention the Portcullis coins of Elizabeth, iſſued in rivalſhip of the Spaniſh king, for the ſervice of the Eaſt India company, in their ſettlements abroad. They are of different ſizes from the crown downward, and are eaſily diſtinguiſhed by the portcullis on the reverſe. To them ſucceeded the various ſiege pieces of Charles I. in gold and ſilver, ſome of the latter being ſo large as to be of 20*s.* value.

The coinage of Scotland did not commence till a late period. There is room to believe, ſays Mr. Pinkerton, that ſilver pennies exiſt of Alexander I., 1107, as ſome are found with that name, apparently of ruder and more ancient fabric than thoſe of Alexander II., 1214. Of David, 1124, there are coins. Thoſe of William, 1165, are numerous, with LE REI WILAM, or WILAM RI, or RE; the laſt word uſed in Scandinavia for king, or perhaps a various ſpelling of the old French *Rei*. A large hoard of William's pennies was found near Inverneſs in 1780. The Scottiſh money continued to be the ſame with that of England in ſize and value till the time of David II., 1355, whoſe vaſt ranſom drained the Scottiſh coin, and occaſioned the ſize of that which remained to be diminiſhed. After this ranſom, the Scottiſh coin gradually diminiſhing, in the firſt year of Robert III. it paſſed only for half its nominal value in England; and at length, in 1393, Richard II. ordered that it ſhould paſs only for the weight of the genuine metal in it. It ſunk by degrees, till, in 1600, it was only a twelfth part value of Engliſh money of the ſame denomination, and ſo remained till the union of the kingdoms cancelled the Scottiſh coinage. In ſilver, we have only pennies of Alexander II., who reigned till 1249; but Alexander III., who reigned till 1293, coined half-pence. Of Robert I., 1306, and David II., there are ſilver farthings. The groat and half-groat, introduced by David II., completed the denominations of ſilver money till the reign of Mary, when they all ceaſed to be ſtruck in ſilver. In 1544, the ſecond year of Mary, Scottiſh money was a fourth of that of England. About the year 1553, ſhillings or teſtoons were firſt coined, bearing the buſt of the queen, and the arms of France and Scotland on the reverſe: they were then worth 4*s.* Marks of 13*s.* 4*d.* Scottiſh were alſo ſtruck, worth 3*s.* 4*d.* Engliſh. In 1565 the coin was to the Engliſh as 1 to 6; the ſilver crown being then firſt ſtruck, weighing an ounce, and paſſing for 30*s.* Scottiſh; and leſſer pieces of 20*s.* and 10*s.* were ſtruck in proportion; and theſe have the marks upon them XXX, XX, X, to expreſs their value. In the time of James VI., 1571, the mark and half-mark Scottiſh were ſtruck, the former being worth about 22 pence and the latter 11 pence Engliſh. In 1578 the famous NEMO ME IMPUNE LACESSET occurs firſt upon the coin; the invention of which is aſcribed to Buchanan. The Scottiſh ſilver, coined after the union of the crowns, it is hardly neceſſary to mention.

The gold coinage of Scotland reſembled the Engliſh; Edward III. having given the firſt currency in this metal in 1344. About 30 years afterwards, Robert II. iſſued his. The gold coins of Scotland, however, are of much ſmaller model than the Engliſh. They were firſt called St. Andrews, from the figure of that tutelar ſaint upon his croſs, who appears upon them, with the arms of Scotland, a lion in a ſhield, on the reverſe. The lion was another name for the largeſt gold coin, from the Scottiſh arms upon it; next was the unicorn under James III.; and the chief gold pieces of James V. were the bonnet pieces, ſo called from the bonnet in which that king's head appears upon them. The laſt gold coinage of Scotland is the piſtole and half-piſtole, coined by William III. in 1701, worth 12*l.* and 6*l.* Scottiſh. They have the ſun under the head.

The copper coinage of Scotland, though more current than that of England, is not of ſo early a date as ſome would aſcribe to it. Buchanan ſpeaks confuſedly of copper coinage in Scotland before James III.; but in this he is miſtaken. During the reign of James III., ſays Pinkerton, the copper coinage began, and ſpeedily increaſed in its pieces. The old Scottiſh coins of copper ſtood thus:

A Penny = $\frac{1}{12}$ of a penny Engliſh.
A Bodle = 2 pennies.
A Hardie = 3 pennies, the farthing Engliſh.

A Plack = 4 pennies.
A Baw-bee = 6 pennies.
An Atkinſon = 8 pennies.

N. B. The penny has a little dot behind the lion; the bodle, alſo called two-penny piece and turner, has two dots. This coinage continued the ſame through the reigns of Charles I. and II. The Scottiſh pennies of Charles II. are not very uncommon; they weigh only 10 grains. In Scotland there are no eccleſiaſtical coins; though they occur in Denmark, Norway, and almoſt all other kingdoms.

With reſpect to the coins of Ireland it may be obſerved, that, from their form and fabric, the old made pennies found in this country were ſtruck by the Danes there. Of Anlaf, 930, and Sihtric, 994, there are coins ſtruck at Dublin, ON DVFLI, or DYFLI, Duflin or Dyflin being the real Daniſh original name of this fine city, as of towns in Scandinavia. Coins of Donald, an Iriſh monarch, probably Donald O'Neal, 956, are publiſhed by Simon. Other Daniſh and Iriſh kings have coins. The pennies ſtruck by Engliſh monarchs in Ireland are remarkable: ſuch, with the name of Dublin, occur of Ethelred, 866; Edred, 948; Edgar, 959; and one of Canute, 1017. The Iriſh coins from John to Henry V. are known by the triangle encloſing the king's head, and by the names of Iriſh towns on them: after Henry V. they are only diſtinguiſhed by the names of Iriſh cities where they were ſtruck. The harp is never ſeen upon Iriſh coin till the reign of Henry VIII. The difference between the Iriſh coin and the other money ſtruck by the kings of England begins in the time of Henry VIII., who coined ſix-pences for Ireland, only worth four-pence in England. Mary iſſued baſe ſhillings and groats for Ireland; and Elizabeth's baſe money for Ireland is notorious. In 1601, copper pennies and half-pence were coined for Ireland by Elizabeth, though ſhe would not conſent to a copper coinage in England. In 1635 a mint was eſtabliſhed in Dublin by Charles I.; but the maſſacre and diſturbances in that country put a ſtop to it, and the plan was never reſumed. After that maſſacre, 1641, the Papiſts ſtruck what are called St. Patrick's half-pence and farthings, known by the legends FLOREAT REX, reverſe ECCE GREX; and the farthing QUIESCAT PLEBS. In Cromwell's time, copper tokens were ſtruck by towns and tradeſmen, as in England. In 1680, half-pence and farthings were given by authority, with the harp and date. James II., arriving in Ireland from France in 1689, inſtituted a mint, and iſſued ſhillings and half-crowns, ſtruck of all the refuſe metal which could be procured: for this purpoſe ſome braſs guns were uſed, ſo that the coinage is generally called gun-money. Pennies and half-pennies of lead mixed with tin were publiſhed in 1690; and other crowns of gun-metal, of the ſize of half-crowns, without the mark of the month, in the ſame year. The crowns of white metal, which are very ſcarce, have James on horſeback, with titles no longer his; and on the reverſe the arms, CHRISTO VICTORE TRIVMPHO, with this legend on the rim, MELIORIS TESSERA FATI ANNO REGNI SEXTO. The patent of William Wood, eſq., acquired from George I, for coining half-pence and farthings, occaſioned great diſcontent, on account of the great loſs that attended it. Theſe coins are of very fine copper and workmanſhip, and have the beſt portrait of George I., perhaps, any where to be found. Sir Iſaac Newton, then at the head of the mint, ſaid they were ſuperior to the Engliſh in every thing but ſize. In 1737, 10th of George II., Iriſh half-pence and farthings were again coined of juſt ſize and weight, with the harp only on the reverſe; and the like are continued to this day. As they have no mint in Ireland, they are all coined here, and ſent to that kingdom. In 1760 the ſcarcity of copper coin in Ireland was relieved by a ſociety of Iriſh gentlemen, who obtained leave to coin half-pence; which appeared with a very bad portrait of George II., and VOCE POPULI round it. Since the abolition of the mint erected by Charles I., which happened about 1640, no gold or ſilver coins have been ſtruck with the Iriſh badge, but copper only. See COIN, COINAGE, and MONEY.

Modern Medals.—In the middle ages medals were quite unknown. Till the 15th century no medals appear of any country in Europe, if we except Scotland, which can boaſt of gold medals of David II. 1330—1370, ſtruck in England during his captivity. In the next century medals appeared in Italy, and from that time ſucceſſively in moſt countries of Europe. The gold medal of the council of Florence, 1439, is one of the earlieſt of theſe medals. Some indeed have mentioned, that of the famous reformer, John Huſs, in 1415, as the firſt. Vittore Piſano, a painter of Verona, is celebrated as perhaps the chief reſtorer of this branch of art. His medals, however, have no ſimilarity to thoſe of antiquity, being very large, and all caſt: they were firſt modelled in wax, then a mould was taken from the model in fine ſand and other ingredients. When a good caſt was procured, it was touched up, and made a model for the reſt. Vaſari, in his lives of the painters, gives us a catalogue of the medals done by Piſano. The papal medals are not only the moſt elegant, but the moſt ancient ſeries in modern Europe. Paul II., created pope in 1464, is the firſt pontiff who has medals of his own time. After Paul II., coeval medals are found of all the popes. In the time of Alexander VI., 1492—15 3, the elegance of the papal medals begins to dawn; but his ſucceſſors Julius II, Leo X, Hadrian VI., and Clement VII., were ſingularly fortunate in having many of their medals deſigned by Raffaele, Julio Romano, and other great painters; and executed with correſponding workmanſhip. The medal of Julius II., with Saul, CONTRA STIMULUM NE CALCITRES, is the firſt medal, according to Venuti, that was ſtruck, not caſt. The medal of Julius III., reverſe a Ganymede ΦΕΡΝΗ ΖΗΝΟΣ ΕΥΦΡΑΙΝΕΙ, the dower of Jove delights, the deſign of which is aſcribed to Michael Angelo, is denied to be genuine by the pontifical writers. But there is a fine medal, deſigned by Parmegiano, of Gregory XIII., upon the correction of the calendar; reverſe a ſerpent, with his tail in his mouth, and a ram's head for the ſign Aries, in the centre, ANNO RESTITUTO, M.D. LXXXII. marked I. PARM. beneath the pope's buſt, in the obverſe. Beſides the papal medals, there are many of the various ſtates in Italy. Next to Italy, France is the moſt remarkable country for medals. But the French medals are neither fine nor numerous, till the reign of Louis XIV., who has exceeded all modern princes in this way. In Denmark, there are medals of Chriſtian II. 1516, and of Frederic and Sophia, 1532. Of Frederic II. and Chriſtian IV. there are many medals. The elephant of the houſe of Oldenburg is very frequent on Daniſh medals. In Sweden there are many fine medals of Guſtaf Waſe, or Guſtavus Vaſa. Chriſtina appears on ſeveral, ſtruck chiefly at Rome after her abdication. Of Charles XII., there are ſeveral curious medals. The medallic hiſtory of Holland begins in the year 1566. In the Spectator a Dutch medal is quoted as Engliſh; namely, that on the defeat of the Spaniſh armada, a fleet, FLAVIT ET DISSIPATI SUNT, 1588. Many Dutch medals are remarkable for maps and plans. The Spaniſh medals begin, as Mr. Pinkerton ſuggeſts, with Conſalvo, the great captain, in 1503; and many of them are curious and intereſting. Germany and Spain were as one empire under Charles V., of whom there are many medals.

But the German ones begin with Frederic III., of whom there is one ſtruck at Rome 1453; next is Maximilian 1504, who appears in the bonnet, worn before hats were invented about 1560, and a wheel on the reverſe, PER TOT DISCRIMINA. There is a curious medal upon the death of Louis, king of Hungary, at Mohatz, 1526, when he fell fighting againſt the Turks; obverſe his head, and that of his queen, face to face; reverſe a battle. The medals of John of Leyden, leader of the Anabaptiſts, 1534, 1535, are ſingular monuments of folly and fanaticiſm. They bear his buſt, with German inſcriptions and legends. Amongſt other curious medals, there is one of Sebaſtian, king of Portugal, famous for his unfortunate expedition in Africa, 1578, with his buſt, full face, and three quarters length, SEBASTIANUS D. G. REX PORTUGALLIÆ, ARABIÆ, INDIÆ, ET AFRICÆ ANNO ÆTATIS XVI., reverſe a ſhell-fiſh in the ſea, the moon and ſeven ſtars, SERENA CELSA FAVENT. There is another ſingular medal of Catherine of Medici, queen of France, notoriouſly addicted to aſtrology. It repreſents her naked, between Aries and Taurus, with the name EBULLA ASMODÆA, over her head: ſhe holds a dart in one hand, and a heart in the other: in the exergue is OXIEL.

As ſoon as medals began to revive, they became ſatiric; a quality almoſt unknown to the ancient mint. Medals among the moderns have been the chief article of ſatire, till the printſhops took up the trade. The firſt ſatiric medal, it is believed, was ſtruck by Frederic, king of Sicily, in 1501, againſt his enemy, Ferdinand, king of Spain. It bears the head of Ferdinand, FERDINANDUS R. AR. VETUS VULPES ORBIS; reverſe a wolf carrying off a ſheep, JUGUM MEUM SUAVE EST ET ONUS MEUM LEVE. It is ſaid that in 1588, Elizabeth, queen of England, ſtruck a medal, with the Spaniſh and Engliſh fleets, HESPERIDUM REGEM DEVICIT VIRGO. Philip, king of Spain, cauſed medals of the ſame impreſſion to be diſtributed in England; but with this addition, NEGATUR, EST MERETRIX VULGI. The queen ſuppreſſed them, and publiſhed another medal, with this legend,

> “ Heſperidum regem devicit virgo Negatur,
> Eſt meretrix vulgi, Res eo deterior.”

Above all nations, the Dutch have moſt diſtinguiſhed themſelves for ſatiric medals; and have paid dearly for this kind of preſumption. A great number of medals have been ſtruck for private men of eminent learning or talents, and in this reſpect modern medals are ſuperior to the ancient.

Mr. Pinkerton cloſes his account of modern medals with a compariſon between theſe and the ancient medals. The moſt ſurpriſing difference between the ancient and modern works of art lies in the portraits. The ancient artiſts, even of the loweſt claſs, marked the character, and exhibited the life and ſpirit of the perſon whom they repreſent: while the moderns only produce a kind of model, with very faint features of the character. The ornaments of the portraits have alſo this effect; the ancient being ſimple and pictureſque in real life; whereas ours are diſcordant and ungraceful. The reverſes of ancient medals, when conſiſting of human figures, or detached objects, exceed the modern in every view of ſtrength, elegance, or taſte. But in landſcape, and all that belongs to perſpective, the modern excel the ancient to a prodigious degree. A great fault of modern reverſes, as of modern portraits, is that the manners of the time and country are very often totally perverted in them. Perſonifications are of all ages and countries and languages; but what title have heathen gods or goddeſſes to exiſt on our medals, and attract the adoration of our connoiſſeurs? Mr. Pinkerton, taking advantage of Dr. Coningham's tract on modern medals, makes ſome remarks on the legends. But for the different kinds of legends that are cenſured, we refer to the article LEGENDS, in which the reader is deſired to correct the error of the preſs in the name of Coningham.

The firſt Engliſh medal is in the duke of Devonſhire's cabinet. It is in braſs, of a large ſize, upon the plan of the early Italian medals, being done without doubt in Italy; and bears on one ſide a buſt IO. KENDAL RHODI TVRCVPELLERIVS, reverſe the arms of Kendal, TEMPORE OBSIDIONIS TVRCORUM. MCCCCLXXX. The next Engliſh medal is that of Henry VIII. ſtruck in 1545; it is of gold, larger than a crown-piece, and has the king's head full-faced on the obverſe, with three legends within each other, of his titles and other matter. The reverſe contains two inſcriptions, declarative of his being head of the church, &c. the firſt in Hebrew, the other in Greek. This was imitated in all points by his ſucceſſor Edward VI. in his coronation medal, being the firſt we have. Elizabeth preſents us with a good number of medals, one or two of which are tolerable, but the reſt very poor, inferior to thoſe of Philip and Mary, two of whom in ſilver by Trezzo are of high relief, and good execution. Decent medals appear of James I. and his queen; and a very large one of Charles I. and Henrietta, in 1636, deſerves notice for its fine workmanſhip. The reverſe repreſents Juſtice and Peace, kiſſing, aukwardly enough; but the execution of the king's buſt, and that of his lovely queen, is very maſterly. The medals of Charles I., who was a lover of the arts, are various and curious; but we cannot enlarge in the enumeration of them. The commonwealth and Oliver Cromwell, were ſingularly fortunate in having the celebrated Simon for their artiſt in this line. The medals and coins of Simon are deſervedly regarded as the moſt admirable which modern times have produced. Of Charles II. there are ſeveral good medals, as on his leaving Holland, his reſtoration, and coronation. The ſhort reign of James II. has ſeveral medals, the moſt remarkable of which are the NEMO ME IMPUNE LACESSET; that with his queen, FORTES RADII SED BENIGNI; thoſe on the Pretender's birth, FELICITAS PUBLICA. William III. gave occaſion for many intereſting medals. Thoſe after his acceſſion to the Engliſh crown, have generally his head and Mary's joined, as the MAJUS PAR NOBILE; ATAVUM PRO LIBERTATE; NEC LEX EST JVSTIOR VLLA; NISI TU QUIS TEMPERET IGNES; and others. Many medals alſo occur of James II., after his abdication, and of the other pretenders, done in foreign countries by eminent artiſts. Queen Anne has ſeveral fine gold, ſilver, and copper medals; of the firſt only two or three different pieces were ſtruck; but in the other medals of this princeſs, we have a ſeries of all the great events with which Marlborough illuminated her reign. About 1740, and for ſome years before and after, Daſſier, a native of Geneva, ſettling in London, engraved a ſeries of medals of all the Engliſh kings, with great taſte and ſpirit. They are ſtruck upon fine copper, and amount to thirty-ſix in number. He likewiſe gave medals of many illuſtrious men of this and other nations, which, ſays Pinkerton, deſerve conſiderable praiſe. The various medals of eminent private perſons in England are very numerous. Thoſe who wiſh for fuller information of Engliſh medals than our limits allow, and the preceding extracts furniſh, may conſult Pinkerton's Eſſay ſo often cited, and Mr. Snelling's plates of them.

Of medals of Scotland, which are numerous, we can only mention ſome of the principal. The fine gold pieces of David II. 1330—1370, which we have already noticed, are certainly medals. Another Scottiſh medal occurs of James III. 1478; it is of gold, weighing near two ounces, and its diameter is 2½ inches. The obverſe bears a beard-eſs king, with long hair, ſitting on a throne, holding in one hand a naked ſword, in the other a ſhield with the Scottiſh arms. On the borders of the canopy, above the throne, is a Gothic inſcription, IN MI DEFFEN, in my defence: the legend of the obverſe in Gothic letters is, MONETA NOVA IACOBI TERTII DEI GRATIA REGIS SCOTIÆ. The reverſe bears St. Andrew and his croſs, SALVVM FAC POPVLVM TVVM DOMINE. Another remarkable Scottiſh medal is that inaugurative of Francis II. of France and Mary of Scotland, ſtruck upon their coronation as ſovereigns of France, and preſenting buſts of them face to face, with three legends, the outermoſt of which contains their titles, and the middle one this ſingular ſentence, HORA NONA DOMINUS IHS EXPIRAVIT HELLI CLAMANS: the innermoſt legend is the name of the city of Paris. The fine crown of Mary and Henry, 1565, is ſo rare as to be eſteemed a medal of the higheſt value; it is ſuppoſed to be worth 40 or 50 guineas. Henry and Mary appear on it face to face, with their titles, and the reverſe bears the arms of Scotland, with this legend, QVOS DEVS CONIVNXIT HOMO NON SEPARET. Another remarkable medal of Mary gives her portrait full-faced, and weeping, O GOD GRANT PATIENCE IN THAT I SVFFER VRANG. The reverſe has this inſcription in the centre, QVHO CAN COMPARE WITH ME IN GREIF—I DIE AND DAR NOCHT SEIK RELEIF; and this legend around, HOVRT NOT THE (figure of a heart) QVHAIS IOY THOV ART. The laſt Scottiſh medal, which we ſhall mention, is the celebrated coronation medal of Charles I., when he underwent his inauguration at Edinburgh, 18th June, 1633. It was executed by Briot, an eminent French artiſt; and was the firſt piece ſtruck in Britain with a legend on the edge, being, it is ſuppoſed, the only one ever coined of gold found in Scotland. On the front is the king's buſt, crowned and robed, with his titles. The reverſe bears a thiſtle growing, HINC NOSTRÆ CREVERE ROSÆ. Around the edge is EX AVRO VT IN SCOTIA REPERITVR BRIOT FECIT EDINBVRGI, 1633. Few of theſe were ſtruck on the Scottiſh gold, three only being known to exiſt, of which one is in the muſeum. The piece is not uncommon in ſilver, in which metal it wants the legend on the edge, which conſtitutes its chief curioſity and merit. It was in rivalſhip to this that Simon gave his fine medal of Oliver, the reverſe of which is an olive tree, NON DEFICIENT OLIVÆ.

MEDALS, *Hiſtory of,* and *Account of Writers on this Subject.* The ſtudy of medals affords ſuch a variety of amuſement and of inſtruction, that we may naturally ſuppoſe it to be almoſt as ancient as medals themſelves; and yet ancient writers do not furniſh us with a ſingle hint of collections of this kind. In the days of Greece, a collection of ſuch coins as then exiſted would not be regarded as an acquiſition of any great value, becauſe it muſt have conſiſted only of thoſe that were ſtruck by the innumerable little ſtates, which then uſed the Greek characters and language, and of courſe it would be regarded as a ſort of domeſtic coinage, precluded from extenſion by the narrow limits of the intercourſe that ſubſiſted between different provinces and countries. As ſoon as any communication was opened between the Romans and the Greeks, the Grecian coins were imitated by the Roman workmen, and preſerved in the cabinets of their ſenators among the choiceſt treaſures. In a more advanced period of the Roman empire, individuals muſt have formed ſerieſes of Roman coins: for we find, in fact, that a complete ſeries of ſilver was lately found in our iſland, containing, incluſively, all the emperors down to Carauſius. From the decline of the Roman empire, moſt branches of ſcience were enveloped in great darkneſs, till the revival of literature towards the end of the 15th century. When literature began to be cultivated in Italy, the ſtudy of medals, connected with that of ancient erudition, began to engage attention. Accordingly Petrarch, who in modern times was amongſt the firſt perſons in Europe that aſpired to the celebrity of learning and of genius, was likewiſe the firſt to conſtitute an example of the ſcience of medals. This eminent writer, being deſired by the emperor Charles V. to compoſe a book that ſhould contain the coins of illuſtrious men, and to place him in the liſt, with a noble pride anſwered, that he would comply with his deſire, whenever the emperor's future life and actions deſerved it. Availing himſelf of this circumſtance, he ſent that monarch a collection of gold and ſilver coins of celebrated men. "Behold," ſays he to the emperor, "to what men you have ſucceeded! Behold whom you ſhould imitate and admire! To whoſe very form and image you ſhould compoſe your talents! The invaluable preſent I ſhould have given to nobody but you; it was due to you alone. I can only know or deſcribe the deeds of theſe great men. Your ſupreme office enables you to imitate them."

In the next age Alphonſo, king of Arragon, cauſed all the ancient coins, that could be diſcovered throughout all the provinces of Italy, to be collected, which he placed in an ivory cabinet and always carried with him; that he might be excited to great actions by the preſence, as it were, of ſo many illuſtrious men in their images. Anthony, cardinal of St. Mark, nephew of Eugene IV., who aſcended the pontifical chair in 1431, had a vaſt collection. Soon afterwards Coſmo de Medici began the grand muſeum of the family of the Medici at Florence; the moſt ancient, as well as the moſt noble, in the univerſe. Among a profuſion of other monuments of ancient art, coins and medals were not neglected. About the ſame period Matthias Corvinus, king of Hungary, formed a noble collection of coins, along with ancient MSS. and other valuable reliques of antiquity. The firſt perſon who ſeems to have examined medals, and adduced them as vouchers of ancient orthography and cuſtoms, was Agnolo Poliziano, or Angelus Politianus. Maximilian I., emperor of Germany, formed a cabinet of medals, by means of which Joannes Huttichius was enabled to publiſh a book of the lives of the emperors, enriched with their portraits, delineated from ancient coins. M. Grollier, treaſurer of the armies of France in Italy during part of the 16th century, had a great collection of coins in all metals. When, after the death of Grollier, theſe were about to be ſent into Italy, the king of France bought them at a high price for his own cabinet of antiquities. Beſides medals of braſs, this collection contained an aſſortment of gold and ſilver. Guillaume du Choul, a contemporary of Grollier, had alſo a good collection of medals, many of which were publiſhed in his treatiſe on the religion of the ancient Romans, printed at Lyons in 1557. From the letters of Eraſmus we learn that the ſtudy of medals was begun, in the Low Countries, about the beginning of the 16th century. About the middle of that century, Goltzius, a printer and engraver, travelled over a great part of Europe in ſearch of coins and medals, for works relating to them, which he propoſed to publiſh. At this time, as he informs us, there were in the Low Countries 200 cabinets of medals, 175 in Germany, more than 380 in Italy, and about 200 in France: to which we may add about 500 for our own country, which Goltzius did not viſit. The greater number, however, of theſe cabinets were of that claſs called caſkets of medals, including from 100 to 1000, or 2000 in number. If we except Italy, there are few countries, in which more ancient coins are found, than in Britain. Mr. Pinkerton ſuſpects, that Camden was one of the firſt, if not the very firſt, of our writers, who produced medals in his works, and who muſt have had a ſmall collection. In the 17th century, Speed's Chronicle, publiſhed in 1610, was illuſtrated with coins from ſir Robert Cotton's cabinet. Henry, prince of Wales, bought the collection of Gorlæus, amounting, as Joſeph Scaliger ſays, to 30,000 coins and medals, and left it to his brother, Charles I. Archbiſhop Laud bought 5500 coins for 600*l.* and gave them to the Bodleian library. Thomas, earl of Arundel and Surry, earl marſhal of England, had, in his exuberant collection of antiquities, a rich cabinet of medals, gathered by Daniel Nilſum. The dukes of Buckingham and Hamilton, ſir William Paſton, ſir Thomas Fanſhaw, ſir Thomas Hanmer, Ralph Sheldon, eſq. Mr. Selden, and many more, are enumerated by Mr. Evelyn, as having collections. To this number we may add the earl of Clarendon, the hiſtorian, and Charles I. The fine cabinet of this unhappy monarch was diſſipated and loſt in the civil commotions. Oliver Cromwell had alſo a ſmall collection; and that of Charles II. is mentioned by Vaillant. We may add, that his preſent majeſty poſſeſſes a tolerable collection of ancient gold coins. Since the time of Mr. Evelyn, many noble cabinets have been formed in this country, which we cannot recount. At preſent, the chief cabinets in Britain are thoſe of the duke of Devonſhire, the earl of Pembroke, earl Fitzwilliam, formerly the marquis of Rockingham's, the Hon. Horace Walpole, the Rev. Mr. Crachrode, the Rev. Mr. Southgate, Mr. Townley, Mr. R. P. Knight, Mr. Edward Knight, Mr. Tyſon, Mr. Barker, Mr. Brown, Mr. Bootle, Mr. Hodſul, Mr. Auſten; with Mr. Ord's Egyptian, Mr. Douce's ſmall braſs, and Mr. Jackſon's Britiſh.

The muſeum, lately enriched by ſome of thoſe abovementioned, and the univerſities, have alſo collections; and alſo the Lawyer's library, and one or two colleges in Scotland; to which might be added private collections both there and in Ireland. But that of the late Dr. Hunter deſerves notice, as the greateſt in Europe, if we only except that of the late French king. From the middle of the 17th century down to theſe times, almoſt every year has produced ſome new work, or new diſcovery, in the ſcience of medals.

Of writers in this department of ſcience, Mr. Pinkerton has enabled us to mention the following: in Italy, Enea Vico publiſhed, in 1548 or 1555, his "Diſcourſes on the Medals of the Ancients." His example was imitated in France by Antoine le Pois, who in 1579 gave his "Diſcourſe on the Coins and Seals of the Ancients" In 1665, Charles Patin publiſhed his "Hiſtory of Medals, or Introduction to that Science." The laſt edition appeared in 1695. In 1692, Pere Jobert, or Joubert, preſented to the public his "Science des Medailles," the beſt edition of which is that of 1739, by M. le Baron Bimard de la Baſtie. In the year in which Jobert publiſhed his book, a work ſomewhat ſimilar to it was publiſhed in the Engliſh language, entitled "The Greek and Roman Hiſtory illuſtrated by Coins and Medals, repreſenting their Religion, Rites, &c. by O. W. (Obadiah Walker,) London 1692, 12mo." In 1695, a tranſlation of Jobert's work appeared under the title of "The Knowledge of Medals," aſcribed to Walker. The "Numiſmata, or Diſcourſe on Medals, ancient and modern," by Mr. Evelyn, was printed in 1697, fol. In 1720, Nicolas Haym, an Italian muſician, publiſhed at London his "Teſoro Britannico," or Britiſh Treaſury, in Italian and Engliſh. They who wiſh to proceed in this ſcience, ſays Mr. Pinkerton, may peruſe the moſt excellent and uſeful work of Froelich, entitled "Notitia Numiſmatum antiquorum illorum, quæ Urbium Liberarum, Regum et Principum, ac Perſonarum illuſtrium, appellantur," Viennæ, Pragæ, et Tergeſti 1758, 4to.; and afterward ſuch books of medals as they pleaſe, in chronological order as publiſhed, from Goltzius down to Pellerin and Combe. The following liſt of the beſt authors is given by Mr. Pinkerton. For the general ſcience he recommends Vico's work, and Patin's already mentioned. The ſtudy of the Greek coins may be begun with Goltzius "Hiſtoria Siciliæ et Magnæ Græciæ ex antiquis Numiſmatibus," Antwerpiæ 1644, fol. Recourſe may then be had to Geſſner's "Theſaurus Numiſmatum," Tiguri 1738, two vols. fol. The productions of Pellerin, Paris 1762, and following years till 1778, making, with all the ſupplements, 10 vols. 4to., ought next to be peruſed. Dr. Combe's publication of Dr. Hunter's coins of Greek cities, London, 1782, 4to., as it is the laſt, ſo it is the very beſt of the kind ever yet given. Of the Greek monarchic coins Geſſner's is the moſt ample aſſemblage. The Roman conſular coins will alſo be found in full detail in Geſſner; and deſcriptions may be found in Vaillant's "Nummi Antiqui Familiarum Romanarum," Amſt. 1703, two vols. fol., or the "Theſaurus Morellianus," Amſt. 1734, two vols. fol., a later and a better work. The imperial coins of Rome are likewiſe amply diſplayed by Geſſner; with whom, for the rare coins, ſhould be read Vaillant's "Numiſmata Imperatorum Romanorum," publiſhed by Baldini at Rome, 1743, three vols. 4to., and Khell's "Numiſmata Imperatorum Romanorum," Vindobonæ 1767, 4to., a ſupplement to the Roman edition of Vaillant; Banduri's "Numiſmata Imp. Rom. a Trajano Decio uſque ad Palaeologos," (or to the termination of the Byzantine empire) Lutetiæ, 1718, two vols. fol.; Occo's "Numiſmata Imp. Rom." The beſt edition is the ſecond of Occo himſelf.

Of books on modern coins and medals, the firſt which ought to be peruſed by a Britiſh ſubject are thoſe relating to his own country. He ſhould begin with Mr. Clarke's "Connection of the Roman, Saxon, and Engliſh Coins," London 1767, 4to.; Mr. Lowndes's excellent "Report, containing an Eſſay for the Amendment of Silver Coins," Lond. 1695, 8vo.; Snelling's "Views of Engliſh Money," Lond. 1763, and following years, 4to.; and Folkes's "Tables of Engliſh Coin," Lond. 1763, 4to., Ducarel's "Letters on Anglo-Gallic Coins" are very conſiderable. Engliſh medals are publiſhed by Snelling and in Vertue's Account of Simon's works. On the Scottiſh coins the only books are thoſe of Anderſon and Snelling. The Iriſh are well diſplayed by Simon, in his "Hiſtorical Eſſay on Iriſh Coin," Dublin, 1749, 4to., with the ſupplement by another author 1767, 4to. For the account of the ſources of information with regard to other modern countries, we muſt refer to Mr. Pinkerton's preface. The ſecond edition of Mr. Pinkerton's "Eſſay on Medals" will ſuperſede the neceſſity of conſtant reference to other works, not eaſily procured; and the reader will find, that the author has cited original authors, and availed himſelf of an examination of many of the coins themſelves, which he has deſcribed. This elaborate work, in two ſmall volumes, Lond. 1789, will afford to the ſtudent in this branch of ſcience ample ſatisfaction. This edition, beſides many corrections and additions, that very much contribute to the increaſed value of the work, is illuſtrated with prints of coins, engraven exactly of the form and ſize of the originals, forming ſpecimens of all the principal ſorts. In the advertiſement to this new edition, the author expreſſes himſelf in terms of high commendation concerning Monaldini's "Iſtituzione antiquarion Numiſmatica," printed at Rome, 1772, 8vo., which, he ſays, is much ſuperior to Jobert's "La Science des Medailles."

Medals, *Utility of the Study of.* Medals are of great importance to the ſtudy of hiſtory. They, indeed, furniſh the principal proof of hiſtoric truth, as their evidence reaches to the moſt remote ages and the moſt remote countries. Vaillant ſet the firſt example, in his learned hiſtory of the Syrian kings, printed at Paris in 1681, of fixing the dates, and arranging the order of events in ancient hiſtorians, by means of theſe infallible vouchers. Thus he was enabled to aſcertain, in a very great degree, the chronology and progreſs of events of three of the moſt important kingdoms of the ancient world, *viz.* thoſe of Egypt, of Syria, and of Parthia. Father Hardouin, Noris, and Bayer, have purſued the ſame plan; and to them we may add Froelich, Corſini, and Cary. The ſtudy of the Roman medals has a ſuperior advantage to that of the Greek coins, as they ſerve not only to illuſtrate the chronology of reigns, but to aid us in the interpretation of particular events. To this purpoſe, beſides the portrait of the prince, and date of his conſulſhip, or of his tribunitian power, we have a repreſentation, or poetical ſymbol, of ſome grand event on the reverſe. In a word, the ſeries of Roman coins preſents the very beſt ſuite of documents of the Roman hiſtory, which the art of man could have invented. Beſides its ſervice to hiſtory, the ſcience of medals is without doubt of conſiderable uſe to geography, to natural hiſtory, to the illuſtration of ancient writers, to architecture, and to the knowledge of a connoiſſeur, or that of ancient monuments, buſts, ſtatues, ceremonies, and the like; in all which views its utility is well illuſtrated by examples in Pinkerton's valuable work. He has alſo evinced the connection of the ſtudy of medals with the fine arts of poetry, painting, ſculpture, and architecture. In the firſt reſpects, he has greatly improved upon Mr. Addiſon's "Dialogues on the Uſefulneſs of ancient Medals." On this very intereſting ſubject, which Mr. Pinkerton has rendered no leſs amuſing than inſtructive, we cannot forbear making a few extracts. The Roman coins to a man of poetical imagination are very entertaining by means of the fine perſonifications and ſymbols, which are to be found on their reverſe. *Happineſs* has ſometimes the caduceus or wand of Mercury, which Cicero tells us was thought to procure the gratification of every wiſh. In a gold coin of Severus, ſhe has heads of poppy, to expreſs that our prime bliſs lies in oblivion of misfortune. *Hope* repreſented as a ſprightly damſel, walking quickly and looking ſtraight forward. With her left hand ſhe holds up her garments, that they may not hinder the rapidity of her pace; while, in her right hand, ſhe holds forth the bud of a flower, an emblem infinitely more fine than the trite one of an anchor, which is the ſymbol of Patience, not of Hope. *Abundance* is imaged as a ſedate matron, with a cornucopia in her hands, of which ſhe ſcatters the fruits over the ground; but does not hold up her cornucopia, and keep its contents to herſelf, as many poets and painters make her do. *Security* ſtands leaning on a pillar, indicative of her being free from all deſigns and purſuits; and the poſture itſelf correſponds to her name. The emblems of *Piety*, *Modeſty*, and the like, are equally appoſite and poetical. The happineſs of the ſtate is pictured by a ſhip, ſailing before a proſperous breeze; an image of which Gray has admirably availed himſelf in his "Bard." The different countries of the then known world are alſo delineated with great poetical imagery. To a Briton, it affords peculiar ſatisfaction to ſee his native iſland often repreſented upon the earlieſt imperial coins, ſitting on a globe, with a ſymbol of military power, the "labarum," in her hand, and the ocean rolling under her feet. Coins alſo preſent us with countries and rivers, admirably perſonified. On the reverſe of a colonial coin, rude in execution, of Auguſtus and Agrippa, inſcribed IMP. and DIVI. F, the conqueſt of Egypt is repreſented by the appoſite metaphor of the crocodile, an animal almoſt peculiar to that country, and at that period eſteemed altogether ſo, which is chained to a palm-tree, at once a native of the country and ſymbolic of victory. Moreover, a cabinet of medals, of which Rubens is ſaid to have had a very fine collection, may be conſidered as forming the claſſic erudition of a painter. We may add, that almoſt all the uſes which connect the ſcience of medals with painting, render it alſo ſubſervient to the art of the ſculptor, who cannot leſs than profit by the ſtudy of the Greek coins in particular. The connection of the ſtudy of ancient coins with architecture, conſiſts in the views of many of the ancient edifices, which are found in perfect preſervation on medals. Froelich obſerves, that the coins of Tarſus are very remarkable for a kind of perſpective in the figures. On others are found triumphal arches, temples, fountains, aqueducts, amphitheatres, circuſes, hippodromes, palaces, baſilicas, columns and obeliſks, baths, ſea-ports, pharoſes, and the like.

Medals *and Coins, Rarity of.* The ſcarcity of coins, bearing any particular impreſſion, muſt be principally owing to the few that were ſtruck with that impreſſion, or their being called in, and iſſued from the mint in another form. The firſt is the caſe with the copper of Otho, and gold of Peſcennius Niger; the latter with the coinage of Caligula. Sometimes coins, formerly eſteemed almoſt ſingular, will, in later times, become much more common in conſequence of the high price at which they are rated, ſo that they are brought to market as hoards of them are found. The firſt was the caſe with the farthings of queen Anne; ſome of which, formerly ſold at five guineas, would not now fetch five ſhillings; the latter with reſpect to the coins of Canute, king of England, which were very rare till a large hoard of them was diſcovered in the Orkneys. The coins of Greek cities are eſteemed to be more common in copper than in ſilver; double the number exiſting in the firſt metal: thoſe of Greek princes the reverſe, with a few exceptions, thoſe of ſilver being more numerous. Of the Greek monarchic coins, the tetradrachms of the Syrian kings, the Ptolemies, the princes of Bithynia and Macedon, excepting Alexander the Great and Lyſimachus, are all rare. Thoſe of Cappadocian kings are not found, except of ſmall ſize, and are ſcarce. Of the kings of Numidia and Mauritania, Juba, the father, is common, the ſon and nephew Ptolemy are ſcarce. The kings of Sicily, in large ſilver, are rare: as are alſo thoſe of Parthia. The kings of Judæa are rare; thoſe of Arabia and Commagene only occur in braſs, and are ſcarce; and likewiſe the kings of Boſphorus, who appear in electrum, and a few in braſs. The kings of Pontus, and Phileterus, king of Pergamus, are all rare. All didrachms, both of kings and cities, are ſcarce, except Corinth and her colonies. The gold coins of Macedon, Alexander the Great, or Lyſimachus, are common: the others very rare. All ſilver tetradrachms of kings are accounted medallions, and bear a high price. One of the ſcarceſt of the ſmall ſilver coins of the Greek princes is the didrachm of Alexander the Great. The Grecian monarchic money of copper may, in moſt inſtances, be conſidered as rare.

Of the Roman coins, the conſular ones reſtored by Trajan are the rareſt of their claſs. The gold conſular coins are the moſt rare, and the ſilver the moſt common; excepting the coin of Brutus, with a cap of liberty between two daggers, EID. MART. which is ſcarce, and a few other inſtances.

Among the Roman imperial coins, we ſhall only mention that of Otho in braſs; the ſcarcity of which is owing to the ſhortneſs and tumult of his reign. The ſcarcity of other imperial coins is largely ſtated by Mr. Pinkerton in his tables. The Roman coins in lead are all extremely rare. The heptarchic coins of Britain are moſtly rare: the money of Alfred, bearing his buſt, is rather ſcarce; his other coin is very rare. The coins of Hardicanute are very ſcarce. Of kings after the conqueſt no Engliſh coins of John are found, except Iriſh only, and of Richard I. only French. In the Scottiſh ſeries Alexander II. is rather ſcarce. Coins of John Baliol are rare, and none of Edward Baliol are found. The gold money of Scotland has always been ſcarce See farther on this ſubject the Appendix to Pinkerton's Eſſay on Medals.

In the ſale of medals, thoſe that are rare are ſold ſeparate, but the common ones are put into large lots, ſo that they are ſeldom bought but by dealers. The gold coins of Greek cities are generally very ſmall; and not above a dozen ſtates have thoſe in gold: of theſe only Carthage, Cyrene, and Syracuſe are rather common, and worth but double their intrinſic value. The other gold civic coins are worth from 5*l.* to 30*l.* The only two gold coins of Athens known to exiſt are in Dr. Hunter's collection, and if they were ſold, they might bring the very higheſt price a coin can bear. The ſilver coins of Greek cities are many of them extremely ſcarce; the common ones are priced according to their ſize, for the largeſt are always the rareſt. Thoſe of Syracuſe, Dyrrachium, Maſſilia, Athens, and a few other ſtates, are common; drachmas, and leſſer ſizes, might bring 5*s.* each; didrachms and tridrachms from 5*s.* to 10*s.* according to their beauty and preſervation. The tetradrachms, which are always moſt valued, may, when belonging to cities whoſe coins are common, bring from 7*s.* 6*d.* to 1*l.* 1*s.* Civic coins of ſilver that are rare are not eaſily valued. Ten guineas have been given for one, and competition might triple that value. The common Grecian civic coins in ſmall braſs bring from 3*d.* to 1*s.* 6*d.*, according to their preſervation. Others belonging to cities, which have not above two or more coins that are known, and thoſe of braſs, bring much higher prices. With reſpect to the gold coins of the Greek princes, thoſe of no rarity in the coinage of Philip of Macedon, and Alexander the Great, bear but from 5*s.* to 20*s.* above the intrinſic value. But thoſe of the other princes are rare, and bring from 3*l.* to 30*l.* a-piece, or more. Of the ſilver monarchic money, with Grecian legends, the tetradrachms, which are deareſt, ſell from 5*s.* to 50*s.*, and thoſe that are very rare from 3*l.* to 30*l.* The drachmas may bring half theſe prices, and that of other denominations in proportion. The copper coins of the Greek kings are, generally, ſcarcer than the ſilver, and ought to bring a high price. Ancient Roman Aſes, with their diviſions, bring from 2*s.* to 2*l.*, according to the ſingularity of their devices. Conſular gold coins are worth from 1*l.* to 5*l.*: the Pompey, with his ſons, 21*l.*, and the two Bruti, 25*l.* The ſilver rate univerſally from 1*s.* to 2*s.* 6*d.*, except that with the cap of liberty and daggers, and a few others, which, if genuine, may bear from 10*s.* to 5*l.* The conſular copper, though rarer than the ſilver, may be put at an equal price. The conſular ſilver coins, reſtored by Trajan, bear 1*l.* a-piece. Among the Roman imperial coins, with uncommon reverſes, we may reckon a ſilver piece of Auguſtus, which will fetch from 4*s.* 6*d* to 1*l.* 11*s.* 6*d.*; that with the legend C.MARIVS TROGVS bears 3*l.* 3*s.* Common gold coins of Trajan are not worth above 1*l.* The medals, with unknown characters, are ſcarce and dear. Saxon pennies of the heptarchic princes are generally rare, and worth from 10*s.* to 10*l.* each, according to ſcarcity and preſervation. Thoſe of the kings of all England, which are rare, are worth from 10*s.* to 2*l.* 2*s.*; excepting one or two very ſcarce ones, ſuch as Hardicanute, which would fetch 10*l.* 10*s.* Of Engliſh medals, the gold ones of Henry, 1545, and of Edward's coronation, are worth 20*l.* each: the Mary of Trezzo, 3*l.* The deareſt of Simon's works are his head of Thurloe, in gold, 12*l.*; his oval medal, in gold, upon Blake's victory at ſea, 30*l.*: his trial-piece, if brought to ſale, would bring a larger ſum. Queen Anne's medals in gold, intrinſically worth about 2*l.* 12*s* 6*d*, bear about 3*l.* a-piece. The ſilver, of about the ſize of a crown-piece, will bring 10*s.* each; the copper from 5*s.* to 10*s.* The Scottiſh coins are on a par with the Engliſh, excepting that the gold ſell higher. The ſhilling of Mary, with the buſt, is very rare, and brings 30*s.*; the half, 3*l.*; the ryal, 5*l.* 5*s.* The French teſtoon of Francis and Mary brings 10*l.* 10*s.*; the Scottiſh one of Mary and Henry would bring 50*l.*; as would alſo the medal of James IV. The coronation medal of Francis and Mary is worth 20*l.* Briot's coronation medal in gold ſold only for 2*l.* 2*s.* at Dr. Mead's ſale in 1755, but would now bring 20*l.* The Engliſh coins ſtruck in Ireland, or appropriated to that kingdom, are moſtly of the ſame price as the other Engliſh coins. The St. Patrick's halfpence and farthings are rather ſcarce. The gun-money of James II. is quite common. The rare crown of white metal brings about 4*l.* All other Iriſh coins are very common. See the Appendix to Pinkerton's Eſſay.

MEDALS, *Counterfeit*, are forged imitations of ancient coins; the art of doing which is ſaid to have ariſen at the beginning of the 16th century, and has ſince prevailed to an aſtoniſhing degree. Theſe counterfeit medals are diſtributed into ſix claſſes: 1. Medals known to be modern imitations of the ancient; but which being executed by maſters, ſuch as the Paduan, &c. have their value. 2. Medals caſt from theſe modern maſterly imitations. 3. Medals caſt in moulds taken from the antique. 4. Ancient medals which are retouched, and the obverſes or reverſes altered. 5. Medals which are impreſſed with new devices, or which are ſoldered. 6. Counterfeit medals which have clefts, or which are plated. For the method of diſtinguiſhing theſe counterfeits from the true, in which the poſſeſſors or purchaſers of medals are particularly intereſted, we refer to Mr. Pinkerton's Eſſay, vol. ii. p. 167, &c.

MEDALS, for the manner of ſtriking, ſee COINAGE.

MEDALS, *Academy of.* See ACADEMY.

MEDALS, *Cabinet of*, may be divided into three diſtinct ſizes: 1. The large and complete cabinet, containing, or intended to contain, every iſſue of the mint, in every age and every country. The late king of France had the moſt richly furniſhed cabinet of this kind in exiſtence, and which is calculated to have coſt near 100,000*l.* ſterling. That of the late Dr. Hunter was, perhaps, one of the beſt private cabinets ever formed in this ſtyle; and coſt about 21,000*l.* 2. The ſmaller cabinet, the collector of which, confining himſelf to the forming of five or ſix ſequences, as of middle and ſmall Roman braſs only, of Engliſh pennies, or of groats, or any other particular ſerieſes, conſiders other medals as out of his line of collecting, though he may purchaſe a few deſolate ones, or ſuch as belong to other ſets, in order to give variety to his collection. Such a cabinet may incur an expence of from 200*l.* or 300*l.* to 1000*l.* 3. The leaſt cabinet, or caſket of medals, which may include all little collections of coins, from 100 to 1000 or 2000. In this not above one or two ſequences can well be formed; but the amateur pleaſes his fancy by the miſcellaneous inſertion of any article which curioſity or other motives may incline him to procure. In the formation of the large cabinet, it is to be obſerved, that in the grand diviſion of ancient coins, as diſtinct from the modern, the Greek medals, of every denomination, can never be arranged by the metals, or ſizes, like the Roman; for no ſeries of any one metal, or ſize, can be found of this claſs in the moſt opulent cabinet. On this account the civic coins of all metals and ſizes, are digeſted in alphabetical order, and the monarchic in chronological. The ſame rule is to be obſerved in the Roman conſular medals, which are arranged in alphabetical ſeries of the families, like thoſe of the Greek cities. The proper diviſions of a grand and complete cabinet, comprehending the part allotted to ancient coins, are ſtated by Mr. Pinkerton as follows: 1. The coins of cities and free ſtates, in alphabetical order; whether uſing Greek, Roman, Punic, Etruſcan, or Spaniſh characters. 2. Kings in chronological ſeries, both as to foundation of empire and ſeniority of reign. 3. Heroes, heroines, and founders of empires, and of cities. 4. Other illuſtrious men and women. 5. Roman *Aſes*. 6. Coins of families, commonly called conſular. 7. Imperial medallions. 8. Imperial gold. 9. Imperial *minimi*, of all metals. 10. Imperial ſilver. 11. Imperial firſt braſs. 12. Second braſs. 13. Third braſs. 14. Colonial coins, which are all of braſs. 15. Greek cities under the emperors, of all metals and ſizes. In a ſmaller cabinet they may be put with the Roman, according to their metal and ſize. Thoſe without the emperor's head go to claſs 1, though ſtruck in Roman times. 16. Egyptian coins ſtruck under the Roman emperors, of all metals and ſizes. They are moſtly of a baſe metal, called by the French writers "potin," being a kind of pot-metal, or brittle braſs. 17. "Contorniati," or ticket medals. 18. Coins of Gothic princes, &c. inſcribed with Roman characters. 19. Coins of ſouthern nations, uſing unuſual alphabets; as the Perſian, Punic, Etruſcan, Spaniſh. 20. Coins of northern nations, uſing unuſual characters; as the Runic and German.

In the modern part no ſeries can be found of copper that will go back above two centuries; but ſequences of gold and of ſilver may be arranged of all the different empires, kingdoms, and ſtates, ſo far as their ſeveral coinages will allow. Thoſe of England and France will be the moſt perfect. Modern ſilver is commonly arranged in three ſequences; the dollar ſize, the groat ſize, and the penny ſize. The metals of each modern country ought of courſe to be ſeparated; though it is beſt to arrange each ſet in chronological order, whatever be their ſize or the metal.

The formation of a cabinet of the ſecond claſs will admit of obſerving the directions for the former, ſo far as this is meant to extend. But as it includes only a few complete ſequences, either of ancient or mordern coins, ſome particular inſtructions may be neceſſary. If, *e.g.* the collector means to form a ſeries of the large braſs, he will find the coins of four or five emperors ſo ſcarce as not to be attainable in that ſeries, even at any price. He muſt, therefore, ſupply their places with a middle braſs, as is allowed with regard to Otho even in the beſt cabinets, there not being above three coins of that emperor in large braſs known in the world, whereas of the middle braſs two or three hundred may exiſt. If this be allowed in one inſtance, why not in others? Why may not Tiberius or Pertinax appear in the middle braſs as well as Otho? In cabinets of the ſecond claſs the collector may mingle the middle with the large braſs as he thinks proper; and in like manner the ſmall with the middle. In the ſmall ſequences there can be no harm in his mixing gold, ſilver, and braſs, as chance or curioſity may lead him to purchaſe any of theſe metals. In like manner, if, in the modern part of the ſmaller cabinet, any coin of a ſeries is of high price, or of bad impreſſion, there can be no impropriety in putting another of the ſame reign which is cheaper, or better executed, though of a different denomination, and a little larger ſize. In ſhort, the collector has no rules, but in the Greek cities and Roman families to obſerve alphabetical order, and chronology in every thing elſe. The management in a caſket of medals may be conducted by the obſervations already made upon thoſe of the two higher deſcriptions.

MEDALS, *Caſt*, are thoſe which are not ſtruck, but caſt in a mould.

MEDALS, *Contourniated.* See CONTOURNIATED.

MEDALS, *Covered* or *Plated*, are thoſe which have only a thin ſilver leaf over the copper, but which are ſtruck ſo artfully, that the cheat does not appear without cutting them; theſe are the leaſt ſuſpected.

MEDALS, *Countermarked*, are thoſe which have marks cut either on the ſide of the head, or of the reverſe. Theſe countermarks ſerve to denote the change of their value; and this kind is much inquired for by the curious. See MEDALS, *ſupra*.

MEDALS, *Dipt*, are ſtruck of pure copper, and afterwards ſilvered. This is a contrivance that the curious have frequent recourſe to, in order to complete their ſilver ſets.

MEDALS, *Grained* or *Indented*, are thoſe whoſe edges are cut, or notched like teeth, which is a ſign of purity and antiquity. They are common among the conſulars, but we have none later than Auguſtus. There are ſeveral of them, however, among thoſe of the kings of Syria.

MEDALS, *Impreſſions* or *Caſts of.* A very eaſy and elegant way of taking impreſſions or caſts of medals and coins is this: melt a little iſinglaſs glue, made with brandy, and pour it thinly over the medal, ſo as to cover its whole ſurface; let it remain on for a day or two, till it is thoroughly dry and hardened, and then taking it off, it will be fine, clear, and hard as a piece of Muſcovy glaſs, and will have a very elegant impreſſion of the coin. In order to render the relief of the medal more apparent, a ſmall quantity of carmine may be mixed with the melted iſinglaſs; or the medal may be previouſly coated with leaf-gold by breathing on it, and then laying it on the leaf, which will by that means adhere to it; but the uſe of leaf-gold is apt to impair a little the ſharpneſs of the impreſſion. Impreſſions of medals may be likewiſe taken in putty of the true kind, made of calx of tin and drying oil. Theſe may be formed in the moulds, previouſly taken in plaiſter or ſulphur; or moulds may be made in its own ſubſtance, like thoſe of plaiſter. Theſe impreſſions will be very ſharp and hard; but the greateſt diſadvantage attending them is their drying very ſlowly, and being liable in the mean time to be damaged.

Sulphur is ſometimes uſed to take off impreſſions of medals, coins, &c. The method is this: having made a ledge of clay about the work whoſe impreſſion is deſired, and carefully oiled the whole, gently pour brimſtone melted in a covered veſſel, to prevent its firing, upon the metal. About the edge of this mould make a border of clay, as before, and lightly oil the internal ſurface of both; then gradually put into it, to the thickneſs of about a quarter of an inch, a mixture made up with calcined alabaſter and water, to the conſiſtence of ſtiff honey. This ſoon growing hard, may be taken out of the mould, and gives figures of the coin or medal. Boyle's Works, abr. vol. i. p. 151. A method ſomewhat different is deſcribed under the article BRIMSTONE.

The brittleneſs of ſulphur is a great objection to this method, and the plaiſter of Paris, which is often uſed for taking impreſſions, is too ſoft: however, a coat or layer of thin metal, formed over the plaiſter, would be a conſiderable defence. This is the cheapeſt and moſt convenient metal for this purpoſe: let thin tin-foil, ſuch as is uſed for ſilvering looking-glaſſes, be laid over the medal or coin intended to be taken off, and then rubbed either with a bruſh, the point of a ſkewer, or a pin, till it has received perfectly the impreſſion of the medal; then pare off the tin-foil round the edge of the medal, till it is brought to the ſame circumference; afterwards the medal muſt be reverſed, and the tin-foil will drop off into a chip-box, or mould ready to receive it; the concave ſide of the foil, or that which is laid on the face of the medal, being uppermoſt; upon this pour plaiſter of Paris, made in the uſual manner, and when dry the caſt figure may be taken out of the box or mould, with the tin-foil ſticking on the plaiſter, the convex ſide being now uppermoſt, in which poſition it is to be kept in the cabinet after it becomes dry. To have an impreſſion very perfect, the thinneſt tin-foil ſhould be made uſe of. The impreſſions taken in this manner almoſt equal ſilver medals in beauty, and are very durable. If the box or mould be rather larger than the impreſſion of tin-foil, the plaiſter, when poured on, runs round its edges, and forms a kind of white frame, or circular border round the foil, whence the new made medal appears more neat and beautiful. If this tin-foil is gilt with gold-leaf, by means of thin iſinglaſs glue, the medal will reſemble gold.

Caſts of medals may be made likewiſe with iron, prepared in the following manner: Take any iron bar or piece of a ſimilar form; and having heated it red-hot, hold it over a veſſel containing water, touch it very ſlightly with a roll of ſulphur, which will immediately diſſolve it, and make it fall in drops into the water. When a ſufficient quantity of iron is thus diſſolved, pour the water out of the veſſel, and pick out the drops formed by the melted iron from thoſe of the ſulphur which contain little or no iron, and will be diſtinguiſhable from the others by their colour and weight. The iron will, by theſe means, be rendered ſo fuſible, that it will run with leſs heat than is required to melt lead; and may be employed for making caſts of medals, and many other ſuch purpoſes, with great convenience and advantage.

We have an eaſy method of procuring the true impreſſion or figure of medals and coins, by Mr. Barker in the Philoſ. Tranſ. N° 472. ſect. 13. vol. xliii. p. 77.

Take a perfect and ſharp impreſſion on the fineſt black ſealing-wax, of the coin or medal you deſire. Cut away the wax round the edges of the impreſſion; then with a preparation of gum-water, of the colour you would have the picture, ſpread the paint upon the wax impreſſion with a ſmall hair-pencil, obſerving to work it into all the ſinking or hollow places, theſe being the riſing parts of the medal; and the colouring muſt be carefully taken from the other parts with a wet finger. Then take a piece of very thin poſt-paper, a little larger than the medal, and moiſten it quite through. Place it on the wax impreſſion, and on the back of the paper lay three or four pieces of thick woollen cloth or flannel of about the ſame ſize. The impreſſion, with its coverings, ſhould be placed between two ſmooth iron plates, about two inches ſquare, and one-tenth of an inch thick.

Theſe muſt be carefully put into a ſmall preſs, made of two plates of iron, about five inches and a half long, one inch and a half wide, and half an inch in thickneſs, having a couple of long male ſcrews running through them, with a turning female ſcrew on each, to force the plates together. Theſe being brought evenly together by means of the ſcrews, will take off a true and fair picture of the medal; which, if any deficiencies ſhould appear, may eaſily be repaired with a hair-pencil or pen, dipped in the colour made uſe of.

If a relievo only be deſired, nothing is neceſſary but to take a piece of card, or white paſte-board, well ſoaked in water, then placing it on the wax-mould, without any colouring, and let it remain in the preſs for a few minutes, a good figure will be obtained.

This method of taking off medals, &c. is convenient, and ſeems much more ſo than the ſeveral inventions uſually practiſed in ſulphur, plaiſter of Paris, paper, &c. wherein a mould muſt be formed, either of clay, horn, plaiſter, or other materials, which requires time and trouble.

Some take impreſſions on paper from the medals themſelves, by paſſing them through the rolling-preſs, and colouring them afterwards; but this is not only more difficult, but does great injury to the medals, by impairing the ſharpneſs of their moſt delicate and expreſſive ſtrokes: whereas wax does not hurt the fineſt medal in the leaſt degree; and though a brittle ſubſtance, yet it effectually reſiſts the force of a downright preſſure.

Red ſeems the beſt colouring, and therefore black wax is directed to be uſed; but if the pictures are choſen in black and white, to reſemble copper-plates, the wax ſhould be red; for the wax and paint ought to be of different colours, in order to diſtinguiſh when the colour is laid on properly, or rightly cleared away.

The ſubſtance of medals, being metalline, is liable to be corroded; and the figures being raiſed, are alſo liable to be effaced by friction. Hence it is rare to find any perfectly preſerved. Gems are not ſubject to theſe inconveniencies. See Gem.

Medals, *Mutilated*, are thoſe that are not entire, or are much defaced.

Medals, *Redintegrated*, are thoſe wherein we find the letters reſt, which ſhew that they have been reſtored by the emperors.

Medal, *Repairing a*. See Repairing.

Medals, *Reſtitution of.* See Restitution.

Medals, *Votive*. See Votive.

Medals *without Reverſe*. See Reverse.

MEDALETS, a name given by Mr. Pinkerton to thoſe ſmall coins or miſſilia, ſcattered among the people on ſolemn occaſions, thoſe ſtruck for the ſlaves in the Saturnalia, private counters for gaming, tickets for baths and feaſts, tokens in copper and lead, and the like. Baudelot, in his curious and entertaining work, "L'Utilite des Voyages," has produced many ſingular ſpecimens of medalets; for ſome of which ſee Pinkerton's Eſſay on Medals, vol. i. p. 227, &c.

MEDALLION, or **Medalion**, a medal of extraordinary ſize.

The word is formed from the French *medaillon*, or Italian *medaglion*, which ſignify the ſame, or a large medal; and which were originally formed from *metalliones*, a name by which theſe pieces are frequently called in ancient Latin writers.

Medallions were never any current coins, as ſome medals probably were: they were ſtruck purely to ſerve as public monuments, or to be preſented by the emperor to his friends, and by the mint-makers to the emperor, as ſpecimens of fine workmanſhip.

They were ſtruck upon the commencement of the reign of a new emperor, and other ſolemn occaſions; and frequently, the Greek medallions in particular, as monuments of gratitude, or of flattery. Sometimes they were trial or pattern-pieces, "teſtimonia probatæ monetæ;" and ſuch abound after the reign of Maximian, with the "Tres Monetæ"

netæ" on the reverſe. It is obſerved, that all Roman pieces in gold, exceeding the denarius aureus; all in ſilver, ſuperior to the denarius; and all in braſs, ſuperior to the ſeſtertius, or what the medalliſts term large braſs, are comprehended under the deſcription of medallions. Mr. Pinkerton, however, thinks that the gold medallions, weighing two, three, or four aurei only, paſſed in currency as the Greek gold didrachms, tridrachms, or tetradrachms, according to their ſize. The like may be ſaid of the ſilver, which are commonly of the value of a Greek tetradrachm, which went in currency for four denarii. But it is not of much moment whether any of the pieces called medallions paſſed as coin with the ancients; it is ſufficient to know what kind of coins paſſed under that denomination. The braſs medallions, which are the largeſt, are commonly of the moſt exquiſite workmanſhip, and uncommon device. Many of them are compoſed of two ſorts of metal, the centre being copper, with a ring of braſs around it, or the contrary. The inſcription of ſuch ſometimes bites upon both metals, and at other times runs upon one. Medallions of this kind are inimitable, and of undoubted antiquity. Medallions from the time of Julius to that of Hadrian are very uncommon, and of very high price; from Hadrian to the cloſe of the weſtern empire they are, generally ſpeaking, leſs rare. The types of the Roman medallions are often repeated upon common coin: hence they appear of leſs importance than the Greek, impreſſions of which are frequently moſt uncommon, and no where elſe to be found. A remarkable diſtinction between the Greek and Roman medallions lies in their different thickneſs; the Roman being often three or four lines thick, while the others ſeldom exceed one. By the Greek medallions we mean thoſe ſtruck in the imperial periods; for few Greek medallions are found prior to the emperors of Rome. Of Greek medallions, preceding the Roman empire, few are known. Some occur of Rhodes; and there is a fine one ſtruck at Syracuſe, upon the defeat of Icetas by Timoleon. The medallion is of ſilver, with the head of Ceres upon one ſide, and upon the other a female figure, perhaps repreſenting Sicily or Syracuſe, in a car, a victory crowning her, and ſpoils in the exergue. Its workmanſhip is fine, but not equal to the gold coin of the ſame Icetas, ſtruck at Syracuſe, ΕΠΙ ΙΚΕΤΑ, under Icetas, which is a perfect gem, ſurpaſſing all deſcription. Syracuſe alſo affords a moſt remarkable medallion on another great occaſion. The only one perhaps exiſting formerly belonged to Dr. Combe, and was engraven by his order. It is exquiſitely wrought, in high relief, and perfect preſervation; of copper, and about two inches in diameter. Upon one ſide is a female head, covered with a helmet, on which is a caduceus, and ROMA. Upon the other is a man's head, with a helmet wreathed with laurel, and M. M. Dr. Combe thinks this fine piece, now in Dr. Hunter's cabinet, was ſtruck by Syracuſe, in honour of Marcus Claudius Marcellus, who beſieged and took that city, 210 years B.C. This medallion is moſt remarkable for its being unique; for its beauty, for its preſervation, and for the portrait of this great man. Theſe are perhaps the only Greek medallions prior to the Roman empire. Many Roman medallions have S. C., as being ſtruck by order of the ſenate; others have not, as being by order of the emperor. Of Auguſtus a noble medallion was found in Herculaneum, and Khell publiſhed a diſſertation upon it. There are medallions of Auguſtus and Tiberius, ſtruck in Spain; and one of Livia, at Patræ in Achaia: one in braſs of Antony and Cleopatra; reverſe, two figures in a car, drawn by ſea-horſes. Of Tiberius there are many, and alſo of Claudius. There are alſo ſome of Agrippina, Nero, Galba, Veſpaſian, and Domitian. Thoſe of Trajan and Hadrian have generally a very broad rim, beyond the legend, with indented circles; and of Hadrian, Baldini gives no leſs than 47. There are fine medallions of Commodus, and his famous miſtreſs Marcia; their heads are joined, and ſhe wears a helmet. One of Pertinax bears, for reverſe, that emperor ſacrificing, with VOTIS DECENNALIBUS. There are many of Severus, Gordian III., and Philip; afterwards they are numerous of Gallus, Valerian, Gallienus, Aurelian, Probus, Diocletian, Maximian I., Conſtantius I., Conſtantinus I. and II., Conſtans, and Conſtantius II. Of other emperors they are ſcarcer. In Dr. Hunter's cabinet, among many others, there is one of Otacilia. The Greek medallions of Roman emperors are far more numerous than the Roman. All medallions, one or two inſtances excepted, are very rare, and of princely purchaſe. Even in the richeſt cabinets, 20 or 30 medallions are eſteemed of great weight. In the 17th century, however, queen Chriſtina was ſo fortunate as to procure about 300; and the king of France's cabinet was poſſeſſed of about 1200 medallions. Dr. Hunter's cabinet contains about 400, excluſive of Egyptian. There are alſo Latin medallions, of a ſize between firſt and ſecond braſs, or larger than our half-crown, eaſily diſtinguiſhable by their thickneſs, and uncommon neatneſs and manner. Theſe are, by Italian medalliſts, called "Medaglioncini," or little medallions. In Dr. Hunter's collection is a fine one of Alexander Severus and Julia Mammæa, face to face; reverſe their figures, with FELICITAS TEMPORVM. Pinkerton's Eſſay on Medals, vol. i.

Medallion, in *Architecture*, is any circular tablet on which are imboſſed figures or buſtos.

MEDAMA, in *Geography*, a town of the iſland of Ceylon; 16 miles N. of Candi.

MEDAMPE, a town of the iſland of Ceylon; 36 miles N. of Columbo.

MEDANIPEK, a town of Servia, on the river Ipek; 22 miles S.W. of Orſova.

MEDARD, St., a town of France, in the department of the Lot; 8 miles N.W. of Cahors.

MEDAUAR, a town of Arabia, in the province of Yemen; 28 miles N.W. of Dsjebi.

MEDAUSO, a town of Africa, in the country of Bergoo; 150 miles S.W. of Wara.

MEDE, Joseph, in *Biography*, a learned divine, was born in 1586, at Berden in Eſſex, and in 1602 entered of Chriſt's college, Cambridge, where he ſtudied with intenſe application, was choſen fellow, and proceeded to his degree of bachelor in divinity. He refuſed ſeveral preferments, particularly the provoſtſhip of Trinity college, Dublin, which was repeatedly offered him by archbiſhop Uſher. He died in 1638. His works have been collected into one volume folio. The principal is his Commentary on the Apocalypſe; in explaining which, his plan has been followed by biſhop Newton, and a number of other great divines. Biog. Brit.

MEDEA, in *Geography*, a town of Algiers, in the province of Titterie, ſurrounded with mud walls, anciently "Lamida;" 32 miles S.W. of Algiers. N. lat. 26 5'. E. long. 2° 50'.

Medea, *El*, *Mehdia*, or *Mehedia*, a town of Africa, in the kingdom of Tunis, on a peninſula, on the eaſt coaſt, formerly a place of great ſtrength and importance. The port, which was an area of nearly 100 yards ſquare, lies within the walls of the city, with its mouth opening towards Cap-oudia; but at preſent not capable of receiving the ſmalleſt veſſel; 80 miles S. of Tunis. N. lat. 35° 20. E. long. 11°.

MEDEBACH, a town of Weſtphalia; 32 miles W. of Caſſel. N. lat. 51° 10′. E. long. 8° 48′.

MEDELLIN, a town of Spain, in Eſtramadura, on the Guadiana, being the native place of Fernando Cortez. It is an ancient town, having been founded by Q. C. Metellus, the Roman conſul, and called by him "Metellinum;" 13 miles S.E. of Merida. N. lat. 38° 43′. W. long. 5° 47′.—Alſo, a town of Mexico, in the province of Tlaſcala, 25 miles S. of Vera Cruz, on a river of the ſame name, which runs into the gulf of Mexico, N. lat. 19°.

MEDELPAD, a province of Sweden, in the diviſion called Nordland, bounded on the north-eaſt by Angermanland, on the eaſt by the gulf of Bothnia, on the ſouth-weſt by Helſingland, and on the north-weſt by Jamtland, or north by the river Indal, and ſouth by the Niurunda; from 13 to 20 leagues from north to ſouth, and upwards of 30 from weſt to eaſt. This province, though mountainous and woody, contains ſeveral vallies of meadow and arable land, interſperſed with rivers and lakes, which yield abundance of fiſh. The grain, which is ſown here about Whitſuntide, produces corn that ripens in ten weeks; and it is ſufficient to ſupply the inhabitants. The foreſts abound with game of all ſorts, elks, rein-deers, beavers, martins, weaſels, lynxes, foxes, and wild fowl. The inhabitants have plenty of cattle, and traffic in timber, hops, flax, hemp, butter, fruits, and dried fiſh. The only ſea-port is Sundſwall, which is a mean though trading town, ſituated in a dry and ſandy tract, near the bottom of a bay, with a convenient port. This province lies in N. lat. 62° 30′.

MEDELSHEIM, a town of France, in the department of Mont-Tonnerre, and chief place of a canton, in the diſtrict of Deux-Ponts. The place contains 338, and the canton 4521 inhabitants, in 15 communes.

MEDEM, a town of Arabia, in the province of Yemen, and the Imam's dominions: it is the capital of Hamdan, and the reſidence of a ſchiech; 10 miles N.N.W. of Sana.

MEDEMBLICK, a ſea-port town of Holland, at the entrance into the Zuyder ſee, ſmall though ancient, and, before Enckhuyſen and Hoorn were built, the capital of North Holland. The inhabitants trade chiefly in timber, which they bring from Norway, and other northern parts of Europe. Its vicinity abounds with rich paſtures. As the land is here lower than the waters, it requires very ſtrong dykes and dams to defend it from the fury of the waves; 26 miles N. of Amſterdam. N. lat. 52° 29′. E. long. 4° 58′.

MEDEN, a river of the Iſle of Wight, which runs into the ſea between Eaſt and Weſt Cowes, but is navigable for ſmall veſſels to Newport.—Alſo, a river, which riſes from a lake in the duchy of Bremen, and diſcharges itſelf into the Elbe, two miles below Otterndorf, N. lat. 53° 55′. E. long. 8° 44′.

MEDENA, in *Surgery*, a name given by Paracelſus to a particular claſs of ulcers.

MEDENAM, in *Geography*, a town of Pruſſia, in the province of Samland; 12 miles N.W. of Konigſberg.

MEDEOLA, in *Botany*, is the Linnæan name of this genus, thought by Profeſſor Martyn to be "a diminutive of *Medea*, the famous ſorcereſs of antiquity." Linn. Gen. 179. Schreb. 240. Willd. Sp. Pl. v. 2. 270. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 327. Michaux. Boreal-Amer. v. 1. 214. Juſſ. 42. Lamarck Illuſtr. t. 266.—Claſs and order, *Hexandria Trigynia*. Nat. Ord. *Sarmentaceæ*, Linn. *Aſparagi*, Juſſ.

Gen. Ch. *Cal.* Perianth none. *Cor.* inferior, deeply cloven into ſix, ovate-oblong, equal, ſpreading, revolute ſegments. *Stam.* Filaments ſix, awl-ſhaped, the length of the corolla; anthers incumbent. *Piſt.* Germens three, corniculate, ending in the ſtyles; ſtigmas recurved, thickiſh. *Peric.* Berry roundiſh, trifid, three-celled. *Seeds* ſolitary, heart-ſhaped.

Eſſ. Ch. Calyx none. Corolla deeply ſix-cleft, revolute. Berry three-ſeeded.

Obſ. Linnæus remarks that *M. virginiana*, which he received from the celebrated Gronovius, had four petals; and Juſſieu further ſays, that the ſame ſpecies having verticillate leaves, and the habit of *Trillium* or *Paris*, is very nearly akin to thoſe genera. *Jacquinia ruſcifolia* was originally conſidered by Linnæus as a *Medeola*.

1. M. *virginiana*. Virginian Medeola, or Indian Cucumber. Linn. Sp. Pl. 483. Sims in Bot. Mag. t. 1316.—Leaves verticillate.—A native of Virginia, flowering in June. Michaux ſays that it is common in moiſt woods throughout the whole of North America. *Root* tuberous and fibrous. *Stem* ſcarcely a foot high, ſimple, erect or ſomewhat ſcandent, about the thickneſs of a quill, covered with a reflexed, hairy down. *Leaves* whorled, from ſix to eight in the upper and three in the lower whorl, ovate, pointed. *Flowers* on pendent ſtalks, greeniſh-yellow, with purple filaments, without ſmell. Its root, which is eaten by the Indians, is ſaid to reſemble the Cucumber in flavour, and hence the Engliſh name.

2. M. *aſparagoides*. Broad-leaved ſhrubby Medeola. Linn. Sp. Pl. 484. (Aſparagus africanus ſcandens, myrti folio; Til. Pis. t. 12. f. 1.)—Leaves alternate, ovate, unequally heart-ſhaped at the baſe.—A native of the Cape of Good Hope. It flowers during the greater part of the winter, and was cultivated in 1702 by the ducheſs of Beaufort. *Root* compoſed of ſeveral oblong knobs, uniting at the top like that of a *Ranunculus.* *Stems* round, twining, branched, ſeveral feet long. *Leaves* ſeſſile, acutely pointed, light-green beneath, but dark above. *Flowers* one or two on a ſtalk, dull white. Michaux is of opinion that *M. aſparagoides* ſhould be referred to another genus, and Mr. Gawler ſays, in the Botanical Magazine, that the following, *M. anguſtifolia*, together with this, ſhould be excluded from *Medeola*.

3. M. *anguſtifolia*. Narrow-leaved Medeola. Willd. n. 3. (Aſparagus africanus ſcandens, myrti folio anguſtiore; Til. Pis. t 12. f. 2.)—Leaves alternate, lanceolate.—A native alſo of the Cape, flowering in the early ſpring. *Root* ſimilar to the preceding. *Stalks* weaker, not ſo much branched, but climbing higher. *Leaves* long and narrow, of a greyiſh colour. *Flowers* lateral, two or three on a ſtalk, of an herbaceous white appearance.

Profeſſor Martyn obſerves that "the flowers of theſe two latter ſpecies making no great appearance, the plants are not preſerved for their beauty; but as their ſtalks are climbing, and their leaves are in full vigour in winter, during that ſeaſon they add to the variety of the green-houſe."

MEDEOLA, in *Gardening*, compriſes plants of the herbaceous climbing kind, of which the ſpecies cultivated are the Virginian medeola (M. virginiana); the broad-leaved ſhrubby medeola (M. aſparagoides); and the narrow-leaved medeola (M. anguſtifolia).

Method of Culture.—Theſe ſorts of plants may be increaſed by planting off-ſets, taken from the roots in the ſummer ſeaſon, about July, in pots filled with good, rich, light mould, remaining in the open air till autumn, when they ſhould be removed into the green or hot-houſe; but the latter, when intended to fruit. While the plants have a vigorous growth, they ſhould be frequently refreſhed with water; but, as the ſtems decay, very little, eſpecially when placed in an eaſtern aſpect.

The ſecond and third ſorts may alſo be raiſed from ſeed; but they commonly remain long in the earth before they come up.

The firſt ſort is ſufficiently hardy to ſtand in the open-air during the winter ſeaſon.

They all afford variety in green-houſe and ſtove collections, in the winter ſeaſon, among other plants.

MEDERA, or MEDRA, in *Geography,* a town of Africa, in the kingdom of Bournou.

MEDES, *Empire of.* See EMPIRE and MEDIA.

MEDFIELD, in *Geography*, a townſhip in Norfolk county, Maſſachuſetts; 20 miles S.W. of Boſton; incorporated in 1650, and containing 745 inhabitants.

MEDFORD, a pleaſant, thriving, compact town in Middleſex county, Maſſachuſetts, ſituated on Myſtick river, three miles from its mouth, and four miles N. of Boſton. The river is navigable for ſmall veſſels to this place, where it meets the Middleſex canal. The townſhip was incorporated in 1630, and contains 1114 induſtrious inhabitants. Here are four diſtilleries, which have diſtilled in one year 252,450 gallons of rum. About four millions of bricks are made annually in this town, moſt of which are conveyed to Boſton.

MEDHERAM, a town of Africa, in the kingdom of Fezzan; 330 miles S.S.E. of Mourzouk.

MEDHERAM *Iza*, a town of Africa, in the deſert of Berdoa. N. lat. 24° 35′. E. long. 16° 24′.

MEDHRA, among Hindoo metaphyſicians and mythologiſts, is a name of the *Yoni;* which ſee.

MEDIA, or, as it was ſometimes called, *Medena*, in *Ancient Geography*, an extenſive country of Aſia, and the ſeat of a powerful empire, bounded, according to Ptolemy, on the north by part of the Caſpian and Hyrcanian ſea, on the ſouth by Perſia, Suſiana, and Aſſyria, on the eaſt by Parthia and Hyrcania, and on the weſt by Armenia Major. In ancient times it was divided into ſeveral provinces, which by a later arrangement were reduced to two, the one called "Media Magna," and the other "Media Atropatra," or ſimply *Atropatene;* which ſee. The cities of note in this latter part of Media were Gaza, the metropolis (which ſee); Sanina, ſituated between the Araxes and the Cambyſes; Fazina, between the Cambyſes and the Cyrus; and Cyropolis, between the Cyrus and the Amardus. This tract was inhabited by the Caduſians and Caſpians, a barbarous and inhuman race, originally ſprung from the Scythians.

Media Magna was bounded by Perſis, Parthia, Hyrcania, the Hyrcanian ſea, and Atropatene. The moſt remarkable cities in it were Ecbatana, Laodicea, Apamea, Rega or Regaia, and Arſacia. This part of Media was inhabited by the Carduchians, Marandæans, Gelians, Syro-Medians, Margaſians, &c. The mountains of this country, according to Ptolemy and Strabo, are Choatra, parting Media from Aſſyria; Xagrus, dividing it from the ſame Aſſyria on the eaſt, which, according to Polybius, was 100 cubits high; Parachoatra, placed by Ptolemy on the borders towards Perſia, and by Strabo on the confines of Media, Hyrcania, and Parthia. To theſe, which are the boundaries between Media and the adjacent provinces, may be added the Orontes, the Jaſonius, and the Coronus, in the interior of the country. The rivers of note, according to Ptolemy, are the Straton, the Amardus, the Cyrus, and the Cambyſes; properly belonging to the provinces of Ghilan and Mazanderan, and not to Media Proper, as deſcribed by the ancients. The northern parts of Media, lying between the Caſpian mountains and the ſea, are very cold and barren: the preſent inhabitants make their bread of dried almonds, and their drink of the juice of certain herbs. The ſnow lies on the mountains for nine months in the year. But the ſouthern parts produce all ſorts of grain, and neceſſaries of life, and are ſo pleaſant, that the country adjoining to Tauris, probably the ancient Ecbatana, is called the garden of Perſia. It has large plains, one of which was called Nyſa, and was famous for its numerous ſtuds of horſes, that were kept in it for the uſe of the Perſian monarchs. The climate of Media is various: that part which lies between the mountains and ſea is cold and ſwampy, and ſubject to vapours exhaling from the Caſpian ſea; but the provinces that are more remote from the ſea, enjoy a very ſalubrious air, though liable to heavy rains and violent ſtorms, eſpecially in the ſpring and autumn. In the neighbourhood of Tauris, it is ſaid that 60 different kinds of grapes, of exquiſite flavour, have been found.

The Medes are ſaid to have ſprung from Madai, the third ſon of Japhet; and in proceſs of time ſeveral perſons from the adjacent countries ſettled here, on account of the fertility of the ſoil, and gave riſe to the various tribes into which theſe people were anciently divided. Their government was originally monarchical, and they ſeem to have had their own kings in the earlieſt times. They were firſt brought under the Aſſyrian yoke by Pul, ſaid to be the founder of that monarchy, or by his immediate ſucceſſor Tiglath-Pileſer. In the reign of Sennacherib they ſhook off this yoke, and fell into anarchy until the reign of Dejoces. Their kings after the revolt were quite abſolute, and controuled by no law. The Medes were once a very warlike people, but in proceſs of time became one of the moſt effeminate nations of Aſia. They uſed the ſame armour with the Perſians, whom, it is ſaid, they inſtructed in the art of war; and it is likewiſe aſſerted, that they firſt introduced luxury into Perſia, which ultimately occaſioned the downfal of that empire. Polygamy was ſo far from being diſreputable among them, that they were bound by law to maintain, at leaſt, ſeven wives, and thoſe women were regarded with contempt, who maintained fewer than five huſbands. In war they ſmeared their arrows with a bituminous liquor called naphta; ſo that when the arrows were ſet on fire and ſhot from a ſlack bow, they burnt the fleſh with ſuch violence that water ſerved to increaſe rather than to extinguiſh the flame. They are ſaid likewiſe to have bred a number of large dogs, to whom they threw the bodies of their friends, parents, and relations, when at the point of death, conſidering it as diſhonourable to die in their beds, or be laid in the ground. Some writers charge the Medes with being the firſt who made eunuchs; but others impute this execrable practice to the Perſians. With the Medes originate the cuſtom of confirming alliances with the blood of the contracting parties, which afterwards prevailed among all the eaſtern nations, even in the Roman times. When they concluded alliances, they tied together, with a hard bandage, the thumbs of their right hands, until the blood ſtarting to the extremities was, by a ſlight cut, diſcharged. This they mutually ſucked, and a league thus confirmed was eſteemed moſt awful, as myſteriouſly ſolemnized with the blood of the parties. The laws and religion of the Medes were much the ſame with thoſe of the Perſians. (See PERSIA.) When a law was once enacted, it was not in the king's power to repeal it, or to reverſe a decree he had once made; whence the laws of the Medes are, in the ſacred writings (Dan. vi. 8.) called unchangeable. Their kings were treated with great reſpect; and whenever they appeared in public, they were attended by muſic, and numerous guards, conſiſting of the prime nobility; their wives, children, and concubines, forming part of their retinue, even when they headed their armies in the field. We are ignorant of their arts, learning, and trade; but this is known, that during the ſhort period of their monarchy, they ſeem to have applied their thoughts only to warlike exerciſes, *viz.* to horſemanſhip and archery, in which they ſurpaſſed all other nations; the Median horſe being no leſs celebrated by the ancients than the Perſian infantry in ſubſequent ages.

In detailing their hiſtory, we begin with Pul, or Tiglath-Pileſer, already mentioned, who firſt brought them under ſubjection. From the time of Pul, or Tiglath-Pileſer, who ſucceeded his father in the year 740 B.C., they remained ſubject to the Aſſyrians till about the latter end of the reign of Sennacherib, 710 B.C., when, emancipating themſelves from Aſſyrian bondage, they fell into a ſtate of anarchy. This circumſtance, as Herodotus informs us, gave Eſar-Haddon, or Aſſar-Hadon, who ſucceeded Sennacherib, an opportunity of reducing a great part of Media, if not the whole country, under ſubjection. This anarchy is ſuppoſed to have laſted one year; for Dejoces, called Arphaxad in the book of Judith, was killed by Saooduchius or Nebuchadonoſor, in the year 656. From the commencement of the reign of Dejoces to the deſtruction of Nineveh, 601 B.C., Media may properly be ſtyled a kingdom. From the deſtruction of Nineveh, we may therefore date the riſe of the empire of the Medes. (See EMPIRE.) Their empire laſted till the taking of Babylon; for we learn from Xenophon, that after the reduction of that city, Cyrus went to the king of the Medes at Ecbatana, and ſucceeded him in the kingdom. The empire of the Medes laſted 65 years, at the period in which the Perſian empire took riſe in Cyrus. Paſſing over the fabulous hiſtory of the Medes, we ſhall begin with the reign of Dejoces, who was choſen by them as their judge, and who, aſpiring to the ſovereign power, performed that office with the ſtricteſt regard to juſtice. Upon his reſignation of this office, licentiouſneſs prevailed, and it was found neceſſary to appoint a king; upon which Dejoces was named to the ſovereignty, and with univerſal applauſe placed upon the throne 710 B.C. As ſoon as he was elected king, and veſted with the ſupreme power, he threw off the maſk, and became a tyrant. Ecbatana was built and choſen for the royal reſidence, and a ſtately palace was erected for the ſovereign. Dejoces, having enacted various laws for the government of the kingdom, and having, in a conſiderable degree, civilized his unpoliſhed ſubjects, entertained thoughts of extending the limits of his new kingdom, and with this view he invaded Aſſyria. Nebuchadonoſor, however, at that time king of Aſſyria, met him in the plain of Ragau, and a battle enſued, in which the Medes were utterly defeated, and Dejoces was ſlain, after a reign, according to Herodotus, of 53 years. The Aſſyrian king, availing himſelf of his ſucceſs, reduced ſeveral cities of Media, and among the reſt Ecbatana, which he almoſt utterly deſtroyed. Dejoces was ſucceeded by his ſon Phraortes, 647 B.C., and, not ſatisfied with the kingdom of Media, he invaded Perſia, and is ſaid to have brought that nation under ſubjection to the Medes. Such is the account of Herodotus; but others aſcribe the conqueſt of Perſia, not to Phraortes, but to his ſon and ſucceſſor Cyaxares. Phraortes, however, ſubdued ſeveral neighbouring nations, and made himſelf maſter of almoſt all the Upper Aſia, lying between mount Taurus and the river Halys. Emboldened by his ſucceſs, he invaded Aſſyria, ſubdued a great part of the country, and even laid ſiege to Nineveh, the metropolis. Here he periſhed, with the greater part of his army, after having reigned 22 years. Upon the death of Phraortes, his ſon, Cyaxares I., a brave and enterpriſing prince, ſucceeded him, 625 B.C. Having well diſciplined his troops, and recovered the territories which the Aſſyrians had taken during the reigns of his father and grandfather, he marched againſt Nineveh, but after having laid cloſe ſiege to the city, he was obliged to retreat, and to employ his troops in the defence of his own kingdom, againſt a formidable army of Scythians, who, having driven the Cimmerians out of Europe, purſued their flying enemies, and were ready to enter Media. The two armies engaged, and the Medes were utterly routed. The conquerors overran, not only all Media, but the greater part of Upper Aſia, extending their conqueſts into Syria, as far as the confines of Egypt. Cyaxares, deſpairing of being able to overpower the Scythians by force, had recourſe to ſtratagem; and invited them to a general feaſt, which was prepared in every family. Each hoſt intoxicated his gueſt; and in that condition the Scythians were maſſacred, and the kingdom delivered from a long and cruel bondage. The Medes were afterwards engaged with the Lydians; and during the engagement there happened a total eclipſe of the ſun, ſaid to have been foretold by Thales the Mileſian. Both parties were terrified, and ſoon after concluded a peace by the mediation of Labynetus, that is Nebuchadnezzar, king of Babylon, and Syenneſis, king of Cilicia. This peace was confirmed by the marriage of Aryenis, the daughter of Halyattes, and Aſtyages, the eldeſt ſon of Cyaxares; and of this marriage was born in the enſuing year Cyaxares, who, in the book of Daniel (ch. v. 31.) is called Darius the Mede. Cyaxares, diſengaged from the Lydian war, reſumed the ſiege of Nineveh; and having formed a ſtrict alliance with Nebuchadnezzar, king of Babylon, they joined their forces, and took and deſtroyed the city. (606 B.C.) With this proſperous event commenced the great ſucceſſes of Nebuchadnezzar and Cyaxares; and thus was laid the foundation of the two collateral empires, as they may be called, of the Medes and Babylonians, which roſe on the ruins of the Aſſyrian monarchy. After the reduction of Nineveh, the two conquerors led the confederate army againſt Pharaoh-Necho, king of Egypt, who was defeated near the Euphrates, and compelled to reſign what he had formerly taken from the Aſſyrians. After this victory they reduced all Cœleſyria and Phœnice; then they invaded, and laid waſte Samaria, Galilee, and Scythopolis; and at laſt beſieged Jeruſalem, and took Jehoiakim priſoner. Nebuchadnezzar afterwards purſued his conqueſts in the weſt, and Cyaxares ſubdued the Aſſyrian provinces of Armenia, Pontus, and Cappadocia. Again uniting their forces, they reduced Perſia and Suriana, and accompliſhed the conqueſt of the Aſſyrian empire. The prophet Ezekiel (ch. xxxii. 22. &c.) enumerates the chief nations that were ſubdued and ſlaughtered by the two conquerors Cyaxares and Nebuchadnezzar.

Cyaxares, having thus erected the kingdom of Media into a powerful empire, and ſhared the new acquiſitions with his Babylonian ally, died in the 40th year of his reign, and was ſucceeded by his ſon Aſtyages, called in ſcripture Ahaſuerus. This prince had by Aryenis, already-mentioned, Cyaxares II., called in ſcripture Darius the Mede, who was 62 years of age when Belſhazzar was ſlain at the capture of Babylon. In the year when Cyaxares was born, Aſtyages gave his daughter Mandane, whom he had by a former wife, to Cambyſes, a Perſian; from which marriage ſprung Cyrus, the founder of the Perſian monarchy, and the reſtorer of the Jews to their country, their temple, and their former condition. (See CYRUS.) Aſtyages, after a reign of 35 years, was ſucceeded by his ſon Cyaxares, uncle to Cyrus, 560 B.C. Whilſt Cyaxares lived, Cyrus held the empire only in partnerſhip with him, though he had entirely acquired it by his own valour; but as Cyrus was entruſted with the command of the army, and the whole management of affairs, he alone was regarded as the ſupreme governor of the empire. From

Joſephus we learn, that Cyaxares, or Darius the Mede, with his ally, Cyrus, deſtroyed the kingdom of Babylon. After the reduction of Babylon, Cyaxares, in concert with Cyrus, ſettled the affairs of their new empire, and divided it into 120 provinces. The governors of theſe provinces were under the direction of three preſidents, of whom Daniel was appointed the chief. (See DANIEL.) From this time Media became a province of Perſia. See EMPIRE and PERSIA.

MEDIANA, in *Anatomy*, median, a name given to certain veins of the upper extremity. Theſe are the median veins of the fore-arm, occupying the middle of the limb, between the radius and the ulna. Theſe divide at the elbow into two chief trunks, of which one joins the baſilic, and the other the cephalic vein of the arm: they are named reſpectively, vena mediana baſilica, and v. m. cephalica. See VEIN.

MEDIANA, in *Geography*, a town of Spain, in Arragon; 12 miles S.E. of Saragoſſa.

MEDIANÆ, *Columnæ*, in Vitruvius, are the columns in the middle of a portico, whoſe intercolumniation is to be larger than thoſe of the columns.

MEDIANTE, *Fr.*, in *Muſic*, is the ſtring or ſound which divides the fifth of a key into two thirds, the one major, and the other minor; and it is their relative poſition which determines the key. When the major third is the loweſt, that is to ſay, between the mediante and key note, the key is major, or with a ſharp third; when the major third is uppermoſt, and the minor at the bottom, the mode or key is minor, or with a flat third above the baſe.

MEDIASTINUM, in *Anatomy*, the partition which divides the cheſt into the right and left halves. See LUNG.

MEDIATE, or INTERMEDIATE, a term of relation to two extremes, applied to a third, which is in the middle between them. See MEAN and MEDIUM.

Subſtance is a genus with regard to man; but between the two there are other mediate genuſſes, as body and animal.

Mediate ſtands oppoſed to immediate: thus when we ſay that God and man concur to the production of man; God is the *mediate* cauſe, man the *immediate*.

MEDIATE *Mode*. See MODE.

MEDIATIO, *Lat.*, MEDIATION, *Fr.*, in *Canto Fermo*, implies the middle of a chant, or the ſound which terminates the firſt part of a verſe in the pſalms. The punctuation of the pſalms in the Engliſh pſalter, where a colon is conſtantly placed in the middle of a verſe, and frequently when the ſenſe requires not ſo long a pauſe, expreſſes this mediatio, or breath-place, marked out for thoſe who chaunt the pſalms in the cathedral ſervice.

MEDIATOR, in *Theology*, is an appellation which belongs in a peculiar, appropriate, and eminent ſenſe, to Jeſus Chriſt, the inſtructor and ſaviour of mankind; accordingly, as the doctrine of mediator between God and man is a matter of pure revelation, the New Teſtament expreſsly aſſerts that "there is one God, and one mediator between God and man, the man Chriſt Jeſus," 1 Tim. ii. 5. Divines, however, have differed in their ſentiments with reſpect to the nature and extent of this office, and the mode of its accompliſhment. In a general view of this ſubject, it is argued by biſhop Butler in his "Analogy, &c." that the whole analogy of nature removes all imagined preſumption againſt the general notion of a mediator between God and man; ſo that, as the viſible government which God exerciſes over the world, is carried on by the inſtrumentality and mediation of ſubordinate beings, there is no ſort of objection againſt the general notion of a mediator, conſidered as a doctrine of Chriſtianity, or as an appointment in this diſpenſation; ſince we find by experience, that God does appoint mediators to be the inſtruments of good and evil to us, the inſtruments of his juſtice and mercy. He adds, that it is clearly contrary to all our notions of government, as well as to what is, in fact, the general conſtitution of nature, to ſuppoſe that doing well for the future ſhould, in all caſes, prevent all the judicial bad conſequences of having done evil, or all the puniſhment annexed to diſobedience. And though the efficacy of repentance itſelf alone, to prevent what mankind had rendered themſelves obnoxious to, and recover what they had forfeited, is now inſiſted upon, in oppoſition to Chriſtianity; yet, by the general prevalence of propitiatory ſacrifices over the heathen world, this notion of repentance alone being ſufficient to expiate guilt, appears to be contrary to the general ſenſe of mankind. As there was, therefore, room for an interpoſition to avert the fatal conſequences of vice, revelation affords us ſuch repreſentations of the compaſſion and goodneſs of God in the adminiſtration of the world, as to give us reaſon to expect ſuch an interpoſition; and, moreover, it informs us, that an interpoſition of this kind has been mercifully provided, in order to prevent the deſtruction of the human kind. (See John, iii. 16.) As for the particular manner in which Chriſt interpoſed in the redemption of the world, or his office as *mediator*, in the largeſt ſenſe, *between God and man*, it is, as the learned prelate conceives, thus repreſented to us in the ſcriptures: 1ſt. He was, by way of eminence, "the prophet that ſhould come into the world" (John, vi. 14.) to declare the divine will. He publiſhed anew the law of nature, which men had corrupted, and the knowledge of which was, to a great degree, loſt among them. He taught mankind, authoritatively, to "live ſoberly, righteouſly, and godlily in this preſent world," in expectation of the future judgment of God. He confirmed the truth of this moral ſyſtem of nature, and gave us additional evidence of it; the evidence of teſtimony. He diſtinctly revealed the manner in which God would be worſhipped, the efficacy of repentance, and the rewards and puniſhments of a future life. Thus he was a prophet in a ſenſe in which no other ever was. To which is to be added, that he ſet us a perfect "example, that we ſhould follow his ſteps." 2dly. He has a "kingdom which is not of this world." He founded a church, to be to mankind a ſtanding memorial of religion, and invitation to it; which he promiſed to be with always, even to the end. He exerciſes an inviſible government over it himſelf, and by his ſpirit; over that part of it which is militant here on earth, a government of diſcipline. (See Eph. iv. 12, 13.) Of this church, all perſons ſcattered over the world, who live in obedience to his laws, are members. 3dly. Chriſt offered himſelf a propitiatory ſacrifice, and made atonement for the ſins of the world; which is mentioned laſt, in regard to what is objected againſt it. Sacrifices of expiation were commanded the Jews, and obtained amongſt moſt other nations, from tradition, whoſe original probably was revelation. And they were continually repeated, both occaſionally and at the returns of ſtated times: and made up great part of the external religion of mankind. "But now once in the end of the world Chriſt appeared to put away ſin by the ſacrifice of himſelf." (Heb. ix. 26.) And this ſacrifice was, in the higheſt degree, and with the moſt extenſive influence, of that efficacy for obtaining pardon of ſin, which the heathens may be ſuppoſed to have thought their ſacrifices to have been, and which the Jewiſh ſacrifices really were in ſome degree, and with regard to ſome perſons.

How and in what particular way it had this efficacy, there are not wanting perſons who have endeavoured to explain: but we do not find that the ſcripture has explained it. We ſeem to be very much in the dark, concerning the manner in which the ancients underſtood atonement to be made, *i. e.*

pardon to be obtained by ſacrifices. And if the ſcripture has, as ſurely it has, left this matter of the ſatisfaction of Chriſt myſterious, left ſomewhat in it unrevealed, all conjectures about it muſt be, if not evidently abſurd, yet at leaſt uncertain. Nor has any one reaſon to complain for want of farther information, unleſs he can ſhew his claim to it.

Some have endeavoured to explain the efficacy of what Chriſt has done and ſuffered for us, beyond what the ſcripture has authorized: others, probably becauſe they could not explain it, have been for taking it away, and confining his office as redeemer of the world to his inſtruction, example, and government of the church. Whereas the doctrine of the goſpel appears to be; not only that he taught the efficacy of repentance, but rendered it of the efficacy which it is, by what he did and ſuffered for us: that he obtained for us the benefit of having our repentance accepted unto eternal life: not only that he revealed to ſinners, that they were in a capacity of ſalvation, and how they might obtain it; but moreover that he put them into this capacity of ſalvation, by what he did and ſuffered for them; put us into a capacity of eſcaping future puniſhment, and obtaining future happineſs. And it is our wiſdom thankfully to accept the benefit, by performing the conditions upon which it is offered, on our part, without diſputing how it was procured, on his.

Another writer, *viz.* Mr. Tomkins, in his treatiſe entitled "Jeſus the Mediator between God and Man," ſeems to have entertained ſimilar views with thoſe of biſhop Butler concerning the mediation of Chriſt. The ſcripture, ſays this writer, expreſsly gives Chriſt the title of mediator (the one mediator): this will be allowed even by thoſe who underſtand it of his mediating on the part of God towards us, or of his being inveſted with a mediatorial kingdom, in conſequence of which he diſpenſes the favours of God to men. But this, in the judgment of the author to whom we now refer, is merely half of what the ſcripture deſigns, when it calls Chriſt the mediator; for he ſuppoſes this office to include what he doth or hath done on our behalf towards God. The apoſtle, he thinks, evidently and directly refers to this (1 Tim. ii. 5.) when he adds, "who gave himſelf a ranſom for us." If, then, it appears that Chriſt offered himſelf a ſacrifice; that he makes interceſſion for us; that he is ordained for us an high-prieſt in things pertaining to God; and that we are required to come unto God by him under this character: if theſe, and the like, are in the plain literal ſenſe the doctrine of the New Teſtament, none, he ſuppoſes, can make it matter of diſpute, whether the title of mediator hath not reſpect to theſe things, as well as to his acting on the behalf of God towards us: in confirmation of which it may be obſerved, that the term itſelf ſeems to imply a tranſacting with each party on the behalf of the other; according to the language of the apoſtle "a mediator is not of one." The object of the author in the treatiſe which we have cited, is to lay before the reader the declarations of ſcripture on the ſubjects above ſtated; or to ſhew that they repreſent what it was appointed for Chriſt to do on our behalf, and conſequently what he hath done, or now does for us, in order to our reconciliation with God. Another writer, after ſhewing that the general notion of a mediator is not at all repugnant to the moſt honourable ſentiments we can entertain of the mercy of God, ſtates the ſubſtance of what he conceives to be the true Chriſtian doctrine of a mediator in the following terms: *viz.* "that our bleſſed Saviour was appointed by the ſupreme authority of heaven and earth, to *reconcile* apoſtate and rebellious men to their offended maker and ſovereign, and to be the *diſtributor* of God's favour to mankind." He thinks, that there are ſeveral probabilities that incline us to believe, that our bleſſed Lord never expreſsly aſſumed to himſelf the title of mediator, during the time of his public miniſtry upon earth, and that it never was aſcribed to him till after his exaltation to regal dignity and power; and of courſe that the mediatorial character of Chriſt did not properly commence till after his reſurrection, when he had all power committed to him, and was conſtituted the *one Lord*, through whom are all things. Adverting to the death of Chriſt, as a prominent event in his hiſtory, he obſerves, that it was not intended to render the Deity propitious, *i.e.* willing to be reconciled to his creatures upon fit and honourable terms, becauſe it was propoſed by *himſelf*, and the whole uſe and efficacy of it ſprung from his appointing and declaring it to be an accepted ſacrifice, ſo that it muſt neceſſarily ſuppoſe him to have been antecedently propitious. The truth of the caſe in his opinion ſeems to be, that it was "an expedient originally proceeding from the mercy of God, and not the argument or motive, inducing him to be merciful. The great purpoſes, as this author ſtates them, which are evidently ſerved by the expreſs command of God to conſider the death of Chriſt under the notion and character of a ſacrifice, are thoſe which follow.

Firſt, that it might be a ſtanding memorial of God's being propitious, and inclined to pardon the ſins of men; and an enforcement of that fundamental principle of all religion, that he is a rewarder of them that diligently ſeek him: "A memorial coinciding with the almoſt univerſal ſentiment and practice of the world (among whom ſacrifices were eſteemed as an eſſential part of religion), and likely, upon that account, to have a more certain and powerful influence."—Secondly, that it might be a ſtanding memorial, likewiſe, of the evil and demerit of ſin; and, conſequently, a perpetual incentive to humility and repentance.—And, thirdly, it ſeems to have been wiſely appointed with this view likewiſe, *viz.* to ſuperſede the uſe of all future ſacrifices; which, extending even to human ſacrifices, had been the moſt depraved and unnatural branch of heathen ſuperſtition. And, therefore, that it might the better produce this effect, which was worthy the care of infinite wiſdom and goodneſs, we are expreſsly informed, that Jeſus Chriſt hath, by one offering, "perfected for ever them that are ſanctified." Heb x. 14.

And, in the laſt place, "there is formed, by this conſtitution, a beautiful analogy in a very conſiderable and important point, between the ſettled methods of God's natural providence, and the extraordinary operations of his grace;" which perhaps may juſtly be eſteemed as one of the principal reaſons of it. Foſter's Sermons, vol. iv. ſerm. xvi. See Atonement.

Mediators *of Queſtions*, in our *Old Writers*, were ſix perſons authorized by ſtatute, who, upon any queſtion ariſing among merchants, relating to any unmercable wool, or undue packing, &c. might, before the mayor, or officers of the ſtaple, upon their oath, certify and ſettle the ſame; to whoſe order and determination therein, the parties concerned were to give entire credence, and ſubmit. 27 Ed. III. ſtat. 2. c. 24.

Mediators, Μεσαζοντες, under the emperors of Conſtantinople, officers of ſtate, who had the direction of all affairs tranſacted at court. Their chief, or preſident, was called *megas meſazon*, μεγας μεσαζων, and anſwered to the prime or grand viſier of the Turks. Hofm. Lex. in voc.

MEDICA, in *Botany*, an old name for ſome plants of the Trefoil or Lucerne family, which Tournefort has retained for the genus *Medicago* of Linnæus. It is ſuppoſed to be derived from Media, the native country of the plants to which it was applied. See Medicago.

MEDICA is alſo the Linnæan ſpecific name of the Citron, *Malus medica*, or Median Apple, of the old writers. See CITRUS.

MEDICAGO, ſo called by Tournefort, from *Medica*, which is indeed the proper name of the plant, (μηδικη of Dioſcorides), and aroſe from its having been introduced into Greece by the Medes, during the Perſian war in the time of Darius Hyſtaſpes. This name being reſtrained by Tournefort to a few ſpecies with a flat, not ſpiral, legume, he calls the very numerous ones in which that part is more or leſs convoluted, or ſpiral, *Medicago*, as reſembling, or approaching to, his *Medica*. Both tribes are united under the above appellation by Linnæus. The original *Medica* of the ancients, which was a valuable fodder, or, in the modern phraſe, *artificial graſs*, is probably one of the genus; though we cannot determine which, and it may poſſibly be ſome *Trifolium*, or perhaps a *Trigonella*. Lucern, Medick, or Snail Trefoil. Linn. Gen. 389. Schreb. 510. Willd. Sp. Pl. v. 3. 1403. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 795. Ait. Hort. Kew. ed. 1. v. 3. 96. Juſſ. 356. Lamarck Illuſtr. t. 612. Gærtn. t. 155. (Cochleata; Riv. Tetrap. Irr. t. 88. Falcata; ibid. t. 84. 85. 87.)—Claſs and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Char. *Cal.* Perianth inferior, of one leaf, ſtraight, cylindrical, ſomewhat bell-ſhaped, divided about half way down into five pointed, nearly equal, ſegments. *Cor.* papilionaceous. Standard ovate, undivided, inflexed at its edges, the whole reflexed. Wings ovate-oblong, affixed to the appendages of the keel, cohering by their edges within it. Keel oblong, cloven, ſpreading, obtuſe, bent down by the piſtil, and divaricating from the ſtandard. *Stam.* Filaments in two ſets, united almoſt to the top; anthers ſmall. *Piſt.* Germen ſtalked, oblong, incurved, compreſſed, enfolded by the filaments, ſtarting from the keel, and forcing back the ſtandard, terminating in a ſhort, awl-ſhaped, nearly ſtraight, *ſtyle*; *ſtigma* terminal, minute. *Peric.* Legume compreſſed, long, inflexed. *Seeds* ſeveral, kidney-ſhaped or angular.

Obſ. The *Cochleatæ* of Rivinus have a ſpirally convoluted legume; his *Falcatæ* a curved, or ſickle-ſhaped one.

Eſſ. Ch. Legume compreſſed, ſpiral, forcing back the keel of the corolla from its ſtandard.

The lateſt edition of Linnæus enumerates but ten ſpecies of *Medicago*, becauſe he always confounded, under his *M. polymorpha*, a numerous tribe, which, though they generally accord very nearly in herbage, differ too widely and conſtantly in their fruit to be eſteemed mere varieties of one ſpecies. Willdenow, following Gærtner, has diſtinguiſhed them all, and has even added ſeveral new ones, making all together 37. He has perhaps gone too far, and the ſubject appears to demand reviſion, which we ſhall here attempt.—*Medicago virginica*, Linn. Sp. Pl. 1096, is ſuppoſed to be the ſame plant as *Hedyſarum fruteſcens*, and is therefore omitted here. On this point however the Linnæan herbarium affords no information.

* *Legumes lunate, ſomewhat twiſted.*

1. M. *arborea*. Tree Medick, or Moon Trefoil. Linn. Sp. Pl. 1096. (Cytiſus ſeptimus cornutus; Ger. em. 1305.)—Legumes lunate, entire at the margin. Stem arboreſcent.—Native of rocky places in various parts of Greece and the Archipelago, as well as about Naples, flowering in the early ſpring. It is with us a hardy green-houſe ſhrub. *Stem* buſhy. *Leaves* ternate, on long ſtalks; their leaflets inverſely heart-ſhaped, hoary and ſilky beneath, like all the ſtalks. *Flowers* in axillary, ſtalked heads, or very ſhort cluſters, of a full yellow. *Legume* reticulated, making ſcarcely more than one complete turn.—This ſhrub has been ſhewn by M. Amoureux in the *Mem. de la Soc. d' Agriculture de Paris*, for 1787, part 2d, to be the real *Cytiſus* of Virgil, celebrated by him for cauſing cows to yield abundance of milk, while its flowers are grateful to goats and to bees.

2. M. *radiata*. Radiated Medick. Gærtn. ſ. 5. (Lunaria radiata italorum; Lob. Ic. v. 2. 38. Trifolium ſiliquâ lunatâ; Ger. em. 1207.)—Legume kidney-ſhaped, toothed at the edge. Leaves ternate.—Native of Italy. *Root* annual. *Stem* erect, more or leſs branched from the bottom, a ſpan high. *Leaves* ſtalked, ternate, obovate, ſharply toothed, ſomewhat hairy. *Flowers* ſmall, yellow, two or three on each axillary ſtalk. *Calyx* hairy. *Legumes* ſingularly elegant, curved into an orbicular flat form, near an inch broad, naked, glaucous, purpliſh, finely reticulated, fringed with briſtly teeth. *Seeds* numerous, tranſverſely corrugated.

3. M. *circinata*. Pinnate Kidney Medick. Linn. Sp. Pl. 1096. (Falcata foliis anthyllidis; Riv. Tetrap. Irr. t. 87.)—Legume kidney-ſhaped, toothed at the edge. Leaves pinnate, lyrate, entire.—Native of Spain, Italy, and the Levant. Annual. *Leaves* ſomewhat like thoſe of *Anthyllis vulneraria*, pinnate, with obovate, entire, thick, hairy leaflets, the odd one very large. The earlieſt leaves are ſimple. *Flowers* yellow, two or three on a long bracteated axillary ſtalk, like thoſe of a *Lotus*. *Legume* ſmaller and leſs elegant than in the laſt, hairy. Willdenow and Gærtner deſcribe a variety whoſe legume is ſmaller, without teeth, which may well prove a ſpecies. We have never ſeen it.

4. M. *ſativa*. Lucern, or Purple Medick. Linn. Sp. Pl. 1096. Mart. Ruſt. t. 48. Engl. Bot. t. 1749. (Medica legitima; Cluſ. Hiſt. v. 2. 242.)—Flower-ſtalks racemoſe. Legumes contorted. Stem erect, ſmooth.—In dry paſtures and by road ſides in France and Spain, as well as occaſionally in England, but it is hardly wild with us. For its deſcription, and agricultural uſe, ſee LUCERN. The *legume* is frequently ſo much convoluted, that it rather belongs to the next ſection.

5. M. *falcata*. Yellow Sickle-podded Medick. Linn. Sp. Pl. 1096. Mart. Ruſt. t. 86, 87. Engl. Bot. t. 1016.—Flower-ſtalks racemoſe. Legumes moon-ſhaped. Stem procumbent.—Found in dry gravelly places in various parts of Europe. In England chiefly about Norwich and Bury. It greatly reſembles the laſt, but does not grow erect, and the *legume* is merely ſickle-ſhaped, not contorted. The *flowers* vary from yellow to purple, and are often of a green hue, combined of both the former tints. Theſe two laſt ſpecies are perennial, and perhaps neareſt akin to the firſt, *arborea*.

6. M. *glutinoſa*. Clammy Medick. Willd. Sp. Pl. v. 3. 1406.—Flower-ſtalks racemoſe. Legumes falcate, twiſted, hairy and viſcid, like the calyx. Leaflets obovate, toothed at the ſummit.—Native of graſſy land in Tauria. Willdenow ſays it is very ſimilar to *M. falcata*, but differs in having obovate *leaflets*, and a hairy viſcid *calyx*. The *ſtems* are aſcending, and downy.

7. M. *lupulina*. Black Medick, or Noneſuch. Linn. Sp. Pl. 1097. Curt. Lond. faſc. 2. t. 57. Engl. Bot. t. 971. Mart. Ruſt. t. 19. (Trifolium luteum lupulinum; Ger. em. 1186.)—Spikes ovate. Legumes kidney-ſhaped, rugged and veiny, ſingle-ſeeded. Stem procumbent.—Frequent in the meadows and paſtures of Europe. It is annual, flowering all ſummer long, and is much cultivated, as an artificial graſs, for a crop of hay, or as fodder for ſheep. The *ſtems* ſpread widely. The *leaflets* are broad, roundiſh-obovate, finely toothed. *Flowers* yellow, ſmall, in denſe ovate ſtalked ſpikes, very much reſembling ſome of the common yellow

ſpecies of *Trifolium*, with which indeed the whole habit of the plant accords, but the curved, black, rugged *legumes*, as they ripen, conſpicuouſly diſtinguiſh it.

8. M. *obſcura*. Doubtful Medick. Retz. Obſ. faſc. 1. 25. t. 1.—Flower-ſtalks racemoſe. Legumes kidney-ſhaped, with two ſeeds. Stipulas toothed. Leaflets obovate, ſomewhat rhomboid. Stems recumbent.—Suppoſed by Retzius, who had it by accident with other ſeeds, to be a native of Germany. *Root* annual. The habit and flowers are like many of the next ſection, but the *legume* is merely orbicular, not cochleated, or truly ſpiral; its diameter ſcarcely a quarter of an inch.

** *Legumes ſpirally convoluted.*

9. M. *proſtrata*. Slender Proſtrate Medick. Linn. Suppl. 340. Jacq. Hort. Vind. v. 1. 39. t. 89. Ehrh. Pl. Select. 49.—Flower-ſtalks racemoſe. Stem procumbent, thread-ſhaped, much branched. Legumes thrice convoluted, thick-edged, without prickles. Stipulas briſtle-ſhaped, undivided. Leaflets nearly linear.—Native of expoſed ſtony ground in Hungary and Italy. It is known by its long, ſlender, much branched *ſtems*, ſimple *ſtipulas*, very narrow *leaflets* toothed merely at the point, and ſmall orbicular *legumes*, conſiſting of two or three complete ſpiral turns, thick at the edge, deſtitute of teeth or prickles, and very ſlightly downy. The *flowers* are yellow, and, like the reſt of the plant, vary much in ſize according to the richneſs of the ſoil. The *root* is perennial, in which it differs from moſt of this ſecond ſection, and agrees with *ſativa* and *falcata*, which alſo it approaches in habit; but the whole nature of the *legume* has induced us to remove it hither.

10. M. *orbicularis*. Flat Snail Medick. (M. polymorpha orbicularis; Linn. Sp. Pl. 1097. Cochleata fructu orbiculato; Riv. Tetr. Irr. t. 88. f. 1.—Moriſ. ſect. 2. t. 15. f. 1, 2.)—Stalks one or two-flowered. Stipulas in many capillary ſegments. Legumes orbicular, depreſſed, with radiating veins, and no teeth.—Native of fields in the ſouth of Europe. Annual. *Stems* long and proſtrate, angular, ſlender, ſmooth. *Leaflets* obovate, ſharply toothed, ſmooth. *Stipulas* deeply pinnatifid. *Flowers* very ſmall, yellow, on ſlender axillary ſtalks. *Legumes* ſmooth, orbicular, depreſſed, above three quarters of an inch in diameter, ſingularly neat, marked with elevated radiating veins, and of a glaucous or purpliſh hue. This is one of thoſe hardy annuals, cultivated in curious gardens, by the name of *Snails*, the *Scorpiurus vermiculata* generally accompanying them under the appellation of *Caterpillars*, which its legumes ſtrikingly reſemble.

11. M. *rugoſa*. Rugged Snail Medick. Lamarck Dict. v. 3. 632. (M. elegans; Willd. Sp. Pl. v. 3. 1408. Cochleata fructu rugoſo; Riv. t. 88. f. 5. Moriſ. ſect. 2. t. 15. f. 4.)—Stalks about two-flowered. Stipulas toothed. Legumes orbicular, depreſſed, with radiating elevated veins, a thick edge, and no teeth.—Native of Sicily. We have ſeen no ſpecimen of this, but it ſhould ſeem to be only a ſlight variety of the laſt, except the *ſtipulas* may ſerve to diſtinguiſh them.

12. M. *ſcutellata*. Common Snail Medick. Lamarck Dict. v. 3. 633. (M. polymorpha ſcutellata; Linn. Sp. Pl. 1097. Cochleata fructu ſcutellato; Riv. t. 88. f. 2. t. 89. f. 1. Moriſ. ſect. 2. t. 15. f. 3.)—Stalks about two-flowered. Stipulas half arrow-ſhaped, toothed. Legumes globular, ſpiral, convex beneath, the convolutions erect, rugoſe, without teeth.—Frequent in corn fields in the ſouth of Europe, and the moſt common kind in our gardens. It differs ſpecifically from *M. orbicularis* in having broad *ſtipulas*, often ſtrongly toothed, but not divided into deep capillary ſegments. The *legume* moreover differs widely in being globoſe, in conſequence of the edges of its convolutions being turned upwards, or erect, and they may be pulled aſunder like a rolled ſlip of paper. The whole *herb* is more or leſs downy.

13. M. *Helix*. Small Snail Medick. Willd. Sp. Pl. v. 3. 1409. (M. lævis; Desfont. Atlant. v. 2. 213.)—Stalks many-flowered. Stipulas ſtrongly toothed. Legumes orbicular, flat, of two ſpiral diſtant turns, concentrically veined, without ſpines.—We have from the ſouth of France what anſwers well to Willdenow's deſcription, nor have we the leaſt doubt concerning the ſynonym of Desfontaines. The *leaflets* are obovate, rounded, with ſhallow teeth. *Stipulas* much like the laſt. *Flowers* four or five on a ſtalk. *Legumes* hairy, a quarter of an inch only in diameter, marked with concentric or ſpiral interbranching veins, in which reſpect it differs eſſentially from the three laſt, as well as from *M. obſcura*, to which Willdenow compares it; a character which ſeems to have been noted by Desfontaines.

14. M. *tornata*. Screw-turned Snail Medick. Willd. Sp. Pl. v. 3. 1409. (M. polymorpha tornata; Linn. Sp. Pl. 1098. Herb. Linn. Cochleata fructu tornatili; Riv. t. 88. f. 4.)—Stalks many-flowered. Stipulas deeply toothed. Legumes cylindrical, flat at each end, of many, rather diſtant, horizontal, ſmooth, thin-edged turns, without ſpines.—Native of the ſouth of Europe. The only ſpecimen we have ever ſeen is that of Linnæus, who by quoting a figure of Moriſon which belongs to the following, has led ſome botaniſts aſtray. Lachenal took one for the other, and Desfontaines has confounded the two. Whether they are more than varieties may perhaps be doubted, as is the caſe with ſome others of the genus; but they appear diſtinct. The real *tornata*, figured by Rivinus in that curious tab. 88, which is wanting in many copies of his book, has a ſmall *legume*, that appears to be neatly turned, exactly like a ſcrew, the convolutions being flat and horizontal, rather diſtant, with a thin ſmooth even edge, parallel and near to which runs a principal concentric ſpiral rib or nerve, connected by reticulated veins with the centre, and ſending off a minute branch, here and there, to the margin. The *ſtipulas* have generally a few deep taper-pointed teeth. The *flowers* are rather large, four or five on a ſtalk. *Leaves* ſharply toothed.

15. M. *turbinata*. Cloſe-turned Snail Medick. Willd. Sp. Pl. v. 3. 1409. (M. polymorpha turbinata; Linn. Sp. Pl. 1098. Cochleata fructu turbinato; Riv. t. 88. f. 3. Moriſ. ſect. 2. t. 15. f. 5.)—Stalks many-flowered. Stipulas deeply toothed. Legumes ovate, convex at each end, of many, cloſely imbricated, thick-edged, even turns, without ſpines.—Native of Italy and the ſouth of France. Like the laſt in habit and general characters, but the *legume* is twice as large, ovate, its convolutions crowded cloſe together, as if imbricated upwards, preſenting a thick edge outwards, along which runs the ſame ſpiral concentric nerve, which in the *M. tornata* is ſituated within the margin. Willdenow, who appears to have paid great attention to theſe plants, has removed a ſynonym of J. Bauhin, cited here by Linnæus, to the following, to which it evidently belongs. Linnæus indeed confounded the two, and Lachenal, led perhaps by Bauhin's ſynonym, took the *tuberculata* for *turbinata*. We cannot however follow Willdenow in here quoting Bauhin's *Medica ſcutellata*, v. 2. 384, which appears to us the real *Medicago ſcutellata*, our n. 12.

16. M. *tuberculata*. Warty Snail Medick. Willd. Sp. Pl. v. 3. 1410 (M. polymorpha tuberculata; Retz. Obſ. faſc. 2. 23. Medica magna turbinata; Bauh. Hiſt. v. 2. 385. Cochleata fructu verrucoſo; Riv. t. 88. f. 6. Moriſ. ſect. 2. t. 15. f. 6.)—Stalks about two-flowered. Stipulas

deeply toothed. Legumes nearly cylindrical, flattiſh at each end, of many horizontal crowded turns, beſet with a double row of corrugated warts.—Native of the ſouth of Europe. This differs from the laſt in having only one or two *flowers* on each ſtalk, which ſeems to be conſtant, and in the rather ſmaller, more cylindrical, *legumes*, the outer edge of whoſe convolutions is cloſely beſet with a double row of bluntiſh warts, imbedded in a ſort of granulated ſkin. In an early ſtate theſe warts are rather bluntiſh ſpines.

17. M. *aculeata*. Prickly Snail Medick. Willd. Sp. Pl. v. 3. 1410. (Cochleata fructu turbinato et echinato; Riv. t. 88. f. 7?)—"Stalks about two-flowered. Stipulas toothed. Leaflets ſomewhat rhomboid. Legumes cylindrical, flattiſh at each end, of many turns, beſet with thick ſhort marginal ſpines."—Native country unknown. Willdenow deſcribes it as very like the preceding, but diſtinct, the *legumes* being beſet with unequal, thick, and very ſhort, prickles. Not having ſeen this plant, we quote with doubt the figure of Rivinus, which anſwers pretty well to the deſcription. Willdenow ſeems not to have known this tab. 88.

18. M. *Murex*. Thorny Snail Medick. Willd. Sp. Pl. v. 3. 1410. (Cochleata fructu duriùs echinato; Riv. t. 88. f. 10?)—"Stalks about two-flowered. Stipulas deeply toothed, or fringed. Leaflets obovate. Legumes cylindrical, rather convex at each end, of many turns, beſet with ſtraight thorns."—Native country unknown, but Willdenow had the plant alive, as well as the laſt. He deſcribes it with cylindrical turbinate legumes, beſet with thick awl-ſhaped thorns, and differing from the laſt in having obovate obtuſe *leaflets*, the lower ones *obcordate*; linear-awl-ſhaped *ſtipulas* with fringe-like teeth, not lanceolate ones toothed only at the baſe; and longer thorns upon the fruit. We quote Rivinus with doubt, for the ſame reaſon as before, though we have ſcarcely any heſitation about either of his figures.

19. M. *intertexta*. Entangled Prickly Medick. Willd. Sp. Pl. v. 3. 1411. (M. polymorpha intertexta; Linn. Sp. Pl. 1098. Cochleata fructu echinato maximo; Riv. t. 88. f. 9; and t. 90. Moriſ. ſect. 2. t. 15. f. 7, 8, 9.)—Stalks about two-flowered. Stipulas deeply toothed. Legumes oval, of many turns, beſet with two rows of long, awl-ſhaped, cloſe-preſſed thorns, alternately divaricated.—Native of the ſouth of Europe. Diſtinguiſhed from all the foregoing by its nearly globular *legumes*, about the ſize of a gooſeberry, compoſed of ſix or ſeven cloſe convolutions, concealed by the long ſharp thorns, which cover the whole fruit, and which being alternately depreſſed, in two oppoſite directions, appear matted together. In all our ſpecimens theſe thorns are ſmooth; Willdenow deſcribes them as pubeſcent. The *flowers* are from two to four on each ſtalk. *Stipulas* fringed with long ſharp teeth. *Leaflets* obovate, or ſomewhat rhomboid, narrow, ſharply toothed. This ſpecies is often met with in gardens.

20. M. *ciliaris*. Hairy Prickly Medick. Willd. Sp. Pl. 1411. (M. polymorpha ciliaris; Linn. Sp. Pl. 1099. Cochleata fructu echinato rotundo; Riv. t. 88. f. 8.)—Stalks about two-flowered. Stipulas deeply toothed. Legumes oval, of many turns, beſet with two rows of ſhort awl-ſhaped hairy thorns, ſpreading in two directions.—"Native of the ſouth of France." *Willdenow*. Sent from Sicily by Mr. Bivona Bernardi. In habit and ſize it altogether agrees with the laſt; but the *legumes* are covered with much ſhorter hairy thorns, ranged in two rows along the edge of their convolutions, ſpreading in oppoſite directions, but not depreſſed.

21. M. *carſtienſis*. Creeping-rooted Medick. Jacq. Coll. v. 1. 86. Ic. Rar. t. 156. Curt. Mag. t. 909.—Stalks many-flowered. Leaflets ovate. Stem erect. Root creeping. Legumes depreſſed, of many turns, fringed with two rows of ſtraight ſpreading briſtles.—Native of the alps of Carinthia and Carniola, ſaid to have been introduced into our gardens in 1790. It is remarkable for its perennial creeping *root*, and upright, ſquare, almoſt ſhrubby *ſtem*. The *leaflets* moreover are ovate, not obovate. *Flowers* ſix or eight on each ſtalk, of a bright yellow, their ſtandard ſtreaked with red. *Legumes* black, not half the ſize of the two preceding, of fewer turns, and depreſſed, the edges fringed with two divaricated rows of long briſtles.

22. M. *maculata*. Spotted Medick. Sibth. Oxon. 232. Willd. Sp. Pl. v. 3. 1412. (M. polymorpha arabica; Linn. Sp. Pl. 1098. Fl. Brit. 797. Engl. Bot. t. 1616. Curt. Lond. faſc. 3. t. 47. Mart. Ruſt. t. 76. Cochleata fructu longiùs echinato; Riv. t. 88. f. 12. Moriſ. ſect. 2. t. 15. f. 12?)—Stalks two or three-flowered. Leaflets inverſely heart-ſhaped, ſpotted. Stipulas dilated, ſharply toothed. Legumes depreſſed, their convolutions fringed with numerous, long, ſpreading briſtles.—Native of the more temperate countries of Europe. Found in the ſouth of England, on a gravelly ſoil, flowering in May and June. The *ſtems* are proſtrate. *Root* annual. *Leaflets* diſtinguiſhed by their obcordate ſhape, and a black or purpliſh ſpot in the middle of their diſk, which however diſappears from the later or upper leaves. *Stipulas* half-heart-ſhaped, with ſharp broad teeth. *Flowers* two or three on a ſtalk, yellow, as indeed are all of this ſection of the genus. *Legumes* ſmall, depreſſed, of ſeveral turns, marked with concentric nearly parallel ribs, and fringed with long, ſpreading, ſlender, and rather weak ſpines, or briſtles, the whole pale brown or whitiſh when ripe.—The three varieties enumerated in the Flora Britannica are now eſteemed diſtinct ſpecies, at leaſt the β and γ. The δ we know only by the report of Dillenius.

23. M. *truncatula*. Abrupt Medick. Gærtn. v. 2. 350. t. 155. Moriſ. ſect. 2. t. 15. f. 17. (M. tentaculata, by miſtake; Willd. Sp. Pl. v. 3. 1413.)—Stalks about two-flowered. Stipulas toothed. Legumes cylindrical, ſpiral, flat at each end, beſet with two ranks of ſmooth, lanceolate, cloſe-preſſed prickles.—Native of the ſouth of Europe. Willdenow had it living, and deſcribes the *leaflets* as obovate; *ſtipulas* awl-ſhaped and toothed; *ſtalks* two-flowered; *legumes* as above. We ſhould think it a variety of the following, but not having ſeen it, we dare not decide.

24. M. *coronata*. Coronet Medick. Lamarck Dict. v. 3. 634. Willd. Sp. Pl. v. 3. 1413. (M. polymorpha coronata; Linn. Sp. Pl. 1098. Moriſ. ſect. 2. t. 15. f. 16. Medica coronata cherleri parva; Bauh. Hiſt. v. 2. 386.)—Stalks many-flowered. Leaflets inverſely heart-ſhaped. Legumes cylindrical, hairy, flat at each end, of about two turns, bordered with an aſcending and deſcending row of ſtrong, cloſe-preſſed, awl-ſhaped ſpines.—Native of the ſouth of France. We have it from Gerard. This is a very ſmall ſpecies, about three or four inches high, hardly branched; with lanceolate ribbed *ſtipulas*, ſcarcely toothed except at the baſe; ſeveral ſmall *flowers* on each ſtalk; and curious little *legumes*, well repreſented in the figures quoted. The *leaflets* are hairy, obcordate, ſtrongly toothed.

25. M. *apiculata*. Wheel-toothed Medick. Willd. Sp. Pl. v. 3. 1414. (M. coronata; Gærtn. v. 2. 349. t. 155. Moriſ. ſect. 2. t. 15. f. 14?)—Stalks many-flowered. Stipulas deeply toothed. Leaflets obovate. Legumes depreſſed, of three turns, ſtrongly reticulated, with two rows of minute, diverging, marginal teeth.—Native of the

ſouth of Europe. We have it from Profeſſor Lachenal under the name of *M. coronata*, but it is very diſtinct from the laſt, being a much larger plant, with deeply fringed *ſtipulas*, obovate ſmooth *leaflets*, and flattened ſtrongly reticulated *legumes*, whoſe teeth are ſcarcely more prominent than their veins.

26. M. *denticulata*. Sickle-toothed Medick. Willd. Sp. Pl. v. 3. 1414.—“ Stalks many-flowered. Stipulas deeply toothed. Leaflets obovate. Legumes depreſſed, of two turns, reticulated, with two rows of diverging marginal ſpines.”—Native of the ſouth of Europe. Very near the laſt, differing only in its longer briſtle-like marginal ſpines. *Willd.* We have from the ſea-coaſt near Cley, in Norfolk, what ſeems to anſwer to theſe characters, except that in ours the *leaflets* are inverſely heart-ſhaped. We know not whether this has been noticed as a Britiſh plant, or whether it be the *M. polymorpha* δ of Fl. Brit. adopted there from Dillenius.

27. M. *muricata*. Flat-toothed Medick. Willd. Sp. Pl. v. 3. 1414. (M. polymorpha muricata; Linn. Sp. Pl. 1098. Fl. Brit. 798 γ. Moriſ. ſect. 2. t. 15. f. 11. Trifolium cochleatum, modiolis ſpinoſis; Pluk. Phyt. t. 113. f. 6.)—Stalks many-flowered. Stipulas deeply toothed. Leaflets obovate, ſomewhat rhomboid. Legumes depreſſed, of five turns, with ſhort, depreſſed, radiating teeth.—Native of dry ground in France and Italy. Said by Ray to have been found on the ſea bank at Orford, Suffolk. The ſtructure of its *legume* is abundantly different from the foregoing five ſpecies, the teeth being horizontal, and in ſingle rows, nor is the ſurface veiny or reticulated. The *leaflets* are hairy. *Flowers* from two to four on each ſtalk.

28. M. *Gerardi*. Gerardian Medick. Willd. Sp. Pl. v. 3. 1415. Waldſt. and Kitaib. Hungar. Moriſ. ſect. 2. t. 15. f. 18.—“ Stalks about two-flowered. Stipulas with ſetaceous teeth. Leaflets obovate. Legumes hairy, depreſſed, of five turns, with awl-ſhaped, projecting, hooked ſpines.”—Native of Spain, Narbonne, and Hungary.—We know it only from Willdenow, who had dried ſpecimens before him.

29. M. *recta*. Upright Dwarf Medick. Willd. Sp. Pl. v. 3. 1415. (M. polymorpha recta; Desfont. Atlant. v. 2. 212.)—Stalks ſingle-flowered. Stipulas entire. Leaflets wedge-ſhaped, downy. Stem erect. Legumes ſpiral, with hooked teeth.—Native of Barbary. About four inches high, annual, downy and ſilky. *Leaflets* ſmall, with minute teeth. *Stipulas* ovate, acute. *Flowers* axillary, on very ſhort ſtalks. *Legume* orbicular.

30. M. *marina*. Downy Sea Medick. Linn. Sp. Pl. 1097. Willd. Sp. Pl. v. 3. 1415. Cavan. Ic. v. 2. 26. t. 130. (Cochleata incana; Riv. t. 91. f. 2. t. 88. f. 15.)—Stalks many-flowered. Herb procumbent, very downy. Leaflets obovate, crenate or entire. Stipulas undivided. Legumes very hairy, with ſtrong radiating teeth.—Native of the ſandy ſea-coaſt in the north of Africa, and ſouth of Europe. *Root* perennial. *Stems* proſtrate, much branched, denſely clothed with ſoft hoary hairs, as is every part of the herbage. The *leaflets* are wedge-ſhaped, broad, but ſcarcely obovate, either quite entire, or ſlightly crenate at the end only. *Flowers* numerous, of a full yellow, in denſe round heads. *Legumes* with ſeveral convolutions, edged with prominent, awl-ſhaped, ſtrong hairy teeth.—This can be confounded with no other, and even Linnæus keeps it ſeparate from the varieties of his ſuppoſed ſpecies *polymorpha*.

31. M. *Terebellum*. Prickly Screw Medick. Willd. Sp. Pl. v. 3. 1416. (M. aculeata; Gærtn. v. 2. 349. t. 155. Moriſ. ſect. 2. t. 15. f. 20, 21. Cochleata fructu rarius echinato; Riv. t. 88. f. 11?) Stalks with ſeveral flowers. Stipulas deeply toothed. Leaflets obovate, obtuſe. Legumes cylindrical, flat at each end, of five turns, with two rows of diverging, very ſhort, awl-ſhaped ſpines.—Native of the ſouth of Europe. In habit this is among the more luxuriant procumbent ſpecies. The *leaflets* are broad, ſtrongly toothed; the lower ones moſt abrupt. Spines of the *legumes*, thick at the baſe, often conical, reflexed in oppoſite directions. The ripe *legume* is the ſize of a large pea. Hence we rather cite Rivinus's fig. 7 for our 17th ſpecies, *M. aculeata*, than, with Gærtner, for the preſent, that figure being nearly thrice as large.

32. M. *tribuloides*. Caltrop Medick. Lamarck Dict. v. 3. 635. Willd. Sp. Pl. v. 3. 1416.—“ Stalks two-flowered. Stipulas toothed. Leaflets obovate. Legumes cylindrical, flat at each end, of five turns, with two rows of diverging conical ſpines.”—Native of the ſouth of Europe. Willdenow ſays the *legumes* are very like thoſe of his *tentaculata*, our *truncatula*, n. 23, but larger, with longer ſpines, which are merely reflexed, not cloſe-preſſed. We have ſeen no ſpecimen that anſwers to this. Willdenow had it alive.

33. M. *uncinata*. Larger Bur Medick. Willd. Sp. Pl. v. 3. 1417.—Stalks many-flowered. Stipulas toothed. Leaflets obovate. Legumes cylindrical, ſhort, flat at each end, of ſeveral diſtant turns, with two ſpreading rows of long, awl-ſhaped, hooked ſpines.—Willdenow, who had this alſo alive, ſuppoſes it a native of the ſouth of Europe. We find what anſwers very correctly to his deſcription in the Linnæan herbarium, marked *coronata*, which is moſt aſſuredly an error. Linnæus having referred all this tribe to one ſpecies, was not ſufficiently attentive to their differences, even as varieties. The *legumes* of the preſent are nearly globoſe, looſely ſpiral, and diſtinguiſhed by their hooked prickles from nearly all the foregoing, in which mark they agree with two hereafter deſcribed, *minima* and *nigra*.

34. M. *rigidula*. Briſtly Medick. Willd. Sp. Pl. v. 3. 1417. (M. polymorpha rigidula; Linn. Sp. Pl. 1098. Medica fructu cochleato ſpinoſo; Ger. em. 1199. Cochleata fructu echinato rotundo minore; Riv. t. 88. f. 13?) Stalks with ſeveral flowers. Stipulas toothed. Leaflets obovate. Legumes cylindrical, of many turns, with conical ſtraight ſpreading ſpines.—Native of fields in France, Italy, and Barbary.—This differs from the laſt in having the convolutions of the *legume* cloſer, the ſpines ſtraight, all horizontally ſpreading; the *flowers* twice as large. It is difficult to adjuſt the ſynonyms of all theſe ſpecies. The figure of Gerard, which is alſo found in Lobel's Icones, v. 2. 37. f. 1, may have been done for either, but it beſt agrees with this. We are much in doubt concerning Rivinus's f. 13; but we cannot refer his f. 12 to the preſent ſpecies, becauſe that figure ſo admirably and preciſely repreſents the concentric veins of *M. maculata*, n. 22, which being a common plant, could hardly have been unknown to Rivinus.

35. M. *minima*. Little Bur Medick. Willd. Sp. Pl. v. 3. 1418. (*M.* polymorpha minima; Linn. Sp. Pl. 1099. Fl. Brit. 798 β. Fl. Dan. t. 211. Medica echinata minima; Bauh. Hiſt. v. 2. 386. Cochleata fructu echinato minimo; Riv. t. 88. f. 14.)—Stalks many-flowered. Stipulas half-ovate, undivided. Leaflets obovate, hairy. Legumes orbicular, hairy, of three or four turns, with two divaricated rows of hooked ſpines.—Native of Germany, Hungary, Switzerland, France, and England, chiefly on a calcareous ſoil. Mr. Woodward found it at Narburgh, Norfolk. A ſmall proſtrate downy ſpecies; its *leaflets* ſtrongly toothed at the very ſummit only. *Flowers* four or five on each ſtalk, with a hairy calyx. *Legumes* ſmall, orbi-

cular, diſtinguiſhed by their numerous rigid, ſpreading, but ſtrongly hooked, prickles.

β. M. polymorpha hirſuta. Linn. Sp. Pl. 1099. (Medica echinata hirſuta; Bauh. Hiſt. v. 2. 386.) This is ſaid by Willdenow to be a variety, four times as large as the common *minima*, and leſs hairy. We know it not, but we have from Switzerland, intermixed with the common ſort, a few ſpecimens diſtinguiſhed by the long ſpines of their fruit, hooked at the tip only. Theſe require inveſtigation in a living ſtate. They may be Bauhin's plant.

36. M. *nigra*. Black Prickly Medick. Willd. Sp. Pl. v. 3. 1418. (M. polymorpha nigra; Linn. Syſt. Veg. ed. 14. 694. M. hiſpida; Gærtn. v. 2. 349. t. 155. Moriſ. ſect. 2. t. 15. f. 19.)—Stalks about two-flowered. Stipulas deeply toothed. Leaflets obovate. Legumes cylindrical, rather depreſſed, of ſeveral cloſe turns, with long, ſpreading, black, hook-tipped ſpines.—Native of the ſouth of France. We have no ſpecimen. It ſeems to be diſtinguiſhed by the long black prickles of the fruit, whoſe points are ſaid to be hooked, though no ſuch character is ſhewn in the figures quoted. Gærtner ſurely miſapplies Rivinus's f. 12, in which, as we have obſerved under n. 34, the veins are concentric, not reticulated as Gærtner repreſents them in his *hiſpida*.

37. M. *laciniata*. Jagged-leaved Medick. Willd. Sp. Pl. v. 3. 1419. (M. polymorpha laciniata; Linn. Sp. Pl. 1099. Cochleata ſyriaca; Riv. Tetr. Irr. t. 91. f. 1.)—Stalks about two-flowered. Stipulas fringed with capillary teeth. Leaflets linear-wedge-ſhaped, abrupt, cut. Legumes cylindrical, of many turns, with two rows of alternately divaricated, ſtrong, hook-tipped ſpines.—Native of the ſouth of Europe and north of Africa. This ſpecies is readily known by its narrow jagged *leaflets*. The *ſtipulas* are cut into deep capillary ſegments. *Flowers* one or two, on long ſlender ſtalks. *Legumes* cylindrical, ſomewhat elliptical, the ſize of a large pea, compoſed of about five cloſe turns, armed with a double divaricated row of peculiarly ſtrong, awl-ſhaped, ſmooth, poliſhed ſpines, very minutely hooked at their tips only.

It is proper to obſerve that all the ſpecies of this ſecond ſection have yellow *flowers* on axillary ſtalks; the *ſtem*, where not deſcribed otherwiſe, proſtrate, branched from the *root*, which is generally annual. The *leaflets* are always more or leſs toothed. In quoting Moriſon throughout this article, we have not thought it worth while to copy his long names or definitions, but merely to cite his figures. Many of theſe remain ſtill unappropriated, for want of better deſcriptions. S.

MEDICAGO, in *Gardening*, furniſhes plants of the ſhrubby evergreen and herbaceous annual kinds, of which the ſpecies moſtly cultivated are, the tree medick, or moon trefoil (M. arborea); and the variable medick, or ſnail and hedge-hog trefoil (M. polymorpha.)

The ſecond ſort has numerous varieties and ſubvarieties, but the principal ones are, the common ſnail medicago, with large ſmooth pods, ſhaped and twiſted like a ſnail; the hedge-hog medicago, with large prickly ſnail-ſhaped pods, armed with ſpines pointing every way, like a hedge-hog; with turbinated pods; with globular pods; with orbicular pods; with long crooked pods; with double pods; with twiſted pods; and with jagged leaves.

Method of Culture.—The firſt ſort may be raiſed from ſeeds or cuttings.

In the former mode the ſeeds ſhould be ſown in the early ſpring, on a warm border, or in pots of light mould, and plunged in a moderate hot-bed, till the plants have attained a little growth; when they ſhould be gradually hardened to the full air. And in both methods the plants ſhould be kept clean, and have protection in the following winter from froſt, and in the ſpring they ſhould be planted out, ſome into pots to have the management of green-houſe plants, and others into borders and nurſery rows, in dry warm ſituations, the former to remain, and the latter to be occaſionally tranſplanted.

But when they are increaſed by cuttings, theſe ſhould be planted on a bed of light rich earth, or in pots of the ſame ſort of mould, and plunged in a moderate hot-bed, due ſhade and water being given; and when they have formed good roots, in the autumn they may be removed into other pots, or the ſituations in which they are to remain, ſhading and watering them till they are well rooted, when they ſhould be trained up to ſticks, to have ſtraight ſtems and regular heads, their irregular ſhoots being annually pruned to keep them in order. Theſe plants are found to grow ſtronger and flower better when kept in warm ſituations in the open air, than when managed as green-houſe plants. They ſhould, however, be ſheltered in very ſevere winters.

And the ſecond ſort and varieties may alſo be raiſed from ſeed, which ſhould be ſown in the early ſpring months in the places where the plants are to remain, in patches of ſeveral ſeeds, after thinning the plants to two or three of the beſt, when they require no further culture. It is the double ſorts that are chiefly cultivated in the garden.

They both afford variety in the borders and other parts, and the former in the green-houſe among other ſimilar plants.

MEDICAL ELECTRICITY. It is natural to imagine, that a power of ſuch efficacy as that of electricity, would be applied to medical purpoſes; eſpecially ſince it has been found invariably to increaſe the inſenſible perſpiration, to quicken the circulation of the blood, and to promote the glandular ſecretion. Accordingly, many inſtances occur in the later period of the hiſtory of this ſcience, in which it has been tried, on various occaſions, with conſiderable advantage and ſucceſs. Among the variety of caſes to which it has been applied, there are none in which it ſeems to have been prejudicial, except thoſe of pregnancy and the venereal diſeaſe. In moſt diſorders, in which it has been uſed with perſeverance, it has given, at leaſt, a temporary and partial relief, and in many effected a total cure. The firſt inſtance that occurs of its ſalutary effect, was that of a woman, who was cured in a quarter of an hour of a contracted finger, by M. Kratzenſtein, at Halle, ſo early as the year 1744. It was afterwards applied in a variety of paralytic caſes, by M. Jallabert of Geneva, in 1747; M. Sauvages of the academy in Montpellier, in the courſe of whoſe experiments it appeared, that electrification increaſes the circulation of the blood about one-ſixth; Mr. Patrick Brydone in Scotland, in 1757; the abbé Nollet and others: in ſeveral of the caſes concerned preſent relief was obtained; but the beneficial effect does not appear to have been permanent. One inſtance occurs, related by Dr. Hart of Shrewſbury, and recorded in the Phil. Tranſ. vol. xlviii. part ii. p. 785, in which electrification was injurious, and brought on univerſal palſy on a young perſon, whoſe right arm was paralytic; and though this palſy was removed by a courſe of medicine, the diſeaſed arm remained incurable. It alſo appears from a number of experiments made by Dr. Franklin in paralytic caſes, that no permanent advantage was derived from electricity in this diſorder; and Mr. Weſley, who was long engaged in a courſe of medical electricity for the benefit of perſons in his connection, obſerves, that though many paralytics have been helped by it, no palſy of a year's ſtanding has been thoroughly cured by it. However, a remarkable inſtance more lately occurs, in which an hemiplegia was cured by this means, under the direction of a phyſician at Greenwich. The patient was in ſuch a ſtate, that boiling water might be applied from her hand to her ſhoulder, and from her ſhoulder to her foot, on the diſeaſed ſide, without being felt. This perſon was electrified, by drawing ſparks from the palſied ſide, and giving ſhocks, beginning with ſtronger ſhocks, till ſhe began to feel them, and continuing moderate ones, for 18 days; and in that time, during 31½ hours, the number of ſhocks was 141; and this perſeverance was attended with ſuch ſucceſs, that her feeling was quite reſtored, and that ſhe became capable of walking, and of writing with the hand, the uſe of which ſhe had loſt. Dr. de Haen obſerves, that with reſpect to partial palſies, electrification never did the leaſt harm; and that one or two perſons, who had received no benefit from it in ſix entire months, were yet much relieved by perſevering in the uſe of it; and that ſome perſons diſcontinuing it, after having received ſome benefit from it, relapſed again; but afterwards, by recurring to the uſe of electricity, recovered, though more ſlowly than before.

Dr. Hart, in 1756, mentions a cure performed on a woman, whoſe hand and wriſt had been for ſome time rendered uſeleſs, by a violent contraction of the muſcles; but the moſt remarkable caſe of this kind is that related by Dr. Watſon, Phil. Tranſ. vol. liii. p. 10.

The patient, about ſeven years of age, was ſeized with an univerſal rigidity of her muſcles, ſo that her whole body felt more like that of a dead corpſe than of a living perſon; Dr. Watſon electrified her, at convenient intervals, from the middle of November 1762, to the end of January 1763, when every muſcle of the body was perfectly flexible, and ſubſervient to her will, ſo that ſhe could ſtand, walk, and run like other children of her age. Mr. Miles Partington alſo communicated to the Royal Society a ſurpriſing inſtance of the cure of a very great degree of contraction and rigidity in the ſterno-maſtoideus muſcle by means of electrical ſparks and ſhocks. (Phil. Tranſ. vol. lxviii. part i. p. 97, &c.) Mr. Wilſon mentions a ſingle inſtance, in which he had cured deafneſs of ſeventeen years continuance; but he acknowledges that he tried ſimilar experiments on ſix other deaf perſons without ſucceſs.

Mr. Lovet and Mr. Weſley have extended the medical application of electricity to a greater variety of caſes than any others. Mr. Lovet obſerves, in his "Eſſay," that electricity is almoſt a ſpecific in all caſes of violent pains, of however long continuance, in any part of the body; as in obſtinate head-aches, the tooth-ache, the ſciatica, the cramp, and diſorders reſembling the gout; and that it has ſeldom failed to cure rigidities, or a waſting of the muſcles, and hyſterical diſorders; he adds, that it cures inflammations, and a fiſtula lachrymalis; that it has ſtopped a mortification, and diſperſed extravaſated blood; that it has been of excellent uſe in bringing to a ſuppuration, or in diſperſing without ſuppuration, obſtinate ſwellings of various kinds, even thoſe that were ſcrophulous; that it has cured the falling-ſickneſs, and ſeveral kinds of fits, and a diſorder that ſeems to have been a gutta ſerena. He adviſes to begin, in general, with ſimple electrification, eſpecially in hyſterical caſes; then to proceed to take ſparks, and laſtly, to give moderate ſhocks. Mr. Weſley obſerves, that he has ſcarcely known an inſtance, in which ſhocks all over the body have failed to cure a tertian or quartan ague; he mentions caſes of blindneſs cured and relieved by it, and hearing given by it to a perſon who was born deaf; and he further ſays, that it has cured bruiſes, running ſores, the dropſy, and a palſy in the tongue; and that it has brought away gravel from the kidnies. In hyſterical caſes, he recommends the patient's being ſimply electrified, by ſitting on cakes of reſin, at leaſt for half an hour morning and evening; and then taking ſmall ſparks, and afterwards giving ſhocks, more or leſs ſtrong as the diſorder requires. Dr. Antonius de Haen, in his "Ratio Medendi," cited by Dr. Prieſtley (Hiſt. Elect. vol. i. p. 485, 8vo.), informs us, that a paralyſis and trembling of the limbs, from whatever cauſe it aroſe, never failed to be relieved by electricity; and that it alſo certainly cures St. Vitus's dance; that it has been of ſome uſe in caſes of deafneſs; but failed in its application to a gutta ſerena, and ſtrumous neck. Mr. Hey, ſurgeon of Leeds, mentions ſeveral caſes in which the power of electricity has been ſucceſsfully applied to an "amauroſis." The machine was uſed twice a day; the patient was placed on a ſtool with glaſs legs, and had ſparks drawn from the eyes and parts ſurrounding the orbit, eſpecially where the ſuperciliary and infra-orbitary branches of the fifth pair of nerves ſpread themſelves. After this operation had been continued for half an hour, the patient was made to receive for an equal time ſlight ſhocks through the affected parts, which were ſometimes directed acroſs the head, from one of the temples to the other, but chiefly from the ſuperciliary and infra-orbitary foramina to the occiput. Med. Obſ. & Enq. vol. v. p. 1, &c.

In rheumatic caſes, Mr. Ferguſon obſerves, that he has generally found electricity ſucceſsful, by continuing to take ſparks from the places where the pain lies, till the ſkin has been red and pimpled, and the patient has felt a glowing warmth where the ſparks were drawn off; and the ſame method has alſo proved effectual in old ſprains. The uſe of electricity has alſo been recommended in caſes of ſudden death. See Drowning.

In all caſes where ſhocks are given, gentle ones ſhould be firſt uſed: and if the diſorder continues, they may be gradually increaſed; and they ſhould be confined to the affected part. The efficacy of electricity in the tooth-ache is ſo great, that it ſeldom or ever fails to give immediate relief, unleſs the tooth be very much decayed. The following inſtrument will ſerve for this purpoſe: it conſiſts of two wires, A B and B E, fixed in the piece of bored wood H, and bent at C D and F G, and at A and B, as in *fig.* 1, *Plate* XV., *Electricity*. If the affected tooth be brought within the two wires at E, and the ring A or B be connected by a chain with the outſide of a charged jar, and the other ring be connected by a chain with the knob of the jar, the ſhock will paſs through the wires, and conſequently through the tooth. The modes of applying electricity to the human frame, formerly uſed, were by the ſhock and ſpark, and ſometimes, though rarely, by ſingle electrification. Theſe modes are now varied and multiplied according to the circumſtances of the patient, and the nature of his diſorder. Under the conduct of Mr. Birch, an eminent ſurgeon, who particularly directed his attention to the improvement and application of medical electricity, and of other gentlemen of the profeſſion who have purſued the ſame courſe, the caſes in which electricity may be employed with ſucceſs have been aſcertained, and its advantages evinced. For an account of this medical apparatus, and of various modes of applying it in different diſorders, ſee Adams's Eſſay on Electricity, chap. 15, 8vo. 1785.

Dr. Cullen ſays, that electricity, when properly applied, is one of the moſt powerful ſtimulants that can be uſed to act upon the nervous ſyſtem of animals. Mr. Birch conſiders electricity, applied under the form of a fluid, as a ſedative, under that of a ſpark or friction, as a ſtimulant, and by way of a ſhock, as a deobſtruent, in its action.

Under this head of medical electricity it may not be improper to mention thoſe medicated tubes, the imaginary virtues of which were firſt diſcovered by Signior Pivati, at Venice, and which were much recommended in the years 1747 and 1748, both in Italy, and by Mr. Winkler at Leipſic. Theſe gentlemen imagined, that odorous ſubſtances, confined in excited glaſs veſſels, would tranſpire through the pores of the glaſs, and communicate their medicinal virtue to the atmoſphere of a conductor, and to all perſons in contact with it; and that theſe ſubſtances would yield their virtues by being held in the hands of perſons electrified; and they pretended that many cures were wrought in this way by the operation of medicines, without being taken into the ſtomach; but the whole was ſoon diſcovered to be a fallacy; and it was inconteſtibly proved, that no effluvia could paſs from the included ſubſtances through the pores of excited glaſs; and that no method was known for cauſing the power of medicine to inſinuate itſelf into the human body by electricity. Dr. Franklin, by proving that glaſs was impermeable to the electric fluid itſelf, and that its electricity was collected from the rubber, &c. evinced the abſurdity of every attempt to tranſmit the effluvia of any ſubſtance through the glaſs. See Franklin's Letters, p. 82, &c.

MEDICAL *Stones*. See STONE.

MEDICAMENTOSUS LAPIS. See LAPIS.

MEDICI, COSMO DE, in *Biography*, a citizen of Florence, born in that city in 1389, was the eldeſt ſon of John, or Giovanni de Medici, who laid the foundation of that greatneſs which his poſterity enjoyed for ſeveral ages. By a ſtrict attention to commerce, John acquired immenſe wealth; by his affability, moderation, and liberality he enſured the confidence and eſteem of his fellow-citizens. Without ſeeking after the offices of the republic, he was honoured with them all. "The maxims," ſays Mr. Roſcoe, "which, uniformly purſued, raiſed the houſe of Medici to the ſplendour which it afterwards enjoyed, are to be found in the charge given by this venerable old man on his death-bed to his two ſons." Theſe, on account of their excellence, of the authority by which they were enforced, and of the ſucceſsful application of them by his poſterity, we ſhall tranſcribe. "I feel," ſaid he, "that I have lived the time preſcribed me. I die content; leaving you, my ſons, in affluence and in health, and in ſuch a ſtation, that while you follow my example, you may live in your native place honoured and reſpected. Nothing affords me more pleaſure than the reflection that my conduct has not given offence to any one; but that, on the contrary, I have endeavoured to ſerve all perſons to the beſt of my abilities. I adviſe you to do the ſame. With reſpect to the honours of the ſtate, if you would live with ſecurity, accept only ſuch as are beſtowed on you by the laws, and the favour of your fellow-citizens; for it is the exerciſe of that power which is obtained by violence, and not of that which is voluntarily conferred, that occaſions hatred and violence." At the death of this venerable man, in 1428, Coſmo had already attained to high reſpectability as well in the political as in the commercial world. He had engaged deeply, not only in the extenſive commerce by which the family had acquired its wealth, but in the ſtill weightier concerns of government. In the year 1414, when Balthaſar Coſſa, who had been elected pope, and had aſſumed the title of John XXIII., was ſummoned to attend the council of Conſtance, he choſe to be accompanied by Coſmo de Medici, among other men of eminence, whoſe high characters might countenance his cauſe. On the death of his father, Coſmo ſucceeded to the influence poſſeſſed by him as head of that powerful family, which rendered him the firſt citizen of the ſtate, though without any ſuperiority of rank or title. He ſupported and augmented the family dignity. His conduct was uniformly marked by urbanity and kindneſs to the ſuperior ranks of his fellow-citizens, and by a conſtant attention to the intereſts and wants of the lower claſs of citizens, whom he relieved with unbounded generoſity. By theſe means he acquired numerous and zealous partizans, whom he conſidered rather as pledges for the continuance of the power which he poſſeſſed, than as inſtruments to be employed in the ruin and ſubjugation of the ſtate.

The authority which Coſmo and his deſcendants exerciſed in Florence during the 15th century conſiſted rather in a tacit influence on their part, and a voluntary acquieſcence on that of the people, than in any preſcribed or definite compact between them. The form of government was that of a republic, directed by a council of ten officers, and a chief executive officer, called the *Gonfaloniere*, or ſtandard bearer, who was choſen every two months. Under this eſtabliſhment, the citizens imagined they were poſſeſſed of the full exerciſe of their liberties; but ſuch was the influence of the Medici, that they generally aſſumed to themſelves the firſt offices of the ſtate, or nominated ſuch perſons as they eſteemed fit for thoſe employments. In this, however, they always paid great reſpect to popular opinion. Notwithſtanding the great prudence and moderation of Coſmo's public conduct, the diſcontent of the Florentines, with the bad ſucceſs of the war againſt Lucca, gave occaſion to the preponderance of a party led on by Rinaldo de' Albizi, which, in 1433, after filling the magiſtracies with their own creatures, ſeized the perſon of Coſmo, and proceeded judicially againſt him, on the pretence that his influence was hazardous to the ſtate. He was committed to priſon, in which he remained for ſeveral days, in conſtant apprehenſion of ſome violence being offered to his perſon; but he ſtill more dreaded that the malice of his enemies might make attempts upon his life by poiſon. On the news of his danger, ſeveral princes and ſtates of Italy interfered in his behalf; and in concluſion, he was baniſhed to Padua for ten years, and ſeveral other members and friends of the Medici family underwent a ſimilar puniſhment. He was received with marked reſpect by the Venetian government, and took up his abode in the city of Venice. Within a year of his retreat, Rinaldo was himſelf obliged to quit Florence, and Coſmo being recalled, he returned amidſt the acclamations of his fellow-ſubjects. Some victims were offered to his future ſecurity, and the gonfaloniere who had pronounced his ſentence, with a few others of that party, were put to death. Meaſures were now taken to reſtrict the choice of magiſtrates to the partizans of the Medici, and alliances were formed with the neighbouring powers for the avowed purpoſe of ſupporting and perpetuating the ſyſtem by which Florence was from that time to be governed. The manner in which Coſmo employed his authority, has conferred upon his memory the greateſt honour. From this time his life was an almoſt uninterrupted ſeries of proſperity. The tranquillity enjoyed by the republic, and the ſatisfaction and peace of mind which he experienced in the eſteem and confidence of his fellow citizens, enabled him to indulge his natural propenſity to the promotion of ſcience, and the patronage and encouragement of learned men. The richeſt private citizen in Europe, he ſurpaſſed almoſt all ſovereign princes in the munificence with which he patronized literature and the fine arts. He aſſembled around him ſome of the moſt learned men of the age, who had begun to cultivate the Grecian language and philoſophy. He eſtabliſhed, at Florence, an academy expreſsly for the elucidation of the Platonic philoſophy, at the head of which he placed the celebrated Marſilio Ficino. He collected from all parts, by means of foreign correſpondences, manuſcripts of the

Greek, Latin, and Oriental languages, which were the foundation of the Laurentian library. He gave great encouragement to the arts of painting, ſculpture, and architecture, by the vaſt ſums which he expended in the public edifices of the city, as well as in his private palaces. He alſo collected the valuable remains of ancient art in ſtatues, vaſes, gems, and medals; and all his treaſures were made liberally acceſſible to the curious.

Towards the latter period of his life, a great part of the time that Coſmo could withdraw from the adminiſtration of public affairs was paſſed at his ſeats at Careggi and Caffaggiolo, where he applied himſelf to the cultivation of his farms; but his happieſt hours were devoted to the ſtudy of letters and philoſophy, or paſſed in the company and converſation of learned men. In his country retreats he was uſually accompanied by Ficino, where, after having been his protector, he became his pupil in the ſtudy of the Platonic philoſophy. His attachment to the ſentiments of antiquity did not render him indifferent to the religion of his country, and he diſplayed his piety according to the faſhion of the age, by numerous religious foundations which he munificently endowed. He even erected a noble hoſpital at Jeruſalem for the relief of diſtreſſed pilgrims. The ſpirit of his government was mildneſs and moderation. He never aſſumed a ſtate beyond that of a citizen in a republic, and avoided every open exertion of authority which could lead the Florentines to ſuſpect they had loſt their liberties.

The wealth and influence that Coſmo had acquired, had long entitled him to rank with the moſt powerful princes of Italy, with whom he might have formed connections, by the intermarriage of his children; but being apprehenſive that ſuch meaſures would give riſe to ſuſpicions that he entertained deſigns inimical to the freedom of the ſtate, he rather choſe to increaſe his intereſt among the citizens of Florence, by the marriage of his children into the moſt diſtinguiſhed families of that place. Piero, his eldeſt ſon, married Lucretia Tornabuoni, by whom he had two ſons, Lorenzo, the ſubject of the following article, and Giuliano. Coſmo converſed freely with all orders of men, and there was ſcarcely a citizen whom he had not ſome time obliged by loans of money of which he never expected the repayment. His immenſe wealth was not the object of envy, becauſe he chiefly expended it upon the public; ſo that it was a kind of common fund in which all had an intereſt. Parties were again formed in Florence hoſtile to the predominance of the Medici. The popularity of Coſmo, however, was not to be ſhaken, and while he withdrew from public buſineſs, he retained the influence of his benefits and virtues. He had loſt his ſecond ſon, Giovanni, on whom he had placed his chief expectations, as his eldeſt, Piero, laboured under various bodily infirmities, and he apprehended that at his own deceaſe the ſplendour of his family would cloſe. Theſe reflections embittered the repoſe of his latter days: and he exclaimed, a ſhort time before his death, as his attendants were carrying him through the apartments of his palace, "This is too large a houſe for ſo ſmall a family." His latter days were, however, cheered by the honourable teſtimony to his merit, afforded by his fellow-citizens, in a public decree, conferring upon him the noble title of *Father of his Country*, which was inſcribed on his tomb, and has ever ſince adhered to his name.

About three weeks before his death, when his ſtrength began rapidly to decline, he entered into converſation with Ficino, lamenting the miſeries of life, and the imperfections inſeparable from human nature. As he continued his diſcourſe, his ſentiments and his views became more elevated, and from bewailing the lot of humanity, he began to exult in the proſpect of that happier ſtate towards which he felt himſelf approaching. He died Auguſt 1ſt, 1464, at the age of ſeventy-five years, deeply lamented by a vaſt majority of the citizens of Florence, whom he had firmly attached to his intereſt, and who feared for the ſafety of the city from the diſſentions that were likely to enſue. Roſcoe's Life of Lorenzo. Univer. Hiſt.

Medici, Lorenzo de, ſurnamed *The Magnificent*, grandſon of Coſmo, and ſon of Piero de Medici, by Lucretia Tornabuoni, was born on January 1, 1448. He was about ſixteen years of age when Coſmo died, and had, at that time, given ſtriking indications of extraordinary talents. From his earlieſt years he had exhibited proofs of a retentive and vigorous mind, which had been cultivated by a very careful education, chiefly under the direction and good conduct of his mother Lucretia, who was one of the moſt accompliſhed women of the age, and who had diſtinguiſhed herſelf not only as a patroneſs of learning, but by her own writings. The diſpoſition of Lorenzo, which afterwards gave him a peculiar claim to the title of "Magnificent," was apparent in his childhood. Having received, as a preſent, a horſe from Sicily, he ſent the donor, in return, a gift of much greater value, and on being reproved for his profuſeneſs, he remarked, that there was nothing more glorious than to overcome others in acts of generoſity. In his youth he had the advantage of the inſtructions of ſome of the wiſeſt and moſt learned men of the age, in the languages, and philoſophy of antiquity, and the principles of polite literature. To the latter he diſplayed a decided inclination by ſome early poetical compoſitions in his native tongue; but he ſeemed formed for excelling in every thing that becomes an object of attention. He was not leſs addicted to active ſports and laborious exerciſes, than to the ſtudies of the cloſet, and was equally dextrous in the management of buſineſs, and in the purſuits of arts and ſcience. Tall in his ſtature, robuſt in his form, Lorenzo had in his perſon more the appearance of ſtrength than of elegance. From his birth he laboured under peculiar diſadvantages; his ſight was weak, his voice harſh and unpleaſing, and he was totally deprived of the ſenſe of ſmell. With all theſe defects, his countenance was dignified, and ſtrongly indicated the magnanimity of his character; and the effects of his eloquence were conſpicuous on many important occaſions. At the death of Coſmo, on account of his father's infirmities, it was thought proper immediately to initiate Lorenzo into political life. He was, accordingly, ſent to viſit the principal courts of Italy for the purpoſe of forming a perſonal connection with the rulers, and making obſervations on the circumſtances of each ſtate. He ſtrengthened the intereſts of his family in an interview with Ferdinand, king of Naples, who was impreſſed with a high idea of his early wiſdom; and the prudence and vigour of his conduct at home were materially inſtrumental in reſtoring the ſuperiority of the Medici. In 1469, Lorenzo married Clarice, the daughter of a member of the noble family of Orſini, and in the ſame year Piero de Medici died, leaving his two ſons, Lorenzo and Giuliano, the heirs of his power and property. Immediately after the death of his father, Lorenzo, at the requeſt of the people of Florence, took upon himſelf that poſt of head of the republic which Coſmo and Piero had occupied. Upon the acceſſion of Sixtus IV. to the papacy, Lorenzo, with other eminent citizens, were deputed to congratulate him on the part of the Florentine republic. On this occaſion he was inveſted with the office of treaſurer of the holy ſee, and he took the opportunity of his abode at Rome to make valuable additions to the remains of ancient art already collected by his family. One of the firſt public occurrences after he conducted the helm of government was a revolt of the inhabitants of Volterra, on account of a diſpute with the Florentine republic; by the recommendation of Lorenzo, means of force were adopted, which ended in the ſack of the unfortunate city, an event that gave him much concern. In 1472, he was the means of re-eſtabliſhing the academy of Piſa, and he took up his reſidence for a conſiderable time in that city for the purpoſe of completing the work; exerted himſelf in ſelecting the moſt eminent profeſſors, and contributed to it a large ſum from his private fortune, in addition to that granted by the ſtate of Florence. Zealouſly attached to the Platonic philoſophy, he took an active part in the eſtabliſhment of an academy for its promotion, and inſtituted an annual feſtival in honour of the memory of Plato, which was conducted with ſingular literary ſplendour. While he was thus advancing in a career of proſperity and reputation, a tragical incident was very near depriving his country of his future ſervices. This was the conſpiracy of the Pazzi, a numerous and diſtinguiſhed family in Florence, the rivals of the houſe of Medici. The inſtigators of this foul conſpiracy, of which the object was the aſſaſſination of Lorenzo and his brother, were pope Sixtus IV. and his nephew, cardinal Riario: and the archbiſhop of Piſa, Salviati, was the principal agent in the horrid deſign. Giacopo de Pazzi, the head of that family, gave his name and aſſiſtance, and ſeveral perſons of deſperate character undertook to aid in the execution. Nothing could exceed the atrocity of the plan which was to aſſaſſinate the two brothers, while they were partaking of the hoſpitality of Lorenzo; but the abſence of Giuliano, on account of indiſpoſition, obliged the conſpirators to poſtpone the attempt. Thus diſappointed, another plan was to be adopted, and on further deliberation it was reſolved that the aſſaſſination ſhould take place on the following Sunday, in the church, at the inſtant of the elevation of the hoſt.

The immediate aſſaſſination of Giuliano was committed to Franceſco de Pazzi and Bernardo Bandini, and that of Lorenzo had been intruſted to the ſole hand of Monteſicco. This office he had willingly undertaken while he underſtood that it was to be executed in a private dwelling, but he ſhrunk from the idea of polluting the houſe of God with ſo heinous a crime. Two eccleſiaſtics were therefore ſelected for the commiſſion of a deed, from which the ſoldier was deterred by conſcientious motives. It was in the month of April 1478, the young cardinal Riario, apoſtolic legate, a gueſt in the palace of Lorenzo, proceeded to the church of the Reharata, ſince called "Santa Maria del Fiore," where the intended victims were preſent. The conſpirators having taken their ſtations, waited with impatience for the appointed ſignal. The bell rang—the prieſt raiſed the conſecrated wafer; the people bowed before it, and at the ſame inſtant Bandini plunged a ſhort dagger into the breaſt of Giuliano. On receiving the fatal wound he took a few haſty ſteps and fell, when the other fiend, Franceſco de Pazzi, ruſhed upon him with incredible fury, and ſtabbed him in different parts of his body, continuing to repeat his ſtrokes even after he was apparently dead. Such was the violence of his rage that he wounded himſelf deeply in the thigh. The prieſts who had undertaken the murder of Lorenzo were not equally ſucceſsful: they inflicted only a ſlight wound, which rather rouſed him to his defence, than diſabled him. He inſtantly threw off his cloak, and holding it up as a ſhield in his left hand, with his right hand drew his ſword, and repelled the aſſailants, who fled. Bandini came up with his dagger ſtreaming with the blood of Giuliano, but was inſtantly laid dead by a ſervant of the Medici. In the mean time, the friends of Lorenzo aſſembled round him, and conducted him home in ſafety. An attack upon the palace of government where the magiſtrates were ſitting, by other conſpirators, failed of ſucceſs, and the people attached to the Medici, collecting in crowds, put to death or apprehended the aſſaſſins, whoſe deſigns were thus entirely fruſtrated, with the exception of the death of Giuliano. Signal and inſtant juſtice was inflicted on the criminals. The archbiſhop of Piſa was hanged out of the palace window in his ſacerdotal robes, and Giacopo de Pazzi, with one of his nephews, ſhared the ſame fate. Lorenzo did himſelf honour by his efforts to reſtrain the fury of the populace, and induce them to commit to the magiſtrates the farther purſuit of the guilty. The name and arms of the Pazzi family were ſuppreſſed, its members were baniſhed, and Lorenzo roſe ſtill higher in the eſteem and affection of his fellow-citizens. The pope, inflamed almoſt to madneſs by the defeat of his ſchemes, excommunicated Lorenzo, and the magiſtrates of Florence, laid an interdict upon the whole territory, and forming a league with the king of Naples, prepared to invade the Florentine dominions. Lorenzo appealed to all the ſurrounding potentates for the juſtice of his cauſe; and he was affectionately ſupported by his fellow-citizens. Hoſtilities began, and were carried on with various ſucceſs through two campaigns. At the cloſe of the year 1479, Lorenzo took the bold reſolution of paying a viſit to the king of Naples, and, without any previous ſecurity, truſted his liberty and his life to the mercy of a declared enemy. The monarch was ſtruck with this heroic act of confidence, and a treaty of mutual defence and friendſhip was agreed upon between them. Sixtus, however, perſevered in the war, till a deſcent upon the coaſt of Italy by Mahomet II. excited ſuch an alarm, that he conſented to a peace upon the ſubmiſſion of the Florentine deputies to his pontifical reprimands.

Another attempt was made to aſſaſſinate Lorenzo in a church in the month of May 1481, but the plot was happily diſcovered, and the agent and his accomplices were ſeized and executed. From this time he generally appeared in public, ſurrounded with friends as a guard, a circumſtance which has been repreſented by his enemies as a ſymptom of tyranny. His political conduct as head of the Florentine republic was chiefly directed to the preſervation of the balance of power among the Italian ſtates. The death of Sixtus IV. freed him from an adverſary who never ceaſed to bear him ill-will, and he was able to ſecure himſelf a friend in his ſucceſſor Innocent VIII. He conducted the republic of Florence to a degree of tranquillity and proſperity which it had ſcarcely ever known before, and by procuring the inſtitution of a deliberative body of the nature of a ſenate, he corrected the democratical part of its conſtitution.

Lorenzo diſtinguiſhed himſelf beyond any of his predeceſſors in the encouragement of literature and the arts: his proficiency in Italian poetry would have conferred diſtinction even upon one who had no other merit to adduce. The productions of this great man are diſtinguiſhed by a vigour of imagination, an accuracy of judgment, and an elegance of ſtyle, which afforded the firſt great example of improvement, and entitle him, almoſt excluſively, to the honourable appellation of the "reſtorer of Italian literature." His compoſitions are ſonnets, canzoni, and other lyric pieces, ſome longer works in ſtanzas, ſome comic ſatires, and jocoſe carnival ſongs, and various ſacred poems, the latter as ſerious, as many of the former are licentious. Some of theſe pieces, eſpecially thoſe of the lighter kind, in which he imitated the ruſtic dialect, became extremely popular. His regard to literature, in general, was teſtified by the extraordinary attention which he paid to the augmentation of the Laurentian library. Although the anceſtors of Lorenzo laid the foundation of the immenſe collection of MSS. contained in this library, he may claim the honour of having raiſed the ſuperſtructure. If there was any purſuit in which he engaged more ardently and perſevered in more diligently than the reſt, it was that of enlarging his collection of books and antiquities: for this purpoſe he employed the ſervices of learned men, in different parts of Italy, and eſpecially of his intimate friend and companion Angelo Politiano, who took ſeveral journies in order to diſcover and purchaſe the valuable remains of antiquity. "I wiſh," ſaid Lorenzo to him as he was proceeding on one of theſe expeditions, "that the diligence of Pico and yourſelf would afford me ſuch opportunities of purchaſing books, that I ſhould be obliged even to pledge my furniture to poſſeſs them." Two journies, undertaken at the inſtance of Lorenzo, into the eaſt, by Giovanni Laſcar, produced a great number of rare and valuable works. On his return from his ſecond expedition, he brought with him two hundred copies, many of which he had procured from a monaſtery at mount Athos; but this treaſure did not arrive till after the death of Lorenzo, who, in his laſt moments, expreſſed to Politiano and Pico his regret that he could not live to complete the collection which he was forming for their accommodation. On the diſcovery of the invaluable art of printing, Lorenzo was ſolicitous to avail himſelf of its advantages in procuring editions of the beſt works of antiquity corrected by the ableſt ſcholars, whoſe labours were rewarded by his munificence. When the capture of Conſtantinople by the Turks cauſed the diſperſion of many learned Greeks, he took advantage of the circumſtance, to promote the ſtudy of the Greek language in Italy. It was now at Florence that this tongue was inculcated under the ſanction of a public inſtitution, either by native Greeks, or learned Italians, who were their powerful competitors, whoſe ſervices were procured by the diligence of Lorenzo de Medici, and repaid by his bounty. "Hence," ſays Mr. Roſcoe, "ſucceeding ſcholars have been profuſe of their acknowledgments to their great patron, who firſt formed that eſtabliſhment, from which, to uſe their own claſſical figure, as from the Trojan horſe, ſo many illuſtrious champions have ſprung, and by means of which the knowledge of the Greek tongue was extended, not only through all Italy, but through France, Spain, Germany, and England; from all which countries numerous pupils attended at Florence, who diffuſed the learning they had there acquired throughout the reſt of Europe."

The ſervices of Lorenzo to the fine arts were not leſs conſpicuous than thoſe which he rendered to letters. Coſmo had collected all the moſt valuable remains of ancient taſte and ſkill that he could obtain. His treaſures were vaſtly augmented by Lorenzo, who propoſed to himſelf the improvement of modern art as the chief end of his magnificence in this point. Of the earneſtneſs with which Lorenzo engaged in this purſuit inſtances may be adduced. It is ſaid that thoſe who wiſhed to oblige him were accuſtomed to collect from every part of the world medals and coins, eſtimable for their age or their workmanſhip, ſtatues, buſts, and whatever elſe bore the ſtamp of antiquity. By his conſtant attention to this purſuit, and by the expenditure of conſiderable ſums, he collected, under his roof, all the remains of antiquity that fell in his way, whether they tended to illuſtrate the hiſtory of letters or the arts. It is not, however, on this account only that he is entitled to the eſteem of the profeſſors and admirers of the arts. He determined to excite, among his countrymen, a good taſte, and, by propoſing to their imitation the remains of the ancient maſters, to elevate their views beyond the forms of common life, to the contemplation of that ideal beauty which alone diſtinguiſhes works of art from mere mechanical productions. With this view he appropriated his gardens in Florence to the eſtabliſhment of an academy for the ſtudy of the antique, which he furniſhed with a profuſion of ſtatues, buſts, and other relics of art, the moſt perfect in their kind that he could procure. The attention of the higher rank of his fellow-citizens was incited to theſe purſuits by the example of Lorenzo; that of the lower claſs by his liberality. To the latter he not only allowed competent ſtipends, while they attended to their ſtudies, but appointed conſiderable premiums as rewards of their proficiency. To this inſtitution, more than any other circumſtance, Mr. Roſcoe aſcribes the ſudden and aſtoniſhing proficiency which, towards the cloſe of the 15th century, was evidently made in the arts, and which commencing at Florence, extended itſelf to the reſt of Europe. The gardens of Lorenzo de Medici are frequently celebrated as the nurſery of men of genius, but if they had produced no other artiſt than Michael Angelo Buonarotti, they would have ſufficiently anſwered the purpoſes of the founder. It was here that this great man began to imbibe that ſpirit which was deſtined to effect a reformation in the arts, and which, perhaps, he could have derived from no other ſource. The art of architecture he encouraged by the numerous buildings which he erected, or induced others to erect in Florence and its vicinity, after deſigns furniſhed by the ableſt artiſts. By theſe exertions he prepared the way for thoſe wonders which have rendered the age denominated from his ſon Leo X. one of the moſt ſplendid in the records of mankind.

Lorenzo, in his domeſtic concerns, deſerves conſiderable, but by no means unmixed praiſe. The licentiouſneſs which characterizes ſeveral of his poems is ſaid to have tainted his manners with reſpect to the female ſex. He was nevertheleſs a very affectionate and attentive father, ſolicitous for the inſtruction of his children, whom he placed under the care of Politiano, and he was fond of partaking in their ſports and amuſements. The exigencies of the republic in conſequence of its wars had obliged him to borrow, in his own name, large ſums, which the negligence or infidelity of his commercial agents and correſpondents rendered it difficult for him to repay; and a decree for the diſcharge of his debts out of the public treaſury was neceſſary to relieve him from his embarraſſments. From this period he determined to quit his mercantile concerns, for the improvement of his eſtates under his own eye. He had a numerous family, in the ſettling of which he was as ſucceſsful as an ambitious parent would generally deſire. His eldeſt ſon Piero, deſigned for his own ſucceſſor in the Florentine ſtate, was ſent, at the age of fourteen, to viſit the pope, and cultivate the family intereſt of Rome. The object of his cloſe connection with the pontiff, and the profound reſpect which he always teſtified for the holy ſee, was the attainment of the favourite point of his ambition, the elevation of his ſecond ſon Giovanni to the cardinalate, with the future proſpect of his filling the papal chair. By means of inceſſant applications, he prevailed upon the pope to confer upon Giovanni, at the age of thirteen, the high dignity of one of the princes of the Roman church, which was unqueſtionably a flagrant violation of decorum, diſhonourable to both.

"It was," ſays one of the biographers of Lorenzo, "a deſerved conſequence of this proſtitution of eccleſiaſtical honours, that this cardinal, when arrived at the popedom, ſhould, by his levity and extravagance, have given the immediate occaſion to that defection from the church of Rome, which has ſo much reduced her power and authority." (For a farther account of this pontiff, the reader is referred to Leo X.) Of his other children, Giuliano became allied to the royal houſe of France, and obtained the title of the duke of Nemours; and his daughters married into noble families.

In the year 1488, Lorenzo's domeſtic comfort was much impaired by the loſs of his wife. He was at this time abſent at the warm baths, which he was often obliged to uſe, on account of a gouty complaint that ſeverely afflicted him, and had made an early breach in his conſtitution. In the intervals of eaſe and health, he appears to have flattered himſelf with the expectation of enjoying the reward of his public labours, and partaking of the general happineſs, which he had ſo eſſentially contributed to promote, in a peaceful and dignified retirement, enlivened by ſocial amuſements, by philoſophic ſtudies, and literary purſuits. Theſe expectations were built upon the moſt ſubſtantial foundation, the conſciouſneſs that he had diſcharged his more immediate duties and engagements. "Having," ſays he, "now obtained the object of my cares, I truſt I may be allowed to enjoy the ſweets of leiſure, to ſhare the reputation of my fellow-citizens, and to exult in the glory of my native place." This proſpect of relaxation and happineſs he was not deſtined to realize. Early in the year 1492, the complaint under which he laboured attacked him with additional violence, and while the attention of his phyſicians was employed in adminiſtering relief, he contracted a ſlow fever, which eſcaped their notice, until it was too late effectually to oppoſe its progreſs. He ſunk, almoſt before his attendants ſuſpected danger, into ſuch a ſtate of debility, as totally precluded all hopes of recovery. Having performed the offices of the church, and adjuſted with ſincerity and decorum his ſpiritual concerns, he requeſted a private interview with his ſon Piero, with whom he held a long and intereſting converſation on the ſtate of the republic, the ſituation of his family, and the conduct which it would be expedient for him to purſue. When Lorenzo had relieved his mind from the weight of its important concerns, he became more ſenſibly alive to the emotions of friendſhip. At this moment Politiano entered his chamber: Lorenzo heard his voice, and raiſing his languid arms, claſped the hands of his friend in his own, and at the ſame time ſteadfaſtly regarded him with a placid and even a cheerful countenance. Deeply affected at this ſilent, but unequivocal proof of his eſteem, Politiano could not ſuppreſs his feelings, but, turning his head aſide, attempted, as much as poſſible, to conceal his ſobs and his tears. Perceiving his agitation, Lorenzo ſtill continued to graſp his hand, as if intending to ſpeak to him when his paſſion had ſubſided; but finding him unable to reſiſt its impulſe, he relaxed his hold, and Politiano, haſtening into an inner apartment, flung himſelf on a bed, and gave way to his grief. Having at length compoſed himſelf, he returned to the chamber, when Lorenzo enquired with great kindneſs why Pico of Mirandola had not once paid him a viſit during his ſickneſs. Politiano apologized for his friend, by aſſuring Lorenzo that he had only been deterred by the apprehenſion that his preſence might be troubleſome. "On the contrary," replied Lorenzo, "if his journey from the city be not troubleſome to him, I ſhall rejoice to ſee him before I take my final leave of you." Pico came, prepared with a melancholy pleaſure, to ſhare, for the laſt time, the intereſt of his converſation. Lorenzo expreſſed his eſteem for him in the moſt affectionate terms, profeſſing that he ſhould meet death with more cheerfulneſs after this laſt interview. He then changed the ſubject to more familiar and lively topics; and it was on this occaſion that he expreſſed, with ſome degree of jocularity, his wiſhes that he could have obtained a reprieve, until he could have completed the library deſtined to the uſe of his auditors. This interview was ſcarcely terminated, when the haughty prieſt Savonarolo reminded him, that it was his duty to bear death with fortitude, "with cheerfulneſs," replied Lorenzo, "if ſuch be the will of God." His vivacity as well as his reſignation were perceptible almoſt to the laſt moment. Being aſked, on taking a morſel of food, how he reliſhed it, "as a dying man always does," was his reply. Having affectionately embraced his ſurrounding friends, and ſubmitted to the laſt ceremonies of the church, he became abſorbed in meditation, occaſionally repeating portions of ſcripture, and accompanying his ejaculations with elevated eyes and ſolemn geſtures of his hands, till the energies of life gradually declining, and preſſing to his lips a magnificent crucifix, he calmly expired, in the forty-fourth year of his age. Few perſons of his condition have filled ſo contracted a ſpace of life with ſo much glory and proſperity.

In ſumming up his character, Mr. Roſcoe ſays, he is "a man who may be ſelected from all the characters of ancient and modern hiſtory, as exhibiting the moſt remarkable inſtance of depth of penetration, verſatility of talent, and comprehenſion of mind.——Of the various occupations in which Lorenzo engaged, there is not one in which he was not eminently ſucceſsful: but he was more particularly diſtinguiſhed in thoſe which juſtly hold the firſt rank in human eſtimation. The facility with which he turned from ſubjects of the higheſt importance, to thoſe of amuſement and levity, ſuggeſted to his countrymen the idea that he had two diſtinct ſouls combined in one body. Even his moral character ſeems to have partaken, in ſome degree, of the ſame diverſity; and his devotional poems are as ardent as his lighter pieces are licentious. On all ſides he touched the extremes of human character, and the powers of his mind were only bounded by that impenetrable circle, which preſcribes the limits of human nature."

After all that we have ſaid of this great man, and his grandfather Coſmo, thoſe who would rightly appreciate their talents and various virtues, will conſult the life of Lorenzo De Medici by Mr. Roſcoe, of which the firſt chapter is chiefly devoted to Coſmo, the remainder of the three volumes to Lorenzo and the fortunes of his houſe.

MEDICINA Musica, or the medicinal Power of Muſic; being an eſſay on the effects of ſinging, muſic, and dancing on the human frame, reviſed and corrected. To which is annexed, a new eſſay on the nature and cure of the ſpleen and vapours, by Richard Browne, apothecary at Oakham, in the county of Rutland, ſmall 12mo. London, 1729.

This is the title of a ſmall tract but little known; but as it is not devoid of merit, we ſhall give ſome account of the author's principles. We feared we ſhould have had the old ſtories over again, of Orpheus, Linus, Amphion, and Terpander; but their names do not once occur in the work. The author does not aſcribe any miraculous powers to muſic, as the Greeks, the Chineſe, and the Arabians have done; who pretend to cure many diſeaſes with the inſtrument called *Oüd;* reſembling our lute: he only points out its mechanical effects on the nerves and animal ſpirits. He is moderate in his demands, and modeſt in his aſſertions. It is not elaborate compoſition, or exquiſite performance, that is required to operate the effects which he deſcribes; but the *dulce linimen* of Horace.

The gentle exerciſe of the lungs in ſinging, as well as the gratification of the ear in hearing ſweet tones well accented, are among the preſcriptions. And for this he only requires the patient to have an ear well organized, and the vocal performance to conſiſt of gay and lively ſtrains, ſo that the body and the mind may be reciprocally affected by the production and ſenſation of ſound. As the motion of the blood is accelerated or retarded during the riſe or fall of the mercury in the barometer; ſo in ſinging, the preſſure of the air upon the lungs is greater than in common reſpiration.

The author ſupports his opinions ably and anatomically. He ſeems to have loved and underſtood muſic, though he never ſpeaks of it with the enthuſiaſm of a rapturiſt.

Among the poſſible evils of too frequent and too violent exerciſe of the lungs, we wiſh the author had cautioned parents not to let their children, whatever diſpoſition they may diſcover for ſinging, begin to exerciſe the voice ſeriouſly in difficult ſongs, or *ſolfeggios*, till arrived at their teens: as we have frequently known a promiſing voice ſung away, by tearing and ſtraining the vocal organ beyond its power. Let them hum a tune, or ſing a light and pleaſing ballad if they pleaſe; but leave different intervals, and long and high notes, to a more robuſt and mature age.

In aſthmatic complaints, when the tone of the ſtomach is relaxed, and appetite fails; and in nervous diſorders, as muſic raiſes the ſpirits, and diverts our attention from ourſelves and our woes, real or imaginary, ſinging is not only amuſing but ſalutary.

The author, however, ſeems to think that nervous and low-ſpirited perſons ſhould refrain from pathetic, melancholy, and languid airs, which, inſtead of exhilarating and enlivening the ſpirits, rather tend to their depreſſion. But on the contrary, in affliction, pain, and ſorrow, as well as in hypochondriac and calamitous caſes, when gay and lively muſic is to the laſt degree offenſive, we rather enliſt with thoſe who think grave muſic, if it cannot radically cure, can ſooth, alleviate, and afford a temporary relief.

And among the medicinal effects of modern muſic that border on the marvellous, we read in the memoirs of the Acad. des Sciences at Paris, that a muſician was cured of a violent fever, by a concert of well ſelected and well executed muſic in his bed-chamber. And the effect which Farinelli's ſinging had on Philip V. king of Spain, who like Saul ſeemed to have been troubled with an evil ſpirit, has never been diſputed.

As to the author's *Medicina Gymnaſtica*, as a ſpecific for ſpleen, vapours, and hypochondriac affections, we ſhall leave the conſideration of theſe myſterious diſorders to the profound ſons of Æſculapius, who peradventure may be perfectly acquainted with their nature and exiſtence. Mr. Browne, who has not defined them very clearly, preſcribes, however, after other preparatory medicines, dancing to a good band of muſic for the completion of the cure. And as the muſic is meant to exhilarate and excite motion, the whole proceſs ſeems reduced to the two moſt ſimple of all Hygeia's agents, *Air* and *Exerciſe*.

To theſe Armſtrong adds *Sun-ſhine*.

> "Cheer'd by thy kind invigorating warmth,
> We court thy beams, great majeſty of day!
> If not the ſoul, the regent of this world,
> Firſt-born of heaven, and only leſs than God!"

MEDICINAL Waters. See Waters.

Medicinal *Sacculus*. See Sacculus.

MEDICINE, Medicina, from *mederi*, *to heal* or *cure*, is the art of reſtoring health to the ſick.

It muſt be obvious, from a ſlight conſideration of the ſubject, that various and complicated knowledge muſt conſpire to give perfection to this art. It is not from the labours of an individual, though he were an Eſculapius, nor even from the united collections of an age, that the nature and means of curing the diſorders of the animal frame can be fully aſcertained. For, to trace the matter in detail, it is neceſſary to be previouſly acquainted with the ſtructure of the animal machine, or with the *anatomy* of the body; and likewiſe with the uſes and actions of its various organs, in a ſtate of health, the knowledge of which conſtitutes the ſcience of *phyſiology*. But to the proper cultivation of this ſcience, a previous knowledge of many other departments of ſcience is abſolutely neceſſary. Almoſt every branch of natural philoſophy, indeed, contributes to the explanation of the functions of the animal economy. The uſes of the eye are intelligible only upon the principles of *optics*, as applied to inorganic inſtruments; the functions of the ear upon thoſe of *acouſtics*; and the various mechanical operations of the body, ſuch as thoſe of muſcular motion, the circulation of the fluids, the action of reſpiration, &c. upon the common principles of *mechanics* and *hydroſtatics*: not to mention the numerous changes in the combinations and properties of the fluids; in the blood, as it paſſes through the lungs; in the food and drink, under the proceſs of digeſtion; and in the various ſecreted fluids, as the urine, milk, bile, &c.; for the elucidation of which, the ſcience of *chemiſtry* lends its aid. Upon theſe branches of knowledge the foundation of medicine is laid; but the ſuperſtructure requires many additional materials for its erection. The animal machine differs materially from all other examples of mechaniſm; principally in the poſſeſſion of a ſelf-ſuſtaining and ſelf-moving power, upon which alone the operation of every external influence muſt be directed; and from which reſult many phenomena, that belong excluſively to its conſtitution, and are inexplicable on any of the principles of mechanical or chemical philoſophy: but it differs likewiſe, ſecondarily, in the circumſtance that its motions are not (as in other machines) expoſed to our view; that we cannot remove, repair, and renew, (as in them,) thoſe parts or organs which become inadequate to their functions, and cannot ſuſpend the motion of the whole but for a moment, without the imminent riſk of ſtopping it for ever. Hence then, in addition to the principles of mere mechaniſm, the ſtudy of the animal conſtitution includes a ſeries of minute obſervations on thoſe phenomena, which are the reſult of *life*; and this ſtudy is neceſſarily rendered more obſcure and difficult, from the circumſtance laſt alluded to: for the internal operations of the vital machine, not being directly cognizable, can only be aſcertained by indirect inference from external and obvious ſigns or ſymptoms. Theſe ſigns or ſymptoms, therefore, are the ſole object of the examination of the practiſers of the art of medicine, and the ſole guides of their proceedings. But as the exiſtence and the nature of diſeaſe are known only by a compariſon of thoſe ſigns, which are exhibited by the body in health, with thoſe which occur in diſeaſe; ſo the ſtudy of ſymptoms includes not only the ſcience of *pathology*, but alſo a knowledge of the various *temperaments*, as they have been called, or of thoſe various appearances of the ſtructure, complexion, ſize, ſtrength, &c. which are all compatible with health. (See Temperament.) The ſigns of the reſpective diſeaſes of the different organs of the body we have detailed under their proper appellations, in the various articles in *medicine* and *ſurgery*; and a ſeries of the ſigns which are to be inveſtigated, as the indications of diſeaſe in general, will be found under the article Disease.

Poſſeſſed, however, of this knowledge, we ſhould ſtill be little more than uſeleſs, though learned, ſpectators of the phenomena of diſeaſe, if we were ignorant of all means of controlling the actions of the vital power. The art of medicine, then, obviouſly requires alſo a knowledge of the various productions of the material world, and of their properties, *i. e.* their agency upon the animal ſyſtem: for theſe productions afford the inſtruments by which alone art can effect any phyſical change in its condition. A ſeries of ages would be requiſite to teach mankind the phyſical properties of the animal, vegetable, and mineral ſubſtances, by which they are ſurrounded; and the nature of many of them could only be aſcertained by accidental trials, from the fatality, injury, or benefit derived from which, a ſlow but multiplying experience would ultimately ariſe. "Hæc ſimiliaque cum quotidie inciderent, diligentes homines notaſſe, quæ plerumque melius reſponderent; deinde ægrotantibus ea præcipere cæpiſſe: ſic medicinam ortam, ſubinde aliorum ſalute, aliorum interitu, pernicioſa diſcernentem a ſalutaribus." (Celſus. Præf.) The knowledge of the *materia medica* has thus been gradually brought to that comprehenſive extent, in which it exiſts at preſent, by a long ſeries of experiments, aided by the reſearches of travellers and naturaliſts, and by the diſcoveries and combinations of chemiſts.

The progreſs of the art of medicine, however, as Celſus has intimated, was the reverſe of the foregoing ſtatement. "Repertis deinde medicinæ remediis, homines de rationibus eorum diſſerere cæpiſſe; nec poſt rationem, medicinam eſſe inventam; ſed poſt inventam medicinam, rationem eſſe quæſitam." (Loc. cit.) The hiſtory of the progreſs of medicine is, in fact, principally a hiſtory of thoſe reaſonings, or hypothetical ſyſtems, adopted by different individuals and their followers; and theſe conſiſted chiefly in transferring to the ſcience of life the doctrines of the collateral departments of philoſophy, which were ſucceſſively cultivated, as the following ſketch will evince.

Medicine, *Hiſtory of.* The hiſtory of medicine has for its object to deſcribe the origin and progreſs of the art, and to inveſtigate the cauſes and conſequences of the different revolutions which it has undergone.

Some authors have waſted much time and learning in attempting to depict the firſt origin of phyſic. Thus Schulze, a writer of great erudition, who was profeſſor at Altorf in the beginning of the 18th century, has traced it to the fall of man; ſhewing, with great gravity, what obſervations Adam and Eve were likely to make on the ſubject of their natural appetites, and the evacuations which followed their indulgence; what a rich ſtore of phyſiological knowledge they would collect, "quum ſe mutuo contemplarentur, quum amplecterentur, coirent;" and how probable it is, that Adam, yielding to the neceſſity of the occaſion, "laboranti amicæ, obſtetricias manus adhibuiſſe, ſicque chirurgiæ primam forte operationem exercuiſſe!" Even Le Clerc thinks it neceſſary to diſcuſs the queſtion, "Si la médecine eſt venue immediatement de Dieu?" and to ſhew, that the firſt man muſt have been alſo the firſt phyſician. And Brambilla, a ſurgeon of ſome repute at Vienna, aſſerts that Tubal Cain was the inventor and manufacturer of ſeveral ſurgical inſtruments; whence he endeavours to prove the greater antiquity of ſurgery!

It is evident, however, that medicine muſt have had a very early origin: for mankind, even in the moſt uncivilized ages of the world, would ſoon be led to remark the more or leſs agreeable, and more or leſs ſalubrious, qualities of the different articles of their food; and expoſed, as they would be, in the common courſe of things, to a variety of accidents, they would, by degrees, learn the means of alleviating the pain, or averting the conſequences of the more uſual external injuries. They would thus, in proceſs of time, form to themſelves certain dietetic maxims and rules, for the treatment of thoſe diſeaſes to which they found themſelves liable. Their materia medica would probably, at firſt, conſiſt of only a few herbs, which they had diſcovered to be efficacious in ſuppreſſing hemorrhage, and in healing wounds, or to which they imputed virtues, real or imaginary, in the cure of internal complaints; but all the concomitant circumſtances, under which they had obſerved recovery, in any doubtful caſe, to take place, would be regarded as indiſpenſable in every ſimilar caſe, and would be imitated accordingly. "Tunc non ſanabat medicina," as Meibomius ſhrewdly remarks, "ſed quidquid videbatur ſanaſſe erat medicina." Unacquainted, however, with the economy of the human body, and unable, for the moſt part, to trace the progreſs of diſeaſe, they would aſcribe the more fatal internal diſorders to the powers of ſorcery, or to the wrath of thoſe deities whom they had been taught to fear; and would reſort, for their cure, to thoſe rites and ceremonies by which they conceived they could break the charm, and pacify the offended gods. Hence would ariſe various ſuperſtitious practices, which would be handed down from one generation to another, and of which the prieſts and magicians of the communities would gladly avail themſelves, as affording them the means of extending their influence. Such we may conceive to have been the origin of the medical art; and ſuch nearly is its condition at the preſent day, among the ſavages of Africa and America, New Holland, Zealand, &c. See Winterbottom's Account of the native Africans in the Neighbourhood of Sierra Leone, vol. ii. Millar's Diſquiſitions in the Hiſtory of Medicine.

The Egyptians appear to have been the firſt nation which cultivated medicine in a ſyſtematic manner. Thouth, or Taaut, (the *Hermes Triſmegiſtus* of the Greeks,) who had been, according to Diodorus, the ſecretary of Oſiris, had divine honours paid him, as the inventor of letters, and of all uſeful arts and ſciences. His doctrines were collected, after his death, into a book, to which the title of "Embre" (*Scientia Cauſalitatis*) was given. A great part of this work conſiſted of medical precepts, which the phyſicians or prieſts were bound to obſerve ſtrictly. If they followed the directions, and the patient happened to die, they were held free from blame; but if they deviated in any manner from the rules laid down, they were puniſhable with death, whatever might be the iſſue of the caſe. Another of the Egyptian deities, Apis, is mentioned by ſome as the inventor of medicine; but greater influence is attributed to Serapis, whoſe moſt ancient temple was at Memphis, and who was worſhipped by the Greeks, as well as Egyptians, as preſiding over health. In whatever way theſe divinities may be ſuppoſed to have firſt attracted the adoration of the people, it is certain that the prieſts, from among whom the ancient kings of Egypt were choſen, appropriated to themſelves the functions of the medical art. The chief prieſts exerciſed what was conſidered as the higher branch of the profeſſion, which conſiſted of magic rites and propheſyings. They are the wiſe men and magicians of whom Moſes ſpeaks, and they appear to have been very expert in their tricks. On the *Paſtophori*, or image-bearers, who were an inferior order of the prieſthood, devolved the taſk of ſtudying the ſix hermetical

metical books on medicine. Theſe treated of the ſtructure of the body, of diſeaſes in general, of ſurgical inſtruments, of materia medica, of diſeaſes of the eyes, and of diſeaſes of women. It was the office of the chief prieſts to prognoſticate the courſe and event of the diſeaſe, while the paſtophori applied the remedies as directed in the ſacred books. As the rank of the Egyptian prieſts was hereditary, as the ſon received and obeyed implicitly the inſtructions of the father, and as their knowledge was communicated to none but thoſe who had been adopted into their order, it is evident that their medical knowledge would remain nearly ſtationary. It was obviouſly their intereſt to teach the people, that all diſeaſes proceeded from the immediate agency of the gods, and were to be cured only by ſacrifices and offerings. They concealed their art under the forms of religious ceremony, and conſequently we know very little concerning the details of their practice. Judging, however, from the analogy of other nations, we may infer that they left the cure of diſeaſes, in a great meaſure, to nature; and were content with promoting the diſcharges, which ſeemed to be indicated. This opinion is in ſome degree confirmed by the remarkable circumſtance which Ariſtotle mentions, (Polit. lib. iii.) *viz.* that it was contrary to their rules to venture upon any active treatment before the fourth day of the diſeaſe. We have the teſtimonies of Diodorus and Plutarch, that incubations were practiſed in the temples of Iſis and Serapis; and we learn from Pliny (lib. viii. c. 46.), that predictions of life and death were delivered in thoſe of Apis.

In the time of Herodotus, the ſtate of phyſic in Egypt ſeems to have been ſomewhat altered. According to this hiſtorian, "every diſtinct diſtemper had its own phyſician, who confined himſelf to the ſtudy and cure of that, and meddled with no other; ſo that all places were crowded with phyſicians; for one claſs had the care of the eyes, another of the head, another of the teeth, another of the ſtomach, and another of occult diſeaſes." But Herodotus would ſcarcely have ſpoken thus of the prieſt-phyſicians. We muſt therefore ſuppoſe that his deſcription applies to the exoteric practice of medicine, as profeſſed by Jatraliptæ and others; and we are inclined, notwithſtanding the dogmatical commentary of Warburton, to put a ſomewhat ſimilar interpretation on the paſſage of Geneſis (c. l. v. 2.), in which it is ſaid, that "Joſeph commanded *his ſervants, the* PHYSICIANS, to embalm his father; and the PHYSICIANS embalmed Iſrael." On the ſtrength of this uſe of the word *phyſicians*, the author of the divine legation (b. iv. § 3.) has amuſed himſelf with forming an ideal picture of "the grandeur, luxury, and politeneſs" of the Egyptian people; and the writer of the article MEDICINE in the Encyclopedia Britannica has haſtily concluded that the firſt phyſicians of Egypt were not of the order of prieſts; but, when we conſider what muſt have been the ſtate of medicine in Joſeph's time; and when we find, that, long afterwards, the prieſts of the Jews were, properly ſpeaking, their only phyſicians, it will at once appear, how abſurd and untenable the above cited tranſlation of the original text is. It is far more probable, and it is certainly more conſonant with all that we have learnt concerning Egyptian hiſtory, to believe that the רופאים, whom Joſeph ordered "to embalm his father," were merely *embalmers*, or, as we might term them, *undertakers*. So, in fact, they are deſignated in the ſeptuagint; Και προσεταξεν Ἰωσηφ τοις παισιν ἀυτου, τοις ἐνταφιασταις, ἐνταφιασαι τον πατερα αυτου. Και ἐνεταφιασαν οἱ ἐνταφιασται τον Ἰσραηλ. We know pretty accurately in what manner the ceremony of embalming was performed, and in what degree of eſtimation the perſons who executed the office were held; we know, too, that among the ancient Egyptians, there was a great diviſion of labour, and that no one was allowed to meddle with the trade or profeſſion of another; it is, therefore, not very likely that, if Joſeph had been ſo affluent as to retain a number of phyſicians in his ſuite, as Warburton ſuppoſes, they would have condeſcended, or been permitted, to embalm the body of his father. From the diſtribution of medical practice, as deſcribed by Herodotus, however, one might be diſpoſed to infer, that the Egyptians had already made conſiderable advances in the art; but as they were, in a great meaſure, debarred from all opportunities of acquiring anatomical knowledge, by the horror that purſued every one who cut open a dead body; and as they laboured, beſides, under many other reſtrictions in the cultivation of the ſcience, this could not poſſibly have been the caſe. That the Egyptian phyſicians were even very unſkilful in the treatment of external complaints, is proved by what the author juſt mentioned relates (lib. iii. c. 129.) concerning their inability to cure a common luxation of the foot, which Darius, the ſon of Hyſtaſpes, had met with in hunting. They appear, however, to have been acquainted with the powers of ſome valuable remedies, as of ſquills in dropſy, and of iron as a tonic in cachectic diſeaſes.

Medicine was eſtabliſhed on nearly the ſame footing among the Jews, as among the Egyptians. The prieſts, forming the only learned claſs, conſtituted themſelves the ſole judges and phyſicians of the people. Diſeaſes were believed to proceed from the wrath of "a jealous God;" and prayer was the chief means employed for their removal (Gen. xx. 17. Numb. xii. 13.); an immediate revelation to Moſes even declares, that if the people would give ear to the commandments of the Lord, and keep all his ſtatutes, he would put none of thoſe diſeaſes upon them which he had brought upon the Egyptians, for it was the Lord that healed them. (Exod. xv. 26.) It would appear, however, from different paſſages of the Pentateuch, and, in particular, from the enumeration of the different ſigns and varieties of leproſy, in Leviticus xiii., that the lawgiver of the Jews muſt have been, at leaſt, a very accurate obſerver. Some perſons have concluded, that he muſt have been alſo deeply ſkilled in chemiſtry, from his being able to diſſolve the golden calf, in the wilderneſs, and from his changing the bitter waters of Marah to ſweet, by means of a certain wood; but without more particular information reſpecting the means which he employed on theſe occaſions, it is impoſſible to form any accurate eſtimate of his chemical proficiency. In later times, the *prophets* of the Jews ſignalized themſelves by healing the ſick, raiſing from the dead, and occaſionally denouncing the infliction of diſtempers on thoſe who had rebelled againſt the law of God.

Recent reſearches have ſhewn, that, at a very early period of hiſtory, the inhabitants of Hindooſtan had made great progreſs in ſeveral branches of phyſical ſcience, but there does not appear to be any reaſon for believing that in the art of curing diſeaſes, they were ſuperior to the ſurrounding nations. According to Strabo (lib. xv.), they truſted chiefly to diet, and to external applications; the ſuperintendance of the ſick was committed in the towns to a particular deſcription of magiſtrates, under whoſe inſpection the Samaneans (Σαμαναιοι) were permitted to practiſe. A law prevailed, that whoever diſcovered a poiſon, was bound to keep it ſecret till he had found an antidote to it; if he ſucceeded in diſcovering the latter, he was rewarded with great honours; but if he made known the poiſon without the antidote, he was puniſhed with death.

Under the deſpotic government of China, whatever its admirers may chooſe to ſay, and whatever degree of antiquity they may aſcribe to its inſtitutions, it was utterly impoſſible

poſſible that the liberal arts could attain any high improvement. The medical code, which is aſcribed to Hoangti, and ſaid to have been compoſed 4000 years ago, but which has been proved to be of much later origin, forms the guide of the Chineſe phyſicians. Formerly there were public ſchools in different parts of the empire, in which medicine was taught in conjunction with aſtrology; but theſe no longer exiſt; and the art itſelf, as we learn from ſir George Staunton and other late travellers, is in a very degraded ſtate. The *Specimen Medicinæ Sinicæ*, for which we are indebted to Cleyen, ſufficiently proves that the Chineſe were never acquainted with its fundamental principles.

There is a ſtriking coincidence between the accounts which have been given of the medical divinities among the Greeks, and thoſe of the Egyptians, though it may be doubted whether the Greeks derived their knowledge of the art from the latter people. Like the Iſis and Oſiris, Apollo and Minerva became the gods of phyſic in Greece, and Orpheus, who was ſaid to be the ſon of Apollo and Calliope, performed the part of Thouth; inſtructing his countrymen in the myſteries of religion, in poetry, and in medicine. According to ſome chronologiſts, however, Melampus is reported to have flouriſhed conſiderably before his time, and to have diſtinguiſhed himſelf by his medical ſkill; of which he gave a remarkable proof in the cure of the daughters of Prœtus, king of Argos, who were attacked with leproſy and madneſs. Afterwards it would appear that all the chief heroes of Greece, and particularly thoſe of the Argonautic and Trojan expeditions, were more or leſs verſed in the phyſical art; in which they are ſaid to have received their inſtruction from Chiron the Theſſalian, ſurnamed the Centaur. Cephalus, Æſculapius, Melanion, Neſtor, Amphiaraus, Peleus, Telamon, Meleagrus, Theſeus, Hippolytus, Palamedes, Ulyſſes, Meneſtheus, Diomedes, Caſtor, Polydeuces, Machaon, Podalirius, Antilochus, Æneas, and Achilles, are all mentioned by Xenophon as the pupils of Chiron. Of theſe by far the moſt celebrated is Æſculapius, or Aſclepios, the reputed ſon of Apollo and Coronis. He was probably a Theſſalian prince; and he is deſcribed as particularly ſucceſsful in the cure of external diſeaſes. That, indeed, his merits muſt have been very extraordinary for the age in which he lived, ſeems proved by the fable, that Jupiter was obliged to remove him from the world, to prevent the growing indifference of mankind towards the gods, and the deſolation of Pluto's kingdom. Some time after his death, divine honours began to be paid him; in conſequence, chiefly, of his deſcendants devoting themſelves to the medical profeſſion; pretending to have derived their knowledge immediately from him, and aſcribing all the cures which they effected to his direct influence. His ſons, Podalirius and Machaon, have acquired a durable celebrity from the mention which the author of the Iliad has made of their ſurgical ſkill.

From the Trojan war till the age of Hippocrates, the art of medicine continued chiefly in the hands of the prieſts, who exerciſed it for their own profit in the temples of the gods. In conformity with the ſuperſtitious character of the age, the patients were taught to expect a cure, or at leaſt to learn the means of obtaining it, in dreams, for which they were previouſly prepared, or rather ſtupefied, by a courſe of impoſing ceremonies. The temples were generally ſituated in the neighbourhood of rivers, or mineral ſprings, and in elevated ſituations, where the influence of the freſh air, and the beauty of the ſurrounding proſpects, were likely to excite cheerful ideas, and to conduce to the recovery of the patient. Bathing was an indiſpenſable part of the initiatory proceſs; and this, conjoined with the ſtrict abſtinence which was enforced, doubtleſs often effected a cure. When recovery took place, the patients were led, from gratitude, to preſent various offerings to the deity of the place; ſometimes pieces of money were thrown into the ſpring where they had bathed, or from which they had drunk; at other times drawings and images of the diſeaſed parts, or tablets deſcriptive of the diſorder and cure, together with the names of the patients, were ſuſpended in the temples. Theſe narratives, ſome of which have been reſcued from oblivion by the induſtry of Grüter (Corp. Inſcript.), muſt have doubtleſs contributed to the progreſs of the art, and ſupplied the ſucceſſive generations of prieſts with ſome uſeful practical obſervations. The temples in which they were recorded, particularly thoſe of the Aſclepiades, became, in fact, ſo many medical ſchools, differing however from one another, and that often materially, in their doctrines and practice. Thus, the Cnidian ſchool diſtinguiſhed itſelf by its ſtrict empiriciſm; while that of Cos had more of a dogmatical character, laying much ſtreſs on the knowledge of the exciting cauſes, and the prognoſis of diſeaſe, and purſuing a more methodic and rational mode of treatment. The former produced Euryphon, the author of the Γνωμαι Κνιδιαι, and Cteſias, of whoſe Perſian hiſtory ſome fragments have been preſerved by Photius; in the latter was developed the genius of Hippocrates.

At firſt, they were only the actual deſcendants of Æſculapius who were inſtructed in the art: afterwards other perſons were admitted as pupils, having previouſly undergone a particular initiation, and bound themſelves by an oath to conform to the rules of the Aſclepiades. Some philoſophers of comprehenſive genius, however, accuſtomed to ſpeculate on the origin of things, the nature of man, &c. had already begun to extend their reſearches to medicine, and ſucceeded in reſcuing the ſtudy, to a certain degree, from the dominion of the prieſts. Of theſe benefactors of their race, no one is more deſerving of mention than Pythagoras, who, after viſiting Egypt and India in queſt of knowledge, returned to his own country and eſtabliſhed the ſchool of Crotona. He applied himſelf to the ſtudy of the animal economy; introduced a regular ſyſtem of dietetics; and did not neglect the practice of medicine. His attempts to explain every thing by the power of numbers, were, indeed, ſufficiently ridiculous; and his therapeutical maxims differed ſcarcely from thoſe of the temples; but the rules of regimen which he inculcated were, generally ſpeaking, very judicious, and implied conſiderable powers of obſervation; though they have, no doubt, been carried to an extravagant length by his followers. Among his immediate diſciples, Alcmæon is celebrated as the inventor of anatomy; and though his knowledge of the internal ſtructure of the human frame may be diſputed, yet the concurring teſtimonies of Ariſtotle, Diogenes, and Plutarch, abundantly prove that he made no inconſiderable figure as a comparative anatomiſt. He is alſo the author of the firſt theory of ſleep. "When the blood," he ſays, "returns into the larger blood-veſſels, ſleep is induced: when it is again diſtributed, waking occurs; but a complete congeſtion is followed by death." (Plutarch de Plac. Philoſ. lib. v. c. 23.) Empedocles was another diſtinguiſhed adherent of the Pythagorean ſect. See EMPEDOCLES.

Beſides theſe philoſophers, and the Aſclepiadæ, there were, at this period, other perſons who devoted themſelves to the profeſſion of phyſic, and who occaſionally were remunerated by a fixed ſalary. Thus, Democetes of Crotona was retained at the court of the Samian tyrant, Polycrates, with an allowance of two talents yearly: being afterwards taken priſoner, and carried as a ſlave into Perſia, he acquired great repute by curing Darius of a ſprained foot, after the

Egyptian phyſicians had failed; and alſo by his ſucceſsful treatment of a tumour of the breaſt, under which Atoſſa, the daughter of Cyrus, and wife of Darius, had laboured for a conſiderable time. (Herod. iii. 133.) Such practitioners, from their wandering lives, were ſometimes deſignated by the name of περιοδευται. Of this claſs, one of the moſt conſpicuous was Acron of Agrigentum, the contemporary and rival of Empedocles, reſpecting whom Pliny has fallen into a ſtrange error, in deſcribing him as the founder of the empiric ſect "under the ſanction of Empedocles." According to Diogenes, he was the author of ſome books on medicine and dietetics, written in the Doric dialect; and he ſignalized himſelf at Athens, in the time of the great plague, by introducing the practice of fumigations (πυρ κελευοντα παρακαιειν τοις νοσουσιν), and thus affording relief to many. (Plut. de Iſid. et Oſir.) The *gymnaſia* of ancient Greece ſeem alſo to have contributed to the improvement of the art. It belonged to the gymnaſiarch, or *palæſtrophylax*, to regulate the diet of the youths who were trained in theſe ſeminaries; the γυμνασται were preſumed to be converſant with diſeaſes; and it was the buſineſs of the ἀλειπται to perform veneſection, to dreſs wounds, fractures, &c. They were ſometimes called phyſicians. It was in theſe ſeminaries that the gymnaſtic ſyſtem of medicine originated, under the auſpices of Iccus of Tarentum, and Herodicus of Selymbria. See Herodicus.

The firſt year of the eightieth Olympiad gave birth to Hippocrates, the ſecond of that name, who was deſtined to effect a greater revolution in medical ſcience than had hitherto been accompliſhed, and whoſe authority continued to be regarded with almoſt implicit veneration by his ſucceſſors, during a period of more than two thouſand years. "He ſaw," ſays Mr. Cabanis, "that too much, and yet not enough, had been done for medicine; and he accordingly ſeparated it from philoſophy, to which it had never been united by its true and reciprocal relation. He brought the ſcience back again into its proper channel, that of rational experience. However, as he himſelf obſerves, he introduced both theſe ſciences into each other, for he conſidered them as inſeparable; but he aſſigned to them relations which were altogether new. In ſhort, he freed medicine from falſe theories, and formed for it new and ſolid ſyſtems: this, he with juſtice ſaid, was to render medicine philoſophical. On the other hand, he elucidated moral and natural philoſophy by the light of medical ſcience. This we may, with propriety, call with him the introduction of the one into the other.

"The new ſpirit of improvement, which was thus communicated to medicine, reſembled a ſudden light that diſpels the phantoms of darkneſs, and reſtores to bodies their proper figure and natural colour. By rejecting the errors of former ages, Hippocrates learned more fully to avail himſelf of the uſeful part of their labours. The connection and dependence, both of the facts which had been obſerved, and of the concluſions which had been legitimately deduced from their compariſon, were now perceived with a degree of evidence, which, till then, had been unknown. All the diſcoveries were certainly not yet made; but from that moment inquirers began to purſue the only path which can conduct to them; from that moment, if they had been able to preſerve themſelves from deluſion, they would have poſſeſſed ſure means of eſtimating, with preciſion, the new ideas which time was deſtined to develope; and if the diſciples of Hippocrates had underſtood his leſſons well, they might have laid the foundation of that analytical philoſophy, by the aid of which the human mind will be henceforth enabled to create to itſelf, as it were, daily, ſome new and improved methods of advancement." Coup d'Œil ſur les Revolutions, &c. de la Médécine, 76—78.

Unfortunately, however, for the progreſs of the art, the diſciples of Hippocrates either did not "underſtand his leſſons," or, miſled by vanity, or other more ignoble paſſions, they ſoon deviated from the path which he had ſtruck out. Inſtead of purſuing quietly the obſervation of nature, they conſumed their time in framing fanciful hypotheſes to explain her operations: inſtead of ſtudying, in a ſincere ſpirit, the works of the maſter whom they profeſſed to worſhip, they ſhameleſsly falſified his writings, in order to adapt them to their own peculiar views, ſo that it has become, as we have already had occaſion to ſhew, (ſee Hippocrates,) a matter of no ſmall difficulty to diſtinguiſh the genuine from the ſpurious compoſitions that have been aſcribed to the father of medicine. But, notwithſtanding theſe errors, it cannot be doubted, that the genius of Hippocrates exerted a highly beneficial influence on the minds of ſucceeding inquirers; and that, without his writings for a guide, the ſcience of phyſic would have remained, for a much longer period, in a ſtate of infancy. "Au lieu de ces ſyſtêmes, ſinon meurtriers, du moins ridicules, qu'a enfantés la médécine moderne pour les proſcrire enſuite, on y trouve des faits bien vus et bien rapprochés; on y voit un ſyſtême d'obſervations, qui encore aujourdhui ſert de baſe à l'art de guérir." D'Alembert, Melanges, iii. 271.

The Dogmatic ſchool, of which Hippocrates has erroneouſly been conſidered as the head, was founded by his ſons Theſſalus and Draco, and his ſon-in-law Polybus, who are the reputed authors of many of the books that now paſs under Hippocrates' name. Polybus is mentioned by Ariſtotle as the compiler, at leaſt in part, of the book "On the Nature of Man," which contains all the leading tenets of the Dogmatiſts, and which was regarded by Galen not as the compoſition of one individual, but as a collection of fragments by different writers. Applying the myſtical doctrines of the Platonic philoſophy to medicine, the Dogmatiſts proceeded upon the principle which has exerted ſuch baneful influence on the progreſs of ſcience in general, *viz.* "that where obſervation failed, reaſon might ſuffice." (De Arte. Ed. Foeſ. 1657. p. 6.) They accordingly were led to neglect the patient ſtudy of nature; and before they had collected a ſufficient ſtore of facts, they fondly imagined that they had laid the foundation of an incontrovertible ſyſtem. Hence it came, that, in their inquiries, ſophiſtry often uſurped the place of obſervation, and futile hypotheſis was preferred to experience. In this way aroſe a multitude of ſects, who contributed little or nothing to the advancement of the art, but, on the contrary, were daily miſleading their followers more and more from the right path of reſearch. It is therefore highly unjuſt to refer the origin of the Dogmatic ſchool to Hippocrates, in whoſe genuine writings it will be found that the moſt oppoſite principles are inculcated. For a more particular account of the doctrines of this ſect, ſee Empiric.

About the ſame period, Eudoxus of Cnidos introduced the Pythagorean ſyſtem, and a modification of the Egyptian practice, in which he was followed by his diſciple Chryſippus. With the latter, cabbage and other vegetables were the favourite remedies; to purgatives and blood-letting he had an averſion. One of the moſt diſtinguiſhed men of the age, however, was Diocles of Caryſtus, whom Pliny (xxvi. 2.) ranks as almoſt equal to Hippocrates. He employed himſelf in comparative anatomy, and corrected many errors of his predeceſſors: like the two laſt mentioned phyſicians, he united the doctrines of Pythagoras with medicine; aſcribing

ing great influence to the number ſeven and its combinations. (Macrob. in Somn. Scip. i. 6.) He was alſo the inventor of a ſurgical inſtrument for the extraction of arrows, called after him *Diocleus graphiſcus*. His contemporary, Praxagoras of Cos, is not leſs deſerving of notice on account of his anatomical labours, being the firſt perſon who eſtabliſhed the diſtinction of arteries and veins, and who demonſtrated the abſence of *cotyledons* in the human uterus; whence Sprengel (Geſchichte der Arzneikunde, i. 549.) has with great plauſibility conjectured, that diſſections of the human ſubject could not have been, at that time, entirely unknown. Praxagoras alſo introduced the doctrine of the pulſe, and reduced the humoral pathology to a more regular ſyſtem: he made frequent uſe of veneſection, particularly in hemorrhage, and was a bold ſurgical operator; for he ſcrupled not, as Cælius Aurelianus informs us, to lay open the abdomen, and divide the *inteſtinum rectum*, in the iliac paſſion, in order to remove the accumulated fæces.

Many circumſtances had now concurred to favour the advancement of natural knowledge. The ſpirit of inquiry, which the early philoſophers had excited, was cheriſhed by the eſtabliſhment of ſo many rival ſchools; but, above all, by the number of learned men, who aroſe to adorn and inſtruct the world. Within the ſhort ſpace of a century appeared Ariſtotle, Pyrrho, Theophraſtus, Zeno, and Epicurus, all of them endowed with tranſcendent genius. and conſpicuous for their zeal in the cauſe of ſcience. The influence which they exerted on the character of their age was accordingly very great. While Ariſtotle applied himſelf, with the moſt ſignal ſucceſs, to all the branches of moral and phyſical reſearch, and his pupil Theophraſtus laid the foundation of true botanical ſcience; Zeno and Epicurus developed thoſe beautiful ſyſtems of ethics, which tranſported their contemporaries, and which ſtill, in ſome meaſure, divide the minds of men. However remote from medicine the ſpeculations of moraliſts may at firſt ſight appear, a little obſervation will teach us, that the phyſicians of almoſt every age have allowed themſelves to be carried along by the current of prevailing opinions. In the epoch of which we are now writing, the tenets of Pyrrho and Epicurus were eagerly ſeized upon by the empirical ſect, as favouring their peculiar views; while the ſtoical ſyſtem gave new ſtrength to the dogmatiſts, particularly by the introduction of the dialectic method.

The eſtabliſhment of a magnificent library and muſeum of natural hiſtory at Alexandria, and the liberal patronage which learning there received from the Ptolemies, rendered that city the chief reſort of men of ſcience from all parts of the world, and the great emporium of literature. In conſequence, the Alexandrian ſchool ſoon eclipſed all the rival ſeminaries, and produced a ſucceſſion of eminent phyſicians; among whom Herophilus and Eraſiſtratus are entitled to the firſt place, on account of their important contributions to anatomical knowledge. (See their reſpective articles.) It was in their time, and probably at Alexandria, that the memorable diviſion of the art into three branches took place: "Iiſdem temporibus, in tres partes medicina diducta eſt, ut una eſſet, quæ victu, altera quæ medicamentis, tertia quæ manu mederetur." (Celſ. l. i.) But, however much this diſtribution of practice was calculated to accelerate the progreſs of medical ſcience, in all its different parts, it does not appear that the immediate ſucceſſors of Herophilus and Eraſiſtratus turned the circumſtance to great account; though Celſus affirms, that ſurgery improved rapidly after its ſeparation. Lib. vii. Præf.

Of the eſtabliſhment and doctrines of the Empirical ſect we have already given a ſufficiently minute view under the proper article. We have there ſhewn how decidedly the principles of this ſchool were oppoſed to thoſe of the Dogmatiſts; and that there was ſomething more than a mere diſpute of words between them, as ſome writers maintain. Notwithſtanding, however, all their points of variance; notwithſtanding the violence and bitter animoſity which the contending parties diſplayed in their controverſies; it was found, that when they came to apply their reſpective principles to practice, and to determine on the treatment of diſeaſe, all differences, in a great meaſure, vaniſhed. Nor was this to be wondered at: for the dogmatiſts, though they indulged too much in hypothetical reaſoning, did not altogether neglect obſervation, and were conſequently more or leſs guided by the ſame leſſons of experience, on which the empirics founded their therapeutical maxims. The ſame remark will be found to apply to almoſt all the ſects which have acquired any conſequence in the medical world.

In the article laſt referred to, Heraclides of Tarentum has been mentioned as one of the adherents of the empirical ſchool; but he deviated from the ſtrict empirics in this reſpect, that he did not neglect the inveſtigation of the hidden and remote cauſes of diſeaſe. His practice in ſome of the moſt dangerous diſeaſes, as phrenitis, lethargy, cynanche, tetanus, and cholera, (for the deſcription of which we are indebted to Cælius Aurelianus,) ſeems to have been highly judicious. To the materia medica he contributed largely: he wrote a treatiſe on the compoſition of medicines, in which he obſerved the praiſeworthy maxim of noticing only ſuch remedies as he had adminiſtered himſelf. He is alſo reported to have poſſeſſed no inconſiderable ſkill in ſurgery; and, on the whole, he appears to have fully merited the eulogies of Galen and Aurelianus, the latter of which ſtyles him *empiricorum princeps*. After his death, the ſtudy of the materia medica took a new direction, in conſequence of the attention that was paid to the ſubject of poiſons and their antidotes, by the kings of Pergamus and Pontus. The antidote which was invented by the latter is well known, though its efficacy has never been proved. Even Serenus, who is in general ſufficiently credulous, ſeems to have had no very high opinion of its virtues.

> "Antidotus vero multis Mithridatica fertur
> Conſociata modis, ſed Magnus ſcrinia regis
> Cum caperet victor, vilem deprehendit in illis
> Syntheſin, et vulgata ſatis medicamina riſit." Cap. lx.

Nicander of Colophon, who was the contemporary of Attalus, king of Pergamus, acquired great fame as a grammarian, a poet, and a phyſician. Of his works, only the two treatiſes in verſe, entitled Θεριακα and Αλεξιφαρμακα, have been handed down to us. Though not abounding in poetical merit, they diſplay no mean acquaintance with natural hiſtory.

The Roman people, as Pliny aſſures us (xxix. 1.), had continued without phyſicians, if not without phyſic, during a period of 600 years. On the occaſion of a deſtructive epidemic, in the year 463 A.U.C. however, they ſent a deputation to the temple of Eſculapius at Epidaurus. Inſtead of an oracle, they received one of the ſacred ſerpents, and following the indication of its ſpringing from the ſhip upon the iſland of the Tiber, they there founded a temple to the god of medicine, and eſtabliſhed his worſhip on the ſame footing as at Epidaurus. Shortly afterwards, a temple was dedicated to the Grecian Hygeia, and the worſhip of Iſis and Serapis was borrowed from the Egyptians: but, beſides theſe, the Romans had certain medical deities quite peculiar to themſelves. For example, on the Palatine Mount, there was a temple of the goddeſs Febris, who probably received divine honours from a prevalent dread of the diſeaſe. Tomaſini, (in Græv. Theſaur. Roman. Antiquit. v. xii. p. 867.) has preſerved the following inſcription of a votive tablet to this goddeſs:

> " Febri divæ febri
> Sanctæ febri magnæ
> Camilla amuta pro
> Filio male affecto p."

There was alſo a goddeſs Oſſipaga, who preſided over the growth of the bones, and one ſtyled Carna, who took care of the viſcera, and who had bean-broth and bacon offered to her, as being the moſt nutritious articles of diet. (Macrob. Saturnal. lib. i. p. 123. ed. Ald.) The goddeſs Mephitis, who is mentioned by Tacitus, as worſhipped at Cremona, had probably the ſame attributes as Febris.

With reſpect to the queſtion, which was ſo warmly debated in the beginning of the laſt century, (*viz.* Whether the art of phyſic was exerciſed by any other perſons than ſlaves, or freedmen, in the earlier periods of Roman hiſtory?) we would obſerve, that the probability is againſt the ſuppoſition, that it was ſo. Certain it is, that the inferior orders of the profeſſion, thoſe Greeks, for example, who were employed to perform veneſection, to extract corns, or draw teeth, were all dignified with the title of *medici*, in the ſame way as the Jatraliptæ were often ſtyled ’ιατροι. But that in time they raiſed themſelves above this ſervile condition, is abundantly proved by the honour of citizenſhip, and other privileges, which were conferred upon them. Archagathus is the firſt perſon who is mentioned as having come to Rome, of his own accord, to practiſe the art of ſurgery. The ſenate decreed him the freedom of the city, and purchaſed for him a ſhop in the Acilian croſsway; but his cruel operations—" ſævitia ſecandi urendique"—ſoon brought him into diſrepute, and eventually led to his baniſhment. Pliny, loc. cit.

In the 654th year A.U.C., or 100 years before the Chriſtian era, Aſclepiades, a native of Pruſa in Bithynia, who had ſtudied at Alexandria and Athens, came to Rome as a teacher of rhetoric: but not finding that profeſſion ſufficiently lucrative, he ſuddenly turned phyſician, and by his conſummate addreſs, in a ſhort time, brought himſelf into great notice. The prototype of all ſucceeding quacks, Aſclepiades affected to contemn every thing that had been done before him—" omnia abdicavit; totamque medicinam, ad cauſam revocando, conjecturam fecit;" he ridiculed Hippocrates for his patient obſervation of nature, and called his ſyſtem a *meditation on death*, θανατου μελετην. His fame, however, would have been incomplete, if he had not introduced a ſyſtem of his own. Accordingly, taking, for the baſis of it, the philoſophy of Epicurus and Heraclides of Pontus, he attempted to explain all the functions of the human body, and all the operations of health and diſeaſe, by means of corpuſcles and pores, ὀγκοι and ποροι. Anatomy was altogether neglected by him. In his practice, he profeſſed to be guided by the maxim *tuto, celeriter, et jucunde:* but though he flattered the caprices of his patients, and ſoothed their complaints by the blandiſhments of his rhetoric; yet we learn from Celſus (lib. iii. c. 4.), that he ſubjected them to many ſevere mortifications; keeping them, for inſtance, ſeveral days without drink or ſleep, in the early ſtages of fever. That Aſclepiades, however, poſſeſſed no mean talent for obſervation, is proved by his deſcription of diſeaſes, and by the diviſion of them into acute and chronic, which appears to have originated with him. The remedies which he employed were chiefly dietetical; but he was no enemy to phlebotomy, though he diſcouraged vomiting and purgation: inſtead of the latter he recommended clyſters. He was a great advocate for the efficacy of frictions, geſtation, and other corporeal exerciſes; and he ſedulouſly preſcribed the uſe of cold water externally as well as internally; though he probably ingratiated himſelf with the Romans more by his free adminiſtration of wine, in diſorders where it had not formerly been allowed. Sprengel ſuppoſes him to have been the inventor of the ſhower-bath, *balinea penſilis.* Pliny, xxvi. c. 3.

Themiſon of Laodicea, a diſciple of Aſclepiades, adopting the leading doctrines of his teacher, founded upon them the Methodic ſyſtem. He diſcarded the ſtudy of remote cauſes, the theory of critical days, &c. as wholly uſeleſs; and maintained, that all that was neceſſary for the phyſician, was an acquaintance with certain general conſtituents of diſeaſe. In his practice he followed the footſteps of Aſclepiades, firſt famiſhing his patients, and then endeavouring to obviate the preternatural condition, which he had induced. His ſucceſs, however, would not appear to have been very great, if we are to credit the inſinuation contained in the line of Juvenal,

> " Quot Themiſon ægros autumno occiderat uno."

The object which the Methodic ſect had in view, ſeems to have been the ſimplification of the theory and practice of the art. The inveſtigations of the Dogmatiſts reſpecting occult cauſes appeared to them to reſt on too fallacious grounds; nor were they ſatisfied with obſerving the *concurſus ſymptomatum*, like the Empirics: they therefore ſteered a middle courſe between the two, taking for the baſis of their theory certain conditions of the ſyſtem, which are common to different diſeaſes (quædam morborum communia, κοινοτητα); without conſidering, as Sprengel well obſerves, that theſe conditions of the body are as often, if not more frequently, concealed from view, than all the occult cauſes of the Dogmatiſts. The earlier adherents of this ſyſtem contended, that there were two general morbid conditions to which all diſeaſes were referrible, *viz.* a ſtate of *conſtriction*, and a ſtate of *relaxation;* but they applied theſe terms not, as it would appear, in the modern acceptation, to particular organs, but to the body at large. Conformably to this view of diſeaſe, all that the practitioner had to do, was to find out, in each caſe, the morbid condition, and to apply his remedies accordingly: if it was a diſeaſe of conſtriction, he preſcribed relaxing medicines; and if it was one of relaxation, he employed aſtringents. But it was very ſoon diſcovered, that theſe two ſtates would not comprehend all diſeaſes: the Methodiſts therefore invented a third common condition, which they called the *mixed* ſtate. " We may form ſome idea," Mr. Cabanis obſerves, " of what they meant to deſignate by the term *diſeaſes of conſtriction*, though it is certainly not ſo intelligible to men of ſcience, as it appears to the uninformed claſs; we may alſo conceive the import of the phraſe *relaxed fibres;* but it is difficult to divine, what they could underſtand by their *mixed ſpecies*, or how they could apply to practice this ſpeculative notion, which is ſo very ſubtle, as to elude all clear conception. Beſides, is it not evident, that almoſt all diſeaſes belong to the *mixed* claſs, or may be referred to it? For this word, if it ſignify any thing, muſt mean an *inequality of tone* in the different organs, or an *irregular diſtribution* of the vital power. Now the majority of diſeaſes preſent the general phenomenon of a derangement of equilibrium,

brium, or irregular expenditure of living energy. In thoſe caſes, in which theſe deviations from the healthy ſtandard are leſs obvious, an obſerving eye may ſtill perceive them; and, perhaps, there is no diſeaſe in which a deficiency of equilibrium is not, in ſome degree, manifeſted, whether it be in the tone of the different organs, or in the exerciſe of life, and diſtribution of the ſenſibility of the ſyſtem. Thus then, the *mixed ſpecies* of the Methodic ſect, by comprehending every thing, becomes, in fact, applicable to nothing." Loc. cit. p. 100.

Notwithſtanding the juſtice of theſe ſtrictures, it cannot be denied, that the doctrines in queſtion had, in one point of view, a beneficial tendency, *viz.* by obliging phyſicians to ſtudy more attentively, than they had hitherto been accuſtomed to do, the different *indications* of diſeaſe. If the Methodiſts had applied themſelves to the inveſtigation of ſuch morbid conditions of the ſyſtem as were manifeſted by the ſymptoms; and if they had not raſhly attempted to ſimplify pathology, by ranging diſeaſes in two general claſſes, according to characters that were but partially applicable; their ſchool would have conduced ſtill more to the improvement of the ſcience of medicine. As to their mode of practice, it may be obſerved, that they wholly overlooked the healing powers of the ſyſtem, and, without regard to the peculiar circumſtances of the caſe, or the nature of the part affected, were ſolely intent on fulfilling thoſe general indications, that were conformable to their theory. It is true, that they paid particular attention to days; not, however, as connected with the doctrine of criſes, for which, as we have already hinted, the founders of this ſect entertained a marked contempt; but only as affording them a meaſure of the duration of the diſorder, and a guide for the method of treatment. In the firſt days, they followed the ſtarving ſyſtem; afterwards they purſued the ſuppoſed general indications of conſtricting, or of relaxing: during the exacerbation of the diſeaſe, they endeavoured to moderate the violence of it; during its decline, they ſupported the powers of the ſyſtem by nutritive diet. This was their mode of proceeding in all acute diſeaſes: but, in chronic complaints to which it was leſs applicable, they had recourſe to what they termed the μετασυγκρισις, or *reincorporation*, of which the profeſſed object was to reſtore the proper relations between the atoms and pores, and for which they prepared the patient by the ἀναληψις, or *reſumptive circle*. It was, in fact, little elſe than their practice in acute diſeaſes reverſed,—they firſt ſought to ſtrengthen the patient by a generous diet, and then they adminiſtered a ſucceſſion of violent remedies, to ſubdue the original malady. For the details of this mode of treatment, ſee Cæl. Aurel. Chron. i. c. 1. ii. c. 13. 29. &c.

Among the diſciples of Themiſon, one Theſſalus of Trallis, a man of low birth and coarſe manners, made himſelf conſpicuous by the ſhameleſs audacity with which he ſought to diſparage the labours of others—arrogating to himſelf the title of ἰατρονικης, or *conqueror of phyſicians*, and that, it would appear, without the ſlighteſt pretenſions to either learning or talents. (Plin. l. xxix. c. 1.) He held forth, that he could qualify any one for a phyſician in the ſpace of ſix months, and actually ſucceeded in obtaining a great number of pupils; but it was from among the loweſt order of artiſans, ſuch as rope-makers, weavers, cooks, butchers, fullers, and ſuch like. Theſe he took with him to viſit his patients for the ſtipulated time, and then he conferred upon them the privilege of practiſing for themſelves. From his time it became the cuſtom for the Roman phyſicians to viſit their patients attended by all their pupils; in alluſion to which, we have the epigram of Martial:

> "Languebam; ſed tu comitatus protinus ad me
> Veniſti, centum, Symmache, diſcipulis.
> Centum me tetigere manus aquilone gelatæ:
> Non habui febrem, Symmache: nunc habeo!"

The methodic ſchool acquired much greater repute from the labours of Soranus and Cælius Aurelianus; the former a native of Epheſus, who had ſtudied at Alexandria, and came to Rome during the reign of Trajan; the latter an African by birth. Free from the prejudices, which had diſgraced his predeceſſors, Soranus cultivated the ſtudy of anatomy, and wrote a book on *the female organs of generation*, which is ſtill extant, and which diſplays conſiderable acquaintance with the ſubject. Many of his obſervations on diſeaſe ſhew, that he was poſſeſſed of great ſagacity and ſtrength of judgment. To Cælius Aurelianus, on the other hand, we are indebted for an account of his doctrines and practice, and for one of the beſt works on medicine, which have come to us from ancient times; written, it is true, in a barbarous ſtyle, but highly deſerving of peruſal on account of the accurate deſcription of diſeaſes, and the different methods of treatment, which it contains.

Anatomy and the other auxiliary ſciences, though they had been ſo much neglected by the methodiſts, were now receiving important additions from other quarters. Rufus of Epheſus, who lived in the time of the emperor Trajan, and whoſe works have been edited by our countryman, Clinch, applied himſelf zealouſly to the diſſection of animals, particularly of apes, and deſcribed from analogy the different organs of the human body. He traced the nerves from their origin in the brain, and divided them into thoſe of ſenſation and thoſe of voluntary motion; he pointed out the decuſſation of the optic nerves at the *infundibulum*, and he ſpeaks of the capſule of the cryſtalline lens, under the appellation ὑμην φακοειδης. The heart he believed to be the ſeat of life, of animal heat, and the cauſe of pulſation, and he ſhewed the difference of ſtructure and capacity between the right and the left ventricle. The ſpleen he held to be an uſeleſs organ. Marinus, whom Galen calls the reſtorer of anatomy, and to whoſe labours he was himſelf probably indebted for much of his knowledge on the ſubject, rendered ſtill greater ſervices to the ſcience. He inveſtigated the abſorbent ſyſtem with great care, and diſcovered the meſenteric glands; he diſtributed the nerves into ſeven pairs: the N. palatinus (then called the fourth pair) was firſt deſcribed by him; and he is ſaid to have been the diſcoverer alſo of the *par vagum*, which he termed the ſixth pair. His numerous writings have all periſhed.

The ſtudy of the materia medica, and of the other branches of natural hiſtory, was proſecuted with no leſs vigour; and we owe to this epoch the invention of many remedies, which are ſtill retained in our pharmaceutical ſyſtems. The elder Pliny, ſecond only to Ariſtotle in the univerſality of his genius, but ſurpaſſing even that great man in his inſatiable thirſt for knowledge, had collected in his Hiſtoria Mundi all that the ancients knew of natural ſcience. Dioſcorides of Anazarba, devoting himſelf to botany and materia medica, produced a work, which ſerved for a guide in theſe ſciences till a very late period. His deſcriptions of ſome of the more valuable drugs, ſuch as myrrh, ladanum, aſſafœtida, ammoniac, opium, ſquills, and their different preparations, are entitled to great praiſe. The efficacy of ſeveral remedies, which he recommends, has been admirably confirmed by later experience, ſuch as of the

the elm-bark in cutaneous diſeaſes, of potaſh as a cauſtic, of the male fern againſt worms, &c. &c. Some of the contemporaries of Dioſcorides, as Scribonius Largus, Xenocrates, and Andromachus, cultivated the materia medica, but with leſs ſucceſs. To Menecrates, who lived in the reign of Tiberius, and who, according to an inſcription in Montfaucon, appears to have been the author of 155 books, we are indebted for the invention of the *diachylon* plaiſter; and Damocrates is well known as the author of ſeveral complicated remedies, which bear his name. Herennius Philo, of Tarſus, is mentioned by Galen as the inventor of an anodyne compoſition, called, after him, Philonium, and which conſiſted of opium, euphorbium, and different aromatics; and Aſclepiades Pharmacion was the introducer of numerous remedies from the animal kingdom, which, though long honoured with a place in our pharmacopeias, have now deſervedly fallen into diſrepute.

Before quitting this period of medical hiſtory, it will be neceſſary to ſay a few words reſpecting two other ſects, which aroſe ſoon after the eſtabliſhment of the methodic ſchool: we mean the Eclectic and Pneumatic ſects. The founder of the latter, Ariſtæus of Cilicia, flouriſhed as a phyſician at Rome about the middle of the firſt century, and diſtinguiſhed himſelf by his oppoſition to the tenets of Aſclepiades, and his attachment to the Stoical ſyſtem: he extended the theory of pre-exiſtent germs; treated the doctrine of the pulſe with dialectic ſubtlety, referring its varieties to the exhalation of the πνευμα from the heart and arteries; and cultivated ſeveral branches of pathology; but was more ſucceſsful in his dietetical reſearches, particularly with reſpect to the influence of the atmoſphere. His pupil Agathinus, endeavouring to reconcile his principles with thoſe of the methodic and empiric ſects, acquired the name of the Epiſynthetic or Eclectic, and thus eſtabliſhed the Eclectic ſyſtem, on which, however, he does not appear to have conferred much repute by his own labours. That merit was reſerved for Archigenes and Aretæus, who, adopting the leading tenets of the Pneumatic theory, gave it a more ſcientific form, and enriched it by many valuable obſervations. The former attempted to reform the language of medicine, but without much effect; for even Galen has occaſion to complain of the obſcurity of his phraſeology; he was, beſides, too fond of ſubtleties: but many of his practical obſervations, which Galen has recorded, are excellent. The merits of Aretæus, as a ſkilful and attentive obſerver, and as an elegant deſcriber of diſeaſe, are familiar to every one. To Caſſius, the Jatroſophiſt, another Eclectic, we are indebted for many valuable pathological remarks concerning the diſeaſes of aſſociation, and the ſympathies of the nervous ſyſtem.

During this period, ſurgery received conſiderable improvement; particularly from the labours of Heliodorus and of Antyllus. Of the former, who was an eminent ſurgeon at Rome, in the time of Trajan, Nicetas has preſerved ſeveral practical obſervations, on injuries of the head and diſeaſes of the bones, which evince no mean proficiency in his art. The latter is perhaps ſtill more deſerving of notice, as being the firſt who gives any account of the extraction of the cataract: he recommends this operation to be performed while the cataract is ſmall, being of opinion, that, when enlarged, it cannot be extracted without bringing the humours of the eye along with it. (Rhaz. Continent. lib. ii. c. 3.) His directions concerning the preparation of plaſters and ointments, and concerning the choice of veins in phlebotomy, are very minute. In dangerous caſes of cynanche, he adviſes bronchotomy; and in *hernia humoralis* he operated by inciſion. Philagrius, who lived about the time of Valens, appears to have been the firſt who attempted to extract a ſtone from the bladder by the high operation. (Aët. Tetrab. iii. ſ. iii. c. 5.) The laſt quoted author has alſo tranſmitted to us an account of the ſurgical practice of one Leonides of Alexandria, whoſe obſervations on hernia, ſcrofula, and glandular ſwellings, on ulcers and warts of the genital organs, on hydrocele, and on inflammation of the ſcrotum, ſhew conſiderable diſcernment. In cancerous affections of the breaſt, he reſorted to amputation, and the actual cautery; in *fiſtula*, his method of operation differed but little from that recommended by Pott.

The art of medicine was advancing thus rapidly in all its branches, when Galen appeared, a man of ſignal talents, who ſoon outſtripped all his competitors in the profeſſion, and divided with Hippocrates the admiration of the medical world. "Endowed with a genius ſufficiently comprehenſive to embrace all the ſciences, and to cultivate them all with equal ſucceſs," if we may borrow the language of Cabanis, "he, even in early infancy, gave proofs of uncommon capacity; and while purſuing his youthful ſtudies, began to perceive the futility of the prevailing ſyſtems. Diſſatisfied with what his maſters taught him as incontrovertible truths, and as the immutable principles of the art, he read Hippocrates' works, and was ſtruck, as it were, with a new light. In comparing them with Nature, his aſtoniſhment and admiration redoubled; and Hippocrates and Nature thenceforth became the only preceptors to whoſe inſtructions he would liſten. He undertook the taſk of commenting upon the writings of the father of medicine; he preſented his opinions in various lights, in which they had not hitherto been regarded; he repeated his obſervations, he extended them, and ſupported them with all the aids which philoſophy and phyſics were capable of affording them, either by the ſimple compariſon of facts, or by the collation of different theories, or, finally, by the combination of different methods of reaſoning. In ſhort, Galen revived the Hippocratic ſyſtem of medicine, and communicated to it a luſtre, which it did not poſſeſs in its primitive ſimplicity. But, at the ſame time, what it gained in his hands, muſt be allowed to have more the appearance of dreſs and ornament, than of real ſolid acquiſition. The obſervations which had been collected, and the rules which had been laid down by Hippocrates, in aſſuming a more ſplendid and ſyſtematic form, loſt much of their original purity; nature, whom the Coan phyſician had always followed with ſo much accuracy and caution, became obſcured, and, as it were, ſtifled, by the foreign pomp of various ſciences and dogmas; and the art of medicine, overcharged, as it already was, with ſubtle and ſuperfluous rules, became entangled in a number of new and unneceſſary difficulties." Q. c. p. 113.

Though poſſeſſed of more extenſive erudition than either Hippocrates or Aretæus, Galen was decidedly their inferior as a pathological obſerver; not, however, ſo much from any defect of his mental powers, as from his attachment to falſe theory. It was on the pſeudo-Hippocratic doctrines, particularly as developed in the book περι φυσεως ἀνθρωπȣ, that he founded his ſyſtem. Although, therefore, he profeſſed to follow Hippocrates, he did not always follow him in his genuine ſpirit. But all the departments of the art have been enriched by his labours: to anatomy and phyſiology, in particular, he made many uſeful additions by the information which he collected in his travels, and by his aſſiduous diſſections of the inferior animals. For the hiſtory of his life and writings, and for an account of the ſyſtem which took its name from him, ſee GALEN and GALENICAL *Syſtem*.

Unfortunately the exertions of Galen, to preſerve the ſcience in the path of improvement, were not ſeconded by his immediate ſucceſſors. During a period of thirteen centuries, medicine remained nearly ſtationary, and, in ſome inſtances, aſſumed even a retrograde courſe. The beſt writers who appeared among the Greeks, ſuch as Oribaſius, Aëtius, Alexander Trallianus, Paulus Ægineta, Nicetas, &c. contented themſelves, in a great meaſure, with the merit of compilation; while among the eaſtern nations an unnatural union was attempted between medicine and the favourite ſtudies of magic and aſtrology. The Arabians, from their vicinity to Alexandria, from their intercourſe with the ſect of Neſtorians and with the Greek philoſophers, who had been compelled by the perſecution of Juſtinian to take refuge in the Mahometan ſtates, had acquired a taſte for literature and the ſciences. About the commencement of the ſeventh century, the works of ſeveral of the Greek philoſophers and phyſicians were tranſlated into Arabic, under the patronage of the caliphs; ſeveral of whom were zealous encouragers of learning. In the eighth century, the caliph Almanſur eſtabliſhed an academy and hoſpitals for the ſick at Bagdad, which ſoon became ſo great a reſort for men of letters from all parts of the world, that, as Leo Africanus aſſures us, it at one time contained ſix thouſand. His ſucceſſor, Harun-Arraſchid, patroniſed the medical ſchool of Jondiſabur, the teachers in which were chiefly Neſtorians; and both he and Almamun were unremitting in their exertions to procure tranſlations from the Greek, and the ſettlement of men of ſcience in their dominions. But it was in Spain that Arabian learning roſe to the higheſt pitch, and produced the moſt brilliant fruits. The univerſity of Cordova, which had been founded by Alhakem, became the moſt celebrated in the world, and maintained its repute for a long courſe of years. As early as the tenth century, Cordova could boaſt of the largeſt library in the Weſt; a library of 250,000 books, and of which the catalogue is ſaid to have filled forty-four volumes. In the twelfth century, there were no leſs than ſeventy public libraries in Spain: Cordova had produced 150 authors, Almeria 52, and Murcia 62. At Seville, at Toledo, and at Murcia, academies were alſo eſtabliſhed, which continued to flouriſh during the whole period of the dominion of the Arabians.

Notwithſtanding theſe numerous incitements to learning, notwithſtanding the multitude of authors which they produced, the labours of the Arabians in the field of ſcience were attended with but ſmall fruits. Worſhipping the authority of Ariſtotle and of Galen, they conſumed their time in commenting upon theſe writers, and neglected the path of individual obſervation and experiment. To anatomy they contributed nothing; the tenets of their religion forbad all attempts at diſſection; and the only thing they ventured upon was the inſpection of the ſkeleton. Their pathology, though disfigured by numberleſs extravagances, was enriched by the deſcription of ſome new diſeaſes, particularly of the ſmall-pox, which, according to the Arabian writers, broke out about the year 558, and of which the firſt account was given by Ahrun, the author of a work in the Syriac tongue, intitled "Pandects." Their practice, in as far as it deviated from the Grecian model, was miſerable quackery. The only improvement deſerving of notice was the introduction of lenitive medicines, in the place of draſtic purgatives, which had been too freely employed by the Greeks. A predilection for the wonderful led them to cultivate with great aſſiduity the arts of aſtrology and uroſcopy, and to deliver their judgments with all the airs of propheſying. National prejudices, and a falſe delicacy, prevented their making any progreſs in ſurgery; and Albucaſis had much reaſon to complain of the ignorance of his countrymen in that department of the ſcience. In the auxiliary arts of chemiſtry and pharmacy they were more ſucceſsful. The former had been cultivated by the later Alexandrians, principally with a view to the tranſmutation of metals; an art which ſeemed to poſſeſs great attractions in the eyes of the Arabians, and to which they accordingly applied themſelves with eagerneſs. Geber, who lived in the commencement of the eighth century, and who is ſaid to have been the firſt alchemiſt of his nation, ſeems to have been acquainted with various preparations of mercury, ſuch as corroſive ſublimate and red precipitate, with the nitric acid, aqua regia, &c. Pharmacy was an object of ſtill greater attention among them; and the Arabians have the credit of having ſet the firſt example of publiſhing regular diſpenſatories, or collections of authorized formulæ. The firſt pharmacopeia was the production of one Sabon-ebn-Sahel, head maſter of the academy of Jondiſabur, and appeared towards the end of the ninth century, under the title of "Krabadin." The ſhops of the Arabian apothecaries were placed under the immediate ſuperintendance of the magiſtracy, who took care that they ſhould be provided with genuine drugs, and that theſe ſhould be ſold at a reaſonable price. Many of the pharmaceutical terms ſtill employed are of Arabian origin, *e. g.* alcohol, naphtha, camphor, julep, ſyrup, &c. &c. For a more particular account of Arabian medicine, ſee Sprengel, G. d. A. Th. ii. ſ. 324—450 (2te Augs.): the modes of practice have been ſufficiently deſcribed by Freind.

If the Mahometans, generally ſpeaking, contributed little to the improvement of the ſcience, they have yet more claims on our gratitude than the Chriſtian profeſſors of the art during the ſame period. To the former we owe, in ſome meaſure, the preſervation and diffuſion of the writings of the Greek phyſicians: the latter did every thing in their power to degrade the profeſſion, and bring it back to its condition in the moſt barbarous times. The clergy, actuated by avaricious motives, ſeized upon the province of the phyſician, and the moſt ignorant prieſts and monks ventured upon the practice of medicine, without any proper ſtudy or preparation. At length the evil became too crying to be any longer endured; and the firſt Lateran council, held in 1123, forbad the regular clergy to viſit any longer the ſick. The prohibition was repeated, in other terms, by the council of Rheims, in 1131, and by the ſecond general Lateran council in 1139; and thoſe monks and canons, who applied themſelves to phyſic, "ordinis ſui propoſitum nullatenus attendentes, *pro deteſtanda pecunia ſanitatem pollicentes*," were threatened with ſevere penalties, and all biſhops, abbots, and priors, who connived at their miſconduct, were ordered to be ſuſpended from their eccleſiaſtical functions. "But the French prieſts and monks," ſays Cabanis, "bade defiance to theſe thundering anathemas; and it was not till three hundred years after, that common ſenſe and a regard to propriety and the public good, triumphed finally over their artifices. A ſpecial bull, procured by the cardinal d'Eſtonteville, which permitted phyſicians to marry, effected their complete ſeparation from the clergy; and, by this means alone, put a ſtop to a variety of ſhameful abuſes." To the honour of our own country, however, be it mentioned, that theſe abuſes do not appear to have prevailed to ſuch an extent among us; but that, on the contrary, England could reckon many ſcientific men among its clergy, even as early as the ſeventh and eighth centuries, whoſe fame was ſo great as to procure them the chief literary appointments abroad. The learned ſociety, which was formed at the court of Charlemagne, conſiſted chiefly of Britons, with the celebrated Alcuin at their head; and it would appear from the verſes of the laſt-mentioned perſonage, that the members practiſed medicine:

> "Accurrunt medici mox Hippocratica tecta;
> Hic venas fundit, herbas hic miſcet in olla,
> Ille coquit pultes, alter ſed pocula præfert."
> Carmin. 228.

The Benedictine monks of Salerno, in the Neapolitan territory, after having exerciſed the art for ſeveral centuries, according to the taſte of the age, and performed many miraculous cures with the relics of St. Matthew and other holy perſons, betook themſelves to the ſtudy of the Arabian and Grecian writers on phyſic, but eſpecially of Galen, whom they eſteemed the prince of phyſicians; and by their ſucceſsful labours procured for their reſidence the title of *Civitas Medicinæ*. In the twelfth century, Salerno arrived at its higheſt fame; and was much frequented by the cruſaders in their paſſage to and from the Holy Land. Among theſe, Robert, the ſon of William the Conqueror, had the honour of having the well-known "Regimen Sanitatis Salerni" dedicated to him. In the year 1140, the emperor Frederic II. conferred particular privileges on the ſchool of Salerno, and regulated the courſe of ſtudies, and the probations which phyſicians and ſurgeons ſhould undergo before they were permitted to practiſe. Many of the ordinances ſhew great judgment. The Salernian ſchool continued accordingly to flouriſh till the middle of the fourteenth century, when it appears to have begun to decline. "Fuiſſe Salerni," ſays Petrarch, "medicinæ fontem fama eſt; ſed nihil eſt, quod non ſenio exareſcat." Gariopontus, Nicolaus, Ægidius, Enos, and John of Milan, the author of the "Regimen Sanitatis," are the chief writers whom this ſchool boaſts.

Medicine was now generally taught in the univerſities of Europe, among which thoſe of Montpellier, Paris, Bologna, Padua, Ferrara, Pavia, Milan, and Piacenza, were the moſt diſtinguiſhed; but it was taught in a ſlaviſh ſpirit of adherence to the dogmas of Galen and Hippocrates, and, what was ſtill worſe, in combination with the ſcholaſtic philoſophy. In 1271, the College of Surgeons at Paris was eſtabliſhed by Pitard, a man who, according to Queſnay, was born for the advancement of his art; and ſurgery was henceforth cultivated with much ſucceſs in France, as a diſtinct branch of the profeſſion. Several writers on phyſic appeared in England; among whom Gilbert has the merit of having furniſhed the beſt deſcription of the leproſy of the middle ages; but he trod in the footſteps of the Arabians, and gave into the ſcholaſtic ſtyle. The ſame remark applies to his ſucceſſors, John of St. Giles, Richard of Windermere, Nicolas Farneham, John of Gaddeſden, &c. It was in Italy that medical ſcience was revived in the trueſt ſpirit. In the year 1315, Mondini de' Luzzi, profeſſor at Bologna, aſtoniſhed the whole world, to uſe Vicq d'Azyr's expreſſion, by the public diſſection of two human bodies. His example was followed in other univerſities; but the utility of the practice was in a great degree fruſtrated by the predilection for ancient opinions, which made the anatomiſts of the age leſs anxious to diſcover facts, than to reconcile the appearances which they obſerved with the dogmas of Galen and Avicenna. An abſurd bull of pope Boniface VIII. forbidding the maceration and preparation of ſkeletons, alſo concurred to impede the progreſs of anatomy (Blumenbach, Hiſt. Med. Litterar. p. 99.): but from this time forward, the Italian profeſſors maintained a high repute for anatomical ſcience, and have ranked among the moſt zealous contributors to our knowledge of the human frame.

Though the cruſades had conferred no direct benefits on ſcience, but, on the contrary, had tended to prolong the reign of prejudice and folly, they had given a new impulſe to the human mind, by the ſpirit of commerce which they excited. They were alſo the occaſion of the rapid ſpreading of leproſy and ſome other diſeaſes in the Weſt, and of the conſequent increaſe of inſtitutions for the relief of the ſick, after the example of the Oriental nations. Several orders of knighthood, as the Templars, the knights of St. John, of St. Lazarus, the *Hoſpitalarii Sancti Spiritus*, &c. were founded with this charitable view; the members devoting themſelves to the cure of ſuch pilgrims as were afflicted with diſeaſe.

In the fifteenth century ſeveral new diſeaſes appear to have invaded mankind, or, at leaſt, to have attacked them with a degree of violence that was before unknown; ſuch as the hooping-cough, which was epidemic in France in the year 1414, and which, according to Mezeray, attacked all deſcriptions of perſons, even the oldeſt men; the ſweating ſickneſs, that broke out firſt in 1486; the ſcurvy, of which ſome traces had been obſerved in earlier times, but which became much more common, perhaps in conſequence of the greater frequency of ſea voyages about this period; and, laſtly, the venereal diſeaſe, the origin of which we ſhall inveſtigate in a ſeparate article. The rules of the ancients proving but little applicable to the treatment of theſe complaints, phyſicians began to doubt the infallibility of theſe guides, and to perceive the neceſſity of obſerving and judging for themſelves. Nor was the influence of the revival of letters, and the great events by which it was followed, loſt upon medicine. But, unfortunately, the taſte for aſtrological ſtudies continued to prevail, and to obſtruct the progreſs of the art in all its branches. The auxiliary ſciences received little improvement during this epoch.

The very general attention which was now paid to claſſical literature in the univerſities of Europe contributed to the reſtoration of the Hippocratic ſyſtem of medicine. Among the Italians, Leonicenus and Manardus laboured to expoſe the errors of the Arabians, whom the latter juſtly deſignated as *ex commentario medicos*; among the Germans, Fuchs, Koch, Winter, and Hagenbut, made known to their countrymen the merits of the Greek phyſicians, by their tranſlations and commentaries; and a ſimilar ſervice was performed in this country by Linacre and Caius. The Pariſian ſchool was ſtill more zealous in the cauſe; Houlier, Duret, and Gorræus, elucidated the doctrines of Hippocrates with much ſucceſs; and Foeſius produced an edition of his works, which even at this day ranks as the moſt accurate and the moſt complete. Medical literature was ſtill farther enriched by the magnificent collections of pathological obſervations, which the induſtry of Dodonæus, Schenckius, Foreſtus, and Platerus accompliſhed. A controverſy reſpecting the mode of performing veneſection in pleuriſy, was begun in the early part of the ſixteenth century by Briſſot, a phyſician of Poitou, who obſerving the good effects of abſtracting blood as near as poſſible from the ſeat of inflammation, had the courage to oppoſe the Arabian method, and to revive the Hippocratic practice. This important innovation, however, was oppoſed by the phyſicians of the time with great warmth, and continued the ſubject of violent diſpute till the anatomical diſcoveries of Veſalius, Faloppia, and Amatus, turned the ſcale in Briſſot's favour. The credulous and ſuperſtitious character of the age, however, was ſtill oppoſed to any great improvement in the art of obſerving and curing diſeaſe: phyſicians were more anxious to collect what was wonderful than what was uſeful; their practice was directed chiefly by the theory of the elementary qualities, and was diſfigured by many remnants of the barbarous ages. The beſt obſerver which the ſixteenth century produced was Jodocus Lommius, the author of a claſſical work on the cure of continued fevers, and of "Three Books of Medical Obſervations."

Though the futility and abſurdity of aſtrological ſcience had been ſucceſsfully expoſed by Picus of Mirandola, Marlianus, and Paulus Florentinus, yet it continued to be purſued with unabated ardour, and to obtain many votaries, among men of otherwiſe great judgment and learning. Even thoſe who evinced the greateſt contempt for this nugatory art, could not diveſt themſelves of a partiality for ſtudies of an equally frivolous nature. Of this weakneſs we have a remarkable inſtance in Picus of Mirandola himſelf; who, after combating aſtrology, applied himſelf to the ſtudy of the Cabbaliſtic philoſophy. The belief in the influence of demons, the efficacy of magic, and the powers of witchcraft, became very prevalent throughout Europe, and perhaps in no part of it to a greater degree than in England, which acquired the repute of being the country of witches. Even the illuſtrious Luther was ſo completely biaſſed by the prejudices of his age, that he aſcribed the majority of diſeaſes to the arts of the devil, and found great fault with phyſicians, when they attempted to account for them by natural cauſes. Alchemy had been hitherto cultivated only by the moſt illiterate men; but the introduction of theoſophiſm and the cabbaliſtic art brought the ſtudy into great vogue, and it was thenceforth proſecuted with much eagerneſs by the monks and wandering ſcholaſtics (*ſcholaſtici vagantes*), under the patronage of kings and princes, who fondly hoped to augment their revenues by the products of this art. Though a law was paſſed by Henry IV., condemning as impoſtors the alchemiſts, who were then very numerous in England, yet they contrived to maintain their ground; and practiſed ſo adroitly on the weakneſs of his ſucceſſor, Henry VI., that this monarch, finding his treaſures exhauſted by the unfortunate wars in which he had engaged, granted to certain tranſmuters of metals the privilege of making gold, and preparing the elixir of life. (Henry's Hiſt. of G. B. b. v. ch. iv. § 7.) The labours of Baſilius Valentinus, the reputed author of the "Currus Antimonii Triumphalis," and of Iſaac le Hollandois, were rather more uſefully directed; but it was reſerved for Paracelſus to appropriate to himſelf all the knowledge which his predeceſſors had attained in this branch of learning, and to apply it with ſucceſs to medicine.

It has been too much the faſhion to ridicule this ſingular man, and to overlook his merits as one of the great reformers of our art; though it muſt be acknowledged, that the extravagance of his pretenſions, his inſolent behaviour, and his diſſolute manners, afford ſtrong grounds for much of the contempt with which he has been viſited. The early education of Paracelſus, or, as he called himſelf, Philippus Aureolus Theophraſtus Paracelſus Bombaſt von Hohenheim, would appear to have been greatly neglected: and, notwithſtanding his aſſeveration, that he had been at German, French, and Italian univerſities, it is ſufficiently evident from his writings, that he could never have enjoyed the benefit of proper claſſical inſtruction. From his father, who is ſaid to have been a phyſician, he obtained a ſmattering of medicine, aſtrology, and alchemy: he afterwards ſerved as ſurgeon in ſeveral wars, and viſited moſt of the countries of Europe, ſeeking information not only from phyſicians and other men of learning, but from old women, from the gipſies, and from conjurers. From theſe he boaſts of having learned the preparation of ſeveral valuable remedies: from his intercourſe with the miners, he became acquainted with various proceſſes for extracting metals. Returning to Germany, he ſoon acquired great repute by his cures, and was believed to have diſcovered the elixir of life. In the year 1526, his increaſing fame procured him the appointment of profeſſor of medicine and ſurgery in the univerſity of Baſle; where he commenced a courſe of lectures on the theory and practice of phyſic, in the German language, and ſucceeded in attracting a conſiderable audience, but chiefly from among the dregs of the people, who, ſeduced by his vauntings, were eager to obtain the knowledge of his ſecrets. He began by burning the works of Galen and of Avicenna, in his auditory, aſſuring his hearers "that his ſhoe-latchets poſſeſſed more knowledge than Galen and Avicenna; that all the academies of the world had not ſo much experience as his beard; and that the hair of the back of his neck was more learned than the whole tribe of authors." The lectures, however, which he delivered, conſiſted of little elſe than the recommendation of a number of empirical remedies, of the infallibility of which he ſpoke with much aſſurance. But his diſciples ſoon became diſguſted with him, on account of the drunken irregular life which he led; and though he ſtill continued to perform many wonderful cures, his fame as a practitioner began to decline, and a diſpute with the magiſtracy compelled him ſuddenly to quit Baſle, and to take refuge at Alſace. He, however, did not ſettle there, but continued to lead a wandering life through different parts of Germany and Switzerland, till the year 1541, when he died at Salzburgh, in the hoſpital of St. Stephen.

The obſcure and barbarous ſtyle in which the writings of Paracelſus are compoſed, has rendered it a matter of great difficulty to give a clear account of his ſpeculative opinions. Even the indefatigable Henſler (Geſchichte der Luſtſeuche, ſ. 120.) complains, that it was with him the buſineſs of ſeveral months to unravel the confuſion of his ſyſtem. Certain, however, it is, that there never was a more glaring example of the error to which chemiſts have been ever prone—that of carrying into other ſciences what Bacon appropriately calls "the ſmoke and tarniſh of the furnace." The elements of the living ſyſtem he fancied to be the ſame as thoſe of his laboratory; and ſulphur, ſalt, and quickſilver, were, according to Paracelſus, the conſtituents of all organized bodies. They were combined by chemical operations, and their relations were governed by the *Archeus*, or demon, who performed the part of alchemiſt in the ſtomach, who ſeparated the poiſonous from the nutritive part of the food, and who communicated the tincture by which the food became capable of aſſimilation. This governor in the ſtomach, this *ſpiritus vitæ*, this *aſtral body* of man, was the immediate cauſe of all diſeaſes, and the chief agent in their cure; yet each member of the body was ſuppoſed to have its peculiar ſtomach, by which the work of ſecretion was effected. Diſeaſes were produced by certain influences, of which Paracelſus reckoned five, *viz. ens aſtrale*, *ens veneni*, *ens naturale*, *ens ſpirituale*, and *ens deale*. When the archeus was ſick, putreſcence was occaſioned, and that either *localiter* or *emunctorialiter*. *Tartarus*, or a certain morbific matter, was the cauſe of all diſorders, exhibiting a viſcidity of the fluids, rigidity of the ſolids, or a concretion of earthy matter, and was believed to be ſecreted when archeus operated in an irregular or too potent a manner, and digeſtion was too fully performed. Such ſpeculations, conſidered abſtractedly, are no doubt very abſurd; but when diveſted of the cabbaliſtical jargon in which they have been enveloped, they will be found to contain a certain portion of truth. Of ſo great value have the views of Paracelſus reſpecting the functions and diſeaſes of the digeſtive organs latterly appeared, that they have been revived with little alteration, though clothed in a new dreſs, by a writer at the commencement of the nineteenth century, in a treatiſe "On Diſorders of the Stomach."

The beſt and moſt original of Paracelſus' works is his treatiſe, in three books, on the venereal diſeaſe, entitled "Von den Impoſturen in den Franzoſen;" in which he has given a minute deſcription of the various forms of ſyphilis, and ſhewn in what manner other diſorders were liable to be modified by its preſence; and in which he has ſucceſsfully expoſed the errors, or, as he terms them, "impoſtures," of the then prevailing practice. Inſtead of the inert fumigations, quinteſſences, and diet drinks, which were in vogue, he recommended mercury as the only remedy on which dependence could be placed, and exhibited it both internally, and by the way of friction. Medicine, in general, was indebted to him for the free introduction of this and other mineral remedies, and of opium, and for pointing out the neceſſity of attending to chemical actions in pharmaceutical operations. To complex preſcriptions he was no friend, and he ridiculed with conſiderable effect the abſurdity of imagining, that 40 or 50 ſimples in a compound would all retain and exert their ſeparate virtues. The treatment of wounds and ulcers received great improvement at his hands, and his obſervations on the *balſam* (coagulable lymph), by which he ſuppoſed nature to effect their cure, diſplay no ſmall degree of diſcernment. His confidence in his *arcana* led him to condemn the uſe of cauterizing inſtruments, and even to reject the employment of ſutures.

The *anatomy of Mundini* was ſervilely followed as a text-book in all the univerſities of Europe till towards the middle of the ſixteenth century, when the diſcoveries of Achillini, Berengar of Carpi, Serveto, Sylvius, and Euſtachius, but, above all, of Faloppia and Veſalius, threw a new light on the ſcience, and eſtabliſhed it on an unalterable baſis. Galen was no longer appealed to on doubtful points; on the contrary, anatomiſts ſeemed to vie with each other in expoſing his errors, and in multiplying the proofs of their obſervations, by repeated diſſections. The ſtructure of the organ of hearing, and other parts of the oſſeous ſyſtem, which had eſcaped the notice of the ancients, was now fully inveſtigated; the arrangement and formation of the muſcles were examined, and the miſtake of ſuppoſing them to conſiſt of an union of tendinous and nervous fibres was ſatisfactorily confuted; the nerves were traced from their origins, and the baſe of the brain was minutely deſcribed. But it was in reſpect to the vaſcular ſyſtem, that the moſt brilliant and fruitful diſcoveries took place. Berengar, who had paid great attention to the ſtructure of the heart, conjectured the right uſe of the ſemilunar valves. So early as 1547, Cannani and Amatus had obſerved the valve at the termination of the vena azygos; but they had not turned the diſcovery to account; and it was reſerved for Fabricius of Aquapendente to prove the preſence of valves throughout the whole courſe of the veins. Five years afterwards, the circulation of the blood through the lungs was imperfectly deſcribed by Servetus, who had availed himſelf of the reſearches of Berengar and Veſalius. In the year 1571, Cæſalpini had the merit of ſtating it more clearly, and even of ſuggeſting the firſt hint of the greater circulation (De Plantis, lib. i. c. 2.); but the full honour of the latter diſcovery, at leaſt of its complete demonſtration, muſt be aſcribed to our countryman, Harvey. See CIRCULATION.

It is ſufficiently apparent, even from the above imperfect account, that nothing but a ſucceſſion of fortunate events could ever have brought about this great improvement in phyſiological ſcience. The diſcovery of the circulation of the blood was one of thoſe occurrences, which, to uſe the language of Bacon, "are more the birth of time than of genius;" and, though the merit of it could only belong to a man of tranſcendent talents, yet we rather detract from, than add to the glory of Harvey, by ſuppoſing him to have hit upon it by chance, unguided by the light which he had received from the inſtructions of his predeceſſors and contemporaries. We may alſo obſerve, that the beneficial conſequences of the diſcovery in queſtion have been greatly overrated, at leaſt as far as practical medicine is concerned; and, in this point of view, we cannot help ſubſcribing moſt fully to the opinions of a writer, whom we have had frequent occaſion to quote. "The new light," Mr. Cabanis remarks, "which was thrown upon the animal economy by this important diſcovery, ſerved only, in a manner, to redouble the rage of ſyſtems. Nothing elſe was thought of, but to cauſe the blood to circulate more freely, to deſtroy its viſcoſity, to draw off from the body that which was ſuppoſed to be corrupted, to purify it, correct it, and renew it, and to preſerve the blood-veſſels in a relaxed and pervious ſtate. Hence thoſe torrents of aqueous and diluent drinks, with which Bontekoe and his adherents deluged their patients. Hence that ſanguinary fury, which the partiſans of Botalli thought themſelves entitled to exerciſe in their treatment of all ſorts of diſeaſes; a fury which, though ſo often damped, in ſome meaſure, by ſyſtematic murders, has ceaſed only for intervals, and ſtill from time to time re-appears in the ſchools. Hence, too, that wretched mania of the tranſfuſion of blood, of which the practice almoſt always deprived thoſe who had the temerity to ſubject themſelves to ſo dangerous an operation, of their reaſon, or their lives.

"Thus, one of the moſt beautiful diſcoveries of modern medicine, far from elucidating the practice of the art, as there was every reaſon to expect, only had the effect of miſleading weak imaginations, dazzled by its ſplendour; and it may ſtill be doubted, whether its application to the knowledge and cure of internal diſeaſes has been of any real uſe. In ſurgical caſes, even where its aſſiſtance is generally regarded as indiſpenſable, might not obſervation almoſt always ſupply its place? And muſt we not limit its importance to the elucidation of a point in anatomy and phyſiology, very curious, no doubt, in itſelf; but which, if it did not directly affect many other intereſting queſtions relative to the animal economy, would probably have contributed very little to our knowledge of its true laws?" Loc. cit. p. 166—8.

A ſyſtem that is founded on myſticiſm, and clothed in obſcurity of language, is ſure to find numerous votaries. Accordingly, the doctrines of Paracelſus, notwithſtanding the oppoſition of Eraſtus, Deſſenius, Libavius, and others, continued to attract adherents in all the countries of Europe, but particularly in Germany. They were eagerly embraced by the fraternity of Roſicrucians, among whom our countryman, Fludd, made himſelf conſpicuous by his uncommon proficiency in cabbaliſtical and aſtrological learning. But of all the followers of Paracelſus, Van Helmont was the only one who could be ſaid to tread ſucceſsfully in the footſteps of his maſter; attacking vigorouſly, on the one hand, the Galenical ſyſtem; and labouring, on the other hand, with unremitting zeal in the proſecution of chemical reſearch. Though miſled in his ſpeculations by a ſtrong bias to theoſophiſm, he muſt be allowed to have ſhewn himſelf, on many occaſions, a ſkilful obſerver of nature: he was the firſt who pointed out diſtinctly the influence which the epigaſtric organs exert upon the other parts of the ſyſtem, in health as well as diſeaſe ; he determined the nature and cauſe of inflammation more accurately than any of his predeceſſors had done ; he gave the firſt ſatisfactory explanation of the origin of calculi ; he expoſed the abſurdity of the prevailing theory of putrefaction of the blood ; and he placed in a ſtrong point of view the pernicious conſequences and the dangers of exceſſive blood-letting. Chemiſtry owes to him the diſcovery of carbonic acid and hydrogen gas, and the firſt inveſtigation of their properties. In his practice he made great uſe of calomel, of antimony, wine, and opium ; and it is ſomewhat remarkable, that with regard to the virtues of the laſt mentioned remedy, he in ſome meaſure anticipated the Brunonian doctrine ; for he maintained that opium was not to be conſidered as a *refrigerant* medicine, but as a *tonic* and *anodyne*. The utility of Van Helmont's labours, however, was leſſened by his attachment to the Paracelſian phraſeology ; and, as his works were not publiſhed till a conſiderable time after his death, when other ſyſtems had come into vogue, his doctrines had few adherents, at leaſt in their original ſtate.

We have already had occaſion to obſerve the influence which the prevailing ſyſtems of philoſophy have exerted on medicine. In no period of medical hiſtory was this influence greater than in that of which we are now about to treat : in no period has it been productive of more marked effects. From the revival of letters to the commencement of the ſeventeenth century, Ariſtotle had continued to be the great authority of the ſchools ; dialectic ſtudies were conſidered as the beſt preparative for all the other branches of learning ; and natural philoſophy, in particular, was confined within very narrow limits by its union with the ſcholaſtic diſcipline. Some philoſophers, it is true, had ſtumbled, as it were, on the proper road of its inveſtigation, and, freeing themſelves from the ſlaviſh admiration of received opinions, had proſecuted, with conſiderable ſucceſs, their inquiries in ſeveral departments of phyſical reſearch : but the ſlow and uncertain advances which they made, prove, that their march was wavering and their footing inſecure ; that they had ſoon deviated from the path, and had never diſcovered its whole extent. It was reſerved for the genius of Bacon to point out the various ſources of error, by which they had been miſled ; to demonſtrate the true end and uſe of all ſcientific inquiry ; to ſhew the only method by which it could be ſucceſsfully purſued ; and to deliver the code by which the ſtudy of nature muſt be thenceforth conducted. Embracing in his comprehenſive mind the whole circle of human knowledge, he ſaw that in medicine much remained to be accompliſhed ; and recalling the attention of phyſicians to the proper objects of inveſtigation, he inculcated the neceſſity of a ſtrict adherence to the path of obſervation and experiment, as the only way by which their art could be improved. By this recommendation, he juſtly remarks, that he was only enforcing the example of Hippocrates, which had been too long neglected : but his views were more correct and enlarged than thoſe of the father of phyſic, and more fully adapted to the exiſting condition of the ſcience, or rather, to ſpeak more accurately, to its future progreſs ; for it has been only in very late times, that ſome of the more important *deſiderata*, which Bacon indicated, have been completely realiſed ; as, for inſtance, his directions concerning the proſecution of morbid anatomy, and his ſuggeſtion of "an imitation by art of natural bathes and medicinable fountaines &c." Medical ſcience, however, has profited much leſs than it ought to have done by the labours of this truly great man ; his writings were for a long time neglected ; and, even at this day, though we talk of the reform in the method of inveſtigation which Bacon introduced, the undigeſted knowledge and crude ſpeculations of too many of our phyſicians demonſtrate, that they neither obſerve his model, nor fully comprehend his precepts. Till the preſent age, Baglivi appears to have been the only writer who knew how to appretiate the importance of the "Novum Organum" as a guide in medical inquiries ; but his unfortunate predilection for the chemico-mechanical theory, led him too often to forget the maxims to which he had given his cordial aſſent, and to commit thoſe very errors which in others he had ſeverely reprehended.

The efforts of Bacon to overthrow the Ariſtotelian philoſophy were powerfully ſeconded by Deſcartes. As the opinions of the latter found a much readier reception among the learned, eſpecially on the continent, than thoſe of our illuſtrious countryman, they accordingly had a more immediate operation, and impreſs their character more diſtinctly on the ſpeculations of the age ; but their tendency was in many reſpects injurious to the intereſts of medical ſcience. Adopting ſome of the moſt objectionable parts of Van Helmont's ſyſtem, particularly the doctrine of fermentation, and combining them with his own hypotheſis of vortical motion, Deſcartes attempts to explain all the chief functions of the living body on chemico-mechanical principles. Thus, the circulation of the blood and animal heat were produced by the ebullition or fermentation that took place in the heart ; digeſtion was likewiſe performed by a ſpecies of fermentation ; and the ſenſation of hunger proceeded from the acid which was evolved during the proceſs. To explain the nature of ſecretion, Deſcartes had recourſe to the corpuſcular philoſophy ; comparing the ſecreting organs to ſieves, which allowed only the more minute and homogeneous particles to paſs through, while the coarſer and heterogeneous bodies were rejected : — the round particles were ſuppoſed by him to enter into cylindrical tubes ; pyramidal particles penetrated by triangular pores, and cubical particles by ſquare pores ; and in this way each ſecretion remained diſtinct, at leaſt in the healthy ſtate. Theſe ideas were eagerly embraced by the Dutch phyſicians of the time, and may be conſidered as forming the groundwork of the chemical and mechanical ſyſtems, which divided the medical world at the end of the ſeventeenth century, notwithſtanding the claims to originality which ſeveral of their followers have put in.

If the importance of the chemical ſyſtem of medicine were to be eſtimated by the portion of good which it has effected, its hiſtory might be brought within a very ſmall compaſs ; but if it ſhould be viewed as one of the chief impediments to the free progreſs of the art, which ſo many circumſtances had conſpired to favour ; if it ſhould be conſidered in relation to the miſchievous bent which it gave to medical ſpeculations, and, above all, in relation to the fatal errors of practice which it countenanced ; few ſyſtems would appear entitled to more ſerious notice. Its firſt and great ſupporter was Francis de le Böe Sylvius, a man of no mean talents, a ſkilful anatomiſt, and the firſt inſtitutor of clinical lectures in hoſpitals. Though he perceived the full value of experience in medicine, and ſtrenuouſly inculcated the neceſſity of ſubjecting all theories to its teſt ; yet he allowed himſelf to be dazzled by the glare of opinions, which not only were not confirmed by experience, but which were, for the moſt part, in direct oppoſition to its leſſons. Fancying that all the operations of life might be explained by a few chemical principles, he could diſcern nothing but fermentations, ebullitions, and combuſtions, in the different organs of the body, except, indeed, that he ſuppoſed the animal ſpirits to be produced by a diſtillation in the brain ; diſeaſes were referred by him to an exceſs of either acid or alkali in the fluids, to which he gave the name of *acrimony*, and the conſequent inſpiſſation or attenuation of the blood and lymph; and they were to be cured only by neutralizing the morbific cauſe. Thus, he ſought to correct the acrimony of the bile by opium and other narcotic remedies; in intermittent fevers, which he believed to proceed from the acid acrimony of the pancreatic juice, he adminiſtered the *ſal ſuccini volatile* and opium; and in malignant fevers, which he aſcribed to an alkaline acrimony and attenuation of the humours, he gave acids, ethers, opium, abſorbent earths, and cordials,—paying no regard to the different ſtages of the diſorder, or the character of the prevailing epidemic; but ſolely intent on fulfilling the indications of his miſtaken theory. In this way, the practice of medicine may be ſaid to have commenced a retrograde march, from which it long ſuffered, and from the injurious conſequences of which it has ſcarcely yet entirely recovered.

After a ſlight oppoſition, the doctrines of Sylvius were almoſt univerſally adopted. In England, indeed, they experienced ſome modification, without becoming more rational, as we have elſewhere ſhewn (ſee HUMORAL *pathology*); and in Italy, where mathematical ſtudies had acquired the aſcendency, though they were received by many, yet they never obtained that excluſive ſway which they enjoyed in other countries. The profeſſors of Paris and Montpellier, refining upon the Helmontian and Carteſian hypotheſis, divided the fermentations of the fluids into ſeveral diſtinct ſpecies; attempted to account for their production by the admixture of the animal ſpirits from the brain; and formed a claſſification of fevers into *fievres chyleuſes*, and *fievres ſanguines*. Attempts were even made, and with apparent ſucceſs, by Viridet, Vieuſſens, and others, to demonſtrate, by experiment, the preſence of alkali in the bile, and of acid in the blood, in the pancreatic and gaſtric juices. But it was in Holland and Germany that this ſyſtem had its moſt bigotted votaries, and was puſhed to the moſt abſurd and pernicious extreme. Thus one phyſician conceived, that acidity was the ſole and univerſal cauſe of diſeaſe; another affirmed, that gout originated from the efferveſcence of the ſynovia of the joints with the vitriolated blood, and recommended alcohol for its cure; while a third deduced all diſorders whatever from inſpiſſation of the fluids, and expatiated on the ſovereign efficacy of diluent drinks, eſpecially of tea. "Tea," ſays Bontekoe, who is loudeſt in his praiſes of this panacea, and who, as Blumenbach remarks, deſerved to have been penſioned by the Eaſt India Company for his ſervices,—"tea is the beſt, nay the only remedy for correcting viſcidity of the blood, the ſource of all diſeaſes, and for diſſipating the acid of the ſtomach; as it contains a fine oleaginous volatile ſalt, and certain ſubtle ſpirits, which are analogous in their nature to the animal ſpirits. Tea fortifies the memory and all the intellectual faculties: it will therefore furniſh the moſt effectual means of improving phyſical education. Againſt fever there is no better remedy than 40 or 50 cups of tea, ſwallowed immediately after one another: the ſlime of the pancreas is in this way carried off." (Abhandlung vom Menſchlichen Leben, Budiſſen, 1685.) A phyſician of Minden, named Van der Becke, attempted an union between the chemical hypotheſis and the peripatetic philoſophy,—taking water, or alkali, for the *matter*, and fire, or acid, for the *form*, of all organized bodies; and was followed by one Van Ruſtingh, who derived all diſeaſes from a deficiency or a redundancy of fire or water; maintaining, for example, that, where the water predominated, the fluids became viſcid, and intermittent fevers and arthritic complaints aroſe: theſe were to be cured by volatile ſalts, which contain many fiery particles. Condemning the employment of veneſection *in toto*, this author did not ſcruple to adopt the ſame *fiery* treatment in various inflammatory diſtempers: ſo completely had falſe theory obſcured his mind; and to ſuch a deplorable ſtate was medical practice reduced, in the hands of theſe chemical dreamers!

Some few, however, had the ſagacity to perceive the inadequacy of ſuch ſpeculations to illuſtrate the phenomena of life, and ventured to call in queſtion the propriety of applying them to the treatment of diſeaſe. Boyle, in his "Sceptical Chemiſt," and other eſſays, had refuted the hypotheſis of acid and alkali; and Le Mort, purſuing his ideas, attacked the doctrine of fermentation, and ſubſtituted a theory of his own, which was more immediately grounded on the corpuſcular philoſophy. Bohn, a profeſſor of medicine at Leipſic, brought forward a number of arguments to prove that digeſtion was not effected by any fermentative proceſs; that, in the healthy ſtate at leaſt, there was no acid fermentation in the ſtomach; and that the preſence of acidity, inſtead of aſſiſting, rather impaired the functions of that organ. He ſhewed, by experiment, that the bile did not efferveſce on the addition of acids; and he controverted the doctrine of a nervous fluid, as inconſiſtent with the ſtructure and properties of the nerves. Pechlin and Brunner proved, that the hypotheſis of the acid nature of the pancreatic juice was utterly unfounded; that this fluid did not efferveſce with the bile; and that it was not even neceſſary for digeſtion. In this manner ſeveral phyſiological facts became aſcertained; and this is the only way in which the chemical theory can be ſaid to have done any thing for the progreſs of ſcience.

The practical errors of the chemiſts were ably expoſed by Sydenham, who, having applied himſelf late in life to the ſtudy of his profeſſion, was never ſo ſtrongly imbued with the prejudices of the ſchools, but that he could eaſily ſhake them off when they would not bend to his experience; and who, living on terms of intimacy with Boyle and Locke, brought into medicine many of thoſe ſound and enlightened views, which had guided their reſearches in other departments of learning. Adopting the ſuggeſtion of Bacon, Sydenham returned to the Hippocratic method of collecting hiſtories of diſeaſe, and ſhewed the neceſſity of coming to its obſervation with an unbiaſſed mind; of attending more carefully to its diſtinguiſhing characters; and of marking all the circumſtances by which it was liable to be modified. He ſaw that ſufficient diligence and diſcrimination had not been uſed in theſe particulars; that obſervers either had confined their attention to uncommon caſes, or, miſguided by falſe hypotheſis, had given imperfect and erroneous views of the diſorders which they attempted to deſcribe. It was only, he maintained, by diſcarding all hypothetical reaſonings, and by inveſtigating minutely the ſucceſſion of ſymptoms, that we ſhould ever be able to arrive at the knowledge of the cauſes, and the curative indications of diſeaſe. Accordingly, though he forgot his own precept, and indulged much in fanciful ſpeculation, Sydenham laboured aſſiduouſly to improve the practice of medicine, and has juſtly acquired the title of its reformer. The deſcriptions which he furniſhed of the various epidemics of his time have ſerved as models to ſucceeding writers, and in point of ſimplicity and accuracy have ſcarcely ever been ſurpaſſed: his "Treatiſe on the Gout" is ſtill conſulted as one of the beſt accounts of that diſeaſe. Sydenham is alſo to be regarded as the reviver of the antiphlogiſtic method; for he was the firſt who pointed out all the dangers of the ſtimulant plan which the chemiſts purſued in the early ſtages of acute diſorders, and which, in many inſtances, but eſpecially in ſmall-pox, had been attended with the moſt fatal conſequences. The practical doctrines of Sydenham, indeed, were adopted by few of his contemporaries; and at the commencement of the following century a large proportion of the Engliſh phyſicians continued to advocate the Sylvian hypotheſis, or ſome of its modifications.

In proportion as true chemical ſcience advanced, the partiality for chemical explications of the functions of the living ſyſtem abated; and phyſicians ſeem to have diſcovered, for the firſt time, that the theory of the humours, even with all the improvements which it derived from the corpuſcular philoſophy, threw no light whatever on the actions of the ſolids. A new hypotheſis, therefore, was projected; and as men, in avoiding one error, are apt to run into the oppoſite extreme, phyſiologiſts now attempted to explain all the phenomena of life according to the mere mechanical powers of the organs, and to reduce the laws of the animal economy to the rigid calculations of geometry. They imagined, that they could illuſtrate every operation of the human body, by comparing it to a ſyſtem of ropes, levers, and pullies, united with a number of rigid tubes of different lengths and diameters, containing fluids, which, from variations in the impelling cauſes, moved with different degrees of velocity. When the fibres of this machine were not ſufficiently flexible; when the pullies and joints of the levers were not kept in ſufficient repair; or when the apertures of the pipes were not ſufficiently free; the movements were neceſſarily ſuſpended, or leſs perfectly performed, and they were only to be brought into proper regulation, according to the practitioners who adopted this fanciful theory, by removing the above deſcribed impediments. The compoſition of the fluids was ſuppoſed to be the reſult of their motion in the tubes; and in theſe nothing was attended to but the forces of gravity and coheſion; as in calculating the action of a pump, or other hydraulic engine. "If the chemical ſchool," to uſe the words of Sprengel, "had degraded the phyſician to the rank of a brewer or diſtiller, the diſciples of the iatro-mechanical ſchool, on the other hand, were glad to be eſteemed as hydraulical engineers; and ſeveral of them, in fact, ſerved in the double capacity of engineers and profeſſors of medicine." One of them, Dionis, a profeſſor of ſurgery at the Jardin du Roi, went ſo far as to compare the circulatory ſyſtem to the water-works at Marly, by which the water of the Seine is raiſed to conſiderable height, and from thence made to fall again upon the great wheel.

Among the cauſes which conduced to the eſtabliſhment of this ſect, the diſcovery of the circulation of the blood is the moſt prominent. When it was found that the blood flowed in a regular manner, through certain conduits, from the heart, and returned to that organ, by other veſſels, from the extremities, phyſicians ſet about calculating the mechanical force which they ſuppoſed neceſſary for enabling the heart and arteries to produce this effect; and, elated with their apparent ſucceſs, were led by degrees to transfer their calculations to the other functions of the body. Geometry had become the prevailing ſtudy of the learned; and ſocieties for the promotion of experimental philoſophy were eſtabliſhed in the different countries of Europe, among which the Florentine academy del Cimento took, in ſome meaſure, the lead. It was in Italy that mathematics had been moſt aſſiduouſly cultivated; and it was there that the firſt attempt was made to introduce them into medicine. In the year 1614, Sanctorius publiſhed his "Medicina Statica," in which he endeavoured to ſhew the great influence which the inſenſible perſpiration has upon health, and to calculate with preciſion all the variations in its quantity, in the different conditions of the body. According to his theory, diſeaſes originated from the noxious particles of the food being retained in the ſyſtem, in conſequence of the ſtoppage of the tranſpiration; and till the latter function was reſtored to the proper ſtandard, no cure could well take place. Sanctorius diſtinguiſhed the different alimentary matters according to their ſpecific gravities, and according as they appeared more or leſs fitted to paſs off in the way of inſenſible perſpiration; he even ventured to apply his maxims to the paſſions of the mind; ſhewing how joy and equanimity favoured the excretions, while ſorrow and fear impeded them; how fevers and melancholy aroſe from the obſtructed perſpirable matter, where grief was long continued; and how they were to be removed by reſtoring the ſuſpended exhalation. Among the "Aphoriſms" of Sanctorius, there are many ſound obſervations; and medical ſcience is under conſiderable obligations to him for having directed the attention of phyſiologiſts to the functions of the ſkin, which, till then, had been in a great meaſure overlooked; but his views, like thoſe of moſt theoriſts, were far too partial; and there can be little doubt that, in one reſpect, they had a moſt injurious influence, *viz.* by encouraging phyſicians in the univerſal employment of ſudorifics, to which they were already too prone; and no one will now ſubſcribe to the judgment of Boerhaave, who ſays of Sanctorius and his work, "Nullus medicorum, qui ante eum ſcripſerunt, cardinem rei ita adtigit—nec ullus liber in re medica ad eam perfectionem ſcriptus eſt."

Such were the advances towards the formation of that ſyſtem on which the talents of Borelli, Baglivi, and Bernouilli, in Italy, and of Pitcairne, Keil, Wintringham, and Mead in England, afterwards ſhed ſo much luſtre. Among the French it found comparatively few ſupporters, though a certain Peter Chirac was captivated with Borelli's ideas to that degree, that he bequeathed 30,000 livres towards the eſtabliſhment of two profeſſorſhips at Montpellier; the one for comparative anatomy, and the other for the iatro-mechanical theory: but in Holland and Germany it ſoon made its way, and was taught at all the principal univerſities. That the labours of Borelli and his ſucceſſors were often confirmed by obſervation, and have ſerved to illuſtrate thoſe movements of the living body which are clearly referrible to mechanical laws, ſuch as the compound actions of the muſcles, the functions of the eye, &c. will not be denied: but when mathematical reaſonings were applied to phenomena, which furniſhed no fixed data for calculation, and which were, in fact, to be inveſtigated by very different methods, no uſeful reſult could be expected. Accordingly it happened, that almoſt every calculator came to a different concluſion from thoſe who had preceded him in the inquiry. Borelli, comparing the maſs of the heart with that of the temporal and maſſeter muſcles, concluded that that organ was capable of ſupporting a weight of 3000 pounds, and that its abſolute power was therefore equal to 3000; but, as it had to overcome a reſiſtance in the ſmaller arteries at leaſt ſixty times greater, its relative power muſt be eſtimated at 180,000 pounds. Keil, on the other hand, applying the Newtonian doctrine of gravitation to the motion of the blood, maintained that the power of the heart was only from five to eight ounces: but his calculations were controverted by Jurin, who made it fifteen pounds three ounces. Again, with regard to digeſtion, which theſe mechaniſts conceived to be only a ſpecies of trituration, Borelli inſtituted a compariſon between the human ſtomach and the ſtomachs of different ſpecies of birds, eſtimating, for example, the power of that organ in the turkey-cock at 1350; Hecquet calculated the power of the coats of the human ſtomach and abdominal muſcles at 261,000; while Aſtruc aſſerted that it amounted to only four pounds three ounces. Secretion, in like manner, was ſuppoſed to depend on the various diameter of the ſecreting veſſels, on their different convolutions, and on the angles at which they branched off from the arteries. But in order to enſure ſucceſs in the moſt ſimple of theſe inquiries, "it would be neceſſary," as D'Alembert has ſhewn, "to know exactly to what degree the veſſels are capable of dilatation; in what manner, and according to what law, they are dilated; to be perfectly acquainted with their figure, with their various elaſticity, with their different anaſtomoſes, with the number, the ſtrength, and the poſition of their valves; with the heat of the blood, and the degree of tenacity which it poſſeſſes; and with the moving powers which impel it. Even ſuppoſing each of theſe particulars to be accurately known, ſtill the great number of elements, which would enter into ſuch a theorem, would probably render all our calculations fruitleſs." Elemens de Philoſophie, Amſt. 1764, p. 268. It is almoſt needleſs to add, that not one of theſe circumſtances was ever properly aſcertained: the laborious calculations of the mechanical phyſicians were therefore, for the moſt part, wholly nugatory.

In ſome reſpects, however, they muſt be allowed to have had a beneficial tendency. By accuſtoming the mind to the ſtrictneſs of mathematical methods; by fixing the attention of phyſiologiſts on points of the animal economy that had been previouſly but little inveſtigated; and by inducing them to ſeek occaſionally for experimental proofs of their theories; they led to diſcoveries which probably would otherwiſe have long remained unmade. From the time of Harvey to the middle of the laſt century, in fact, anatomy continued to make great progreſs; the errors which had obſcured its ſtudy were gradually diſſipated; and the more important functions of the organic frame were explained with all the rigour of demonſtration. A ſummary view of the principal diſcoveries of this epoch will ſhew the importance, and alſo, in ſome degree, the ſhare which the followers of the mechanical ſect had in them.

The heart had been regarded as a parenchymatous veſſel by the ancients, with the exception of the author of the pſeudo-Hippocratic treatiſe, περι καρδιης, who calls it a *ſtrong muſcle*. In the year 1663, Stenonis aſcertained the muſcularity of its ſtructure; and three years afterwards the work of Lower appeared, in which all the circumſtances of its poſition and organization were more fully demonſtrated. Wepfer, a phyſician of Suabia, inſtituted various experiments with cicuta and other poiſons, which proved that the blood was only the exciting, and not the proximate cauſe, of the motion of the heart; and that this motion depended ſolely on the organic powers of that organ. Lange, a profeſſor at Leipzig, gave, in the year 1680, an account of ſome experiments with injections, by which ſeveral important facts connected with the circulation were brought to light. He ſucceeded, for example, in injecting the cells of the lungs from the pulmonary artery, and the placenta from the arteries of the uterus. In 1683, a Dublin profeſſor of the name of Molyneux demonſtrated, by aid of the microſcope, the circulation in the amphibia: but it was chiefly through the indefatigable exertions of Leeuwenhoek, that this new inſtrument of anatomical obſervation was brought to perfection, and that full ocular proof was afforded of the Harveian diſcovery. By ſucceſſive improvements on his magnifiers, he was at laſt enabled to perceive diſtinctly the paſſage of the blood from the ſmalleſt arteries into the veins, and the continuity of theſe two ſets of veſſels; and to obſerve the figures of the globules of the blood. The art of injection, which was carried to a great degree of nicety by Ruyſch, ſerved alſo to throw new light on the vaſcular ſyſtem. Vieuſſens gave a minute deſcription of the *vena cava*, and pointed out the *foſſa ovalis* and the ring by which it is encompaſſed: and, in the year 1700, he diſcovered the ſerous veſſels of the *uvea*. Gaſtaldy, having divided the intercoſtal and eighth pair of nerves, above the heart, found that it ſtill continued to contract; whence he juſtly inferred, that its action did not depend on the nervous influence. The experimental labours of Hales and Wintringham ſerved to determine ſeveral queſtions relating to the motion of the blood, the connection of the veins and arteries, and their relative ſtrength; but their calculations concerning the force of the heart and the velocity of the blood were all founded on the arbitrary principles of the mechanical ſyſtem. Weitbrecht and De Gorter proved the independent action of the arteries; and, laſtly, Senac and Haller put an end to all controverſy on the ſubject by their maſterly deſcriptions of the heart, and the complete analyſis of its functions.

Previouſly to the publication of Harvey's work on the circulation, Faber, a phyſician at Rome, had aſcertained by experiment, that no air paſſed into the heart by the lungs; but very erroneous ideas concerning the functions of the latter organs continued to prevail, till Malpighi aſcertained their real ſtructure, and Mayow proved the neceſſity of oxygen gas for the due performance of reſpiration. Lower, adopting the doctrines of Mayow, was led to the concluſion, that the red colour of the blood depended on the preſence of the "*nitro-aërious* particles" of the atmoſphere. Borelli, however, had the merit of giving the firſt complete explanation of the mechaniſm of reſpiration; ſhewing how the ribs and ſternum are elevated by the action of the intercoſtal muſcles, and how the cavity of the thorax is in that manner enlarged, while the lungs remained in a great meaſure paſſive; and how the air, which is inſpired, is never entirely expired, though it becomes more rarefied. He rejected the hypotheſis of a vital heat in the heart, and referred the exhalation from the lungs to an excretion from the bronchial glands. Theſe opinions were adopted and extended by Pitcairn, Strœm, and Liſter. In the year 1715, Muſchenbroek publiſhed his diſſertation "De Aëre in Humoribus," in which he refuted ſeveral erroneous notions that had been entertained on the ſubject of reſpiration, particularly the doctrine of the admixture of the air with the blood, and of the preſence of air between the pleura and the lungs. A controverſy that aroſe between Hamberger, a diſciple of the mechanical ſchool, and Haller, had the effect of determining ſome diſputed points relative to the action of the intercoſtal muſcles and the ſtate of the lungs in reſpiration; and the experiments, which Hales inſtituted with the air-pump, ſhewed the effects of the deprivation of air on the ſenſible properties of the blood.

On the 23d of July, 1622, Caſpar Aſelli, while diſſecting a live dog, at the requeſt of ſome friends, in order to demonſtrate the recurrent nerves, obſerved a number of ſmall white threads croſſing the meſentery. At firſt he conceived they were nerves; but happening to cut into one of them, he remarked a ſmall portion of a milky fluid flowing from the opening. Full of joy at this unexpected diſcovery, he cried out to the byſtanders ἕυρηκα, and reſolved to loſe no time in repeating the experiment. Finding, accordingly, that theſe veſſels were obſervable in living animals, only after a full meal, he concluded that they were the true *vaſa chylifera*; which was further proved by their origin in the villous coat of the inteſtines, and by the valves with which they were furniſhed: but he erroneouſly ſuppoſed them to unite in the pancreas, and from that to paſs into the liver. The obſervation of Aſelli was ſoon afterwards confirmed in the human body by Peireſc, Veſling, and others; but the ſame falſe notions of their termination continued to prevail, till Pecquet, in the year 1647, ſtruck with the appearance of a milky fluid in the vena cava of a dog, was led to the diſcovery of the thoracic duct. This great diſcovery, like that of the circulation of the blood, was diſputed with much warmth; and it is a blot in the character of Harvey, that he ſided with the opponents of Aſelli, and would not even be convinced by the demonſtrations of Pecquet and Veſling. How different the conduct of his own adverſary, Plempius, who, after having long contended againſt the circulation, made a voluntary acknowledgment of his error, and freely embraced the new doctrine; and who, upon the preſent occaſion, diſplayed the ſame amiable candour. In 1651, Olaus Rudbeck diſcovered the abſorbent veſſels of the large inteſtines, and remarked, that the ſuppoſed lacteal veſſels of the liver ſerved only to convey a lymphatic fluid to the hepatic glands; whence he conjectured, that the received opinion concerning the aſſimilating powers of that organ was altogether wrong. Shortly afterwards, Gliſſon and Wharton produced their reſpective works on the Liver and on the Glands, in which their ſtructure and functions were more fully deſcribed. The latter gave the firſt account of the ducts of the parotids. Experiments were undertaken by Lower, Drelincourt, Liſter, and Muſgrave, to determine the motion of the chyle, and the changes to which it is ſubjected in its courſe; and before the cloſe of the century the anatomy of the abſorbent ſyſtem was brought to a great degree of perfection by the labours of Nuck, Pacchioni, and Duverney.

The diſcoveries relating to the nervous ſyſtem, and the organs of ſenſe, were not leſs remarkable. Caſſerius, Sylvius, and Willis, applying themſelves to the diſſection of the brain, gave accurate views of its different parts, and of their relative poſition, and ſhewed the difference between the human brain and nerves, and thoſe of other animals. Willis gave to the hypotheſis of a nervous fluid a degree of conſequence, which it had never before attained, ſuppoſing it to be the vehicle of the animal ſpirits, and the cauſe of various diſorders, when it became vitiated; and he may be regarded as the precurſor of Dr. Gall, in referring particular faculties of the mind to certain parts of the brain. His ideas on the former of theſe ſubjects were controverted by Malpighi, who inveſtigating, with great induſtry, the nature of the cortical ſubſtance, ſhewed, that it extended to the innermoſt parts of the brain, and in ſome animals even to the *medulla oblongata;* that its ſtructure was fibrous; and that the fibres of which it conſiſted united in the great commiſſure and medulla oblongata, and again diverged into the brain; whence he infers, that the brain is to be conſidered as the appendage of the ſpinal marrow. The *tunica arachnoides* was deſcribed by Blaes and Swammerdam; and Leeuwenhoek and Ruyſch aſcertained, by the microſcope, and by injections, the vaſcularity of the ſubſtance of the brain. The theory of viſion had received conſiderable improvement from the labours of Kepler, who had pointed out the true uſe of the cryſtalline lens, and ſhewn how the images of external objects were formed, in an inverted poſition, on the retina. A public experiment with the eye of an ox, which was made at Rome, in 1625, by the Jeſuit Scheiner, fully confirmed Kepler's theory; but afterwards Mariotte, having found that the images of objects diſappeared when they fell on the ſpot where the optic nerve enters the eye, called in queſtion the ſenſibility of the retina, and maintained that the choroid coat was better calculated to receive and tranſmit the perceptions of ſight; and a controverſy aroſe concerning the actual ſeat of viſion, which was carried on, with great eagerneſs, by Pecquet, Perrault, and St. Yves, and which had the effect of eliciting many valuable obſervations. The Newtonian diſcoveries, reſpecting the properties of light, contributed ſtill more to the accurate analyſis of the functions of the eye; and the treatiſes of Du Petit, Porterfield, and Zinn, which followed ſoon after, have left little for their ſucceſſors to accompliſh.

Paſſing over the improved deſcriptions which Caſſerius, Duverney, Riverius, Vieuſſens, and others, gave of the ſtructure of the ear; the intereſting experiments of Harvey, Malpighi, and Redi, on the generation of animals; the diſcovery of the ſeminal animalculæ by Leeuwenhoek; and the various diſcuſſions and theories to which they ſeverally gave riſe; we conceive that we have adduced ſufficient proofs of the great increaſe which took place in anatomical knowledge, and of the indirect advantages which medical ſcience derived from the application of mathematics, and from the improved methods of phyſical reſearch, which came into uſe after the time of Bacon. Wherever the laws of mechanics were properly applied, as they were by Borelli to muſcular motion, and by Kepler and his followers to the theory of viſion, they explained and illuſtrated the phenomena of life; and even when they were transferred to queſtions, which they were altogether incompetent to determine, as in the calculations of Borelli, Keil, Hales, and Wintringham, reſpecting the action of the heart and arteries; they ſuggeſted and led the way to many luminous experiments. In theſe reſpects the mechaniſts had greatly the advantage over their chemical brethren, whoſe ſpeculations being founded on vague and puerile hypotheſis, and implying no acquaintance with the laws of nature, led only to an accumulation of errors.

Deſcartes had taught his followers to conſider matter as purely paſſive, and to refer all the changes to which it is ſubjected to a ſpiritual cauſe: the union of body and ſpirit was, in his eſtimation, merely one of its modes, or accidental conditions. Malebranche, extending the Carteſian doctrine, endeavoured to explain more fully the nature of this union, and to ſhew that the ſoul had a more or leſs diſtinct conſciouſneſs of all the movements and affections of the body. The part which the animal ſpirits were made to perform has been already frequently noticed. From theſe tenets, the tranſition to the ſyſtem which came to be afterwards developed by Stahl was very eaſy; and an attentive review of the progreſs of the opinions in queſtion muſt convince every one that the Stahlian hypotheſis, far from being entitled to the merit of originality which its author claimed, was nothing more than an offspring of the Carteſian philoſophy. Educated under Wedel, who was a devoted adherent of Sylvius, and an aſſiduous teacher of his doctrines, Stahl began very early to queſtion the ſufficiency of thoſe chemical explanations, which he heard applied to all the phenomena of life. It appeared very wonderful to him, that the humours of the body, which are, of themſelves, ſo diſpoſed to putrefaction, ſhould yet ſo ſeldom fall into that ſtate; and that the daily preſence of ſo many ſaline ſubſtances, as we are in the habit of receiving in our food, ſhould produce ſo few ſymptoms of acrimony. He alſo remarked the great influence which the paſſions of the mind had in the production of diſeaſes, and their inſtantaneous operation, in general, on the corporeal frame. The intervention of animal ſpirits he conceived to be a very unſatisfactory ſuppoſition; and all the attempts which had been made to explain the theory of life on pure chemical and mechanical principles he held very cheap. Taking the paſſiveneſs of matter for the baſis of his ſyſtem, he maintained, "that the body, as body, had no power to move itſelf, but was put in motion only by immaterial ſubſtances; that all motion, therefore, was immaterial, and a ſpiritual act." The origin of all the actions of the living ſyſtem, by which it is enabled to preſerve itſelf, and to fulfil the ends for which it is created, muſt, according to Stahl, be ſought for in the *ſoul*, or immaterial principle which animates it,—the nature, or ψυχὴ of the ancients. A little obſervation will teach us, that many ſenſations are experienced, and many corporeal actions performed, which are either altogether unnoticed at the time, or of which we have only an obſcure conſciouſneſs; but in which it cannot be doubted, that the mind more or leſs participates. Finding this to be the caſe with reſpect to our perceptions, and the anatomical movements, as they have been termed, of the body, Stahl thought himſelf juſtified in ſuppoſing the ſame power to preſide over all the other functions, and accordingly referred the performance of digeſtion, abſorption, and aſſimilation, to the immediate agency of the ſoul. As the ſoul regulates thus inceſſantly the ordinary movements of the animal machine, and is thus conſtantly intent on its preſervation, the ſame ſalutary vigilance may be naturally expected during diſeaſe. In fact, diſeaſe may be generally ſaid to conſiſt in a deranged idea (*perturbata idea*) of the regulation of the animal economy; and this poſition Stahl conceives to be proved by the greater frequency of diſeaſes in the human ſpecies, than among the inferior animals, and from their attacking, moſt readily, thoſe perſons who are endowed with a high degree of ſenſibility. Several ſecondary cauſes, however, appeared neceſſary to the further illuſtration of this peculiar pathology, among which plethora had the moſt extenſive agency aſſigned to it. To this condition, Stahl believes that there is a conſtant tendency in the human body, and that it proceeds from the quantity of aliment received being always greater than is neceſſary for the ſupport of the organs: it ſhews itſelf in different parts of the frame, at different periods of life; in infancy, for example, in the head; afterwards in the lungs; and finally in the digeſtive organs. Hemorrhages were, for the moſt part, occaſioned by an effort of nature to moderate this diſpoſition to plethora, by what Stahl called the *tonic vital action*; as exemplified in menſtruation, and in the hemorrhoidal diſcharges which occur in advanced age, and which Stahl aſcribed to the tonic action of the *vena portæ*, the ſource of the great majority of chronic diſtempers, "porta malorum." Rejecting, as altogether unfounded, the doctrine of the acidity and alcaleſcence of the humours, Stahl inculcated the neceſſity of ſtudying, in diſeaſe, the organic movements of the ſyſtem, and of obſerving the proceſſes by which nature effects a cure. Fever, according to his view, was merely an autocratic effort of nature, to conquer the morbific cauſe, and to expel it from the body, and all the ſymptoms, not excepting *rigor*, were only ſo many proofs of the tonic action which was thus excited. Congeſtions were ſuppoſed, in contradiſtinction to obſtructions, to reſult from an afflux of the fluids occaſioned by the ſame tonic power; when obſtruction followed, or when the object of the congeſtion, *i. e.* evacuation, was not accompliſhed, inflammation took place; and the tendency of the violent actions, which accompanied it, was to diſperſe the obſtructed humour. If this end was not attained, the obſtructed matter became vitiated, and pus was formed. Hypochondriaſis, gout, melancholy, and almoſt all cachectic diſorders, were attributed to a diminution of the tonic power of the *vena portæ*, and the conſequent ſtoppage of the blood in it; while ſpaſmodic diſeaſes were thought to indicate an exceſs of the general tonic power of the ſyſtem.

In the treatment of diſeaſes Stahl proceeded in conformity to theſe views. The chief duty of a phyſician, he maintained, was to watch the healing efforts of nature; to leave the cure to them, when they ſeemed adequate to its accompliſhment; but to aſſiſt them when they were too feeble, and to moderate their violence when they were too powerful. Thus, holding evacuation to be indicated in fevers, he recommended the aſſiduous employment of ſuch means as were likely to promote it, particularly diaphoretics. Purgation, indeed, he conceived to be ſeldom neceſſary or uſeful; but veneſection he had little heſitation in adminiſtering, as it ſerved, in his opinion, to bring about the criſis, and to favour the efforts of nature to relieve herſelf from the ſuperfluity of blood; it might, however, prove injurious, if due attention was not afterwards paid to the excitement of ſweating. The Peruvian bark was admitted by Stahl to operate in the cure of intermittents by its aſtringent qualities; but he believed it rather ſuppreſſed the diſeaſe, than effected its complete removal. Generally ſpeaking, his favourite remedies were evacuants, ſuch as antimony, aloës, rhubarb, and jalap; to the uſe of chalybeate medicines in chronic complaints, he objected, that they cauſed too powerful contractions of the parts; and opium tended, as he thought, to counteract too much the tonic vital action; yet he preſcribed hyoſcyamus, without any ſcruple.

"The ideas of Stahl," obſerves M. Cabanis, "have, in general, been very imperfectly underſtood; we may even aſſert, that they have been almoſt equally disfigured by his cenſurers and by his admirers. The cauſes of this miſunderſtanding deſerve to be detailed in a particular work. It would be uſeful to exhibit the Stahlian ſyſtem, in more determinate points of view, than the author himſelf could poſſibly have done. Hitherto the points, by which it is diſtinguiſhed from the doctrines of the ancients, and thoſe by which it is related to them, have never been preciſely aſcertained. Perhaps, too, it would be adviſable to conclude a work of this deſcription by a ſyſtematic view of the progreſs of medical ſcience ſince the time of Stahl, and of the advances which we have reaſon to expect at no very diſtant period. It would probably reſult from this inveſtigation, that the reforms, which have been already effected, and thoſe which may be hereafter accompliſhed in the ſame ſpirit, muſt be aſcribed, in a great meaſure, to this extraordinary man; both on account of the ſound ideas which he directly eſtabliſhed, and of the impulſe which he communicated to public opinion. It would too, I am perſuaded, appear, that notwithſtanding the haughty manner in which the adverſaries of Stahl have attacked him; notwithſtanding the aukwardneſs with which ſome of his diſciples have defended, explained, and commented upon his works; ſtill his influence has not been leſs powerful in medicine than in chemiſtry, and that to both ſciences he has rendered everlaſting ſervices." Coup d'Œil, p. 148—9.

Of Stahl's merit as a chemiſt we ſhall have occaſion to ſpeak at large in a future volume; in this place we ſhall be content with obſerving, that, although he effected a complete revolution in chemical ſcience, and continued to lecture upon it, with great applauſe, during the whole period of his academical career; yet he had the good ſenſe to refrain from all application of chemiſtry to medicine, and repeatedly cautioned his diſciples of the futility of any ſuch attempt; contending, that the true theory of phyſic conſiſts in the ſtudy of the vital actions, and has little or nothing to do with the laws of mechanics, with the minute anatomy of the ſolids, or with the mixture of the fluids; that its chief object is to aſcertain by experience the laws of organic life; that it is therefore little elſe than rational empiriciſm;

and in the neglect of this empirical method is to be found the origin of all the controverſies of phyſicians. Notwithſtanding theſe ſalutary admonitions, it is evident that Stahl himſelf forſook this empirical method, when he gave "to an airy nothing a local habitation and a name," by perſonifying the principle of life, and aſcribing to the direct agency of a rational intelligence all the corporeal functions of the ſyſtem. Some perſons, it is true, have imagined that they could perceive, through the obſcurity of Stahl's ſtyle, the glimpſes of a more enlightened phyſiology, and Cabanis even contends that Stahl ſelected the term *anima* or *ſoul*, merely in order to ſave himſelf from perſecution; not as thinking it by any means the beſt calculated to expreſs his views: but this would have been a ſpecies of deception, to which it is not probable that the haughty ſpirit of Stahl would have ſtooped; and nothing appears in his writings to warrant the belief, that he wiſhed the phraſe in queſtion to be underſtood in any but the literal and vulgar acceptation.

Stahl's contemporary and colleague, Frederic Hoffmann, though endowed with leſs genius, was his ſuperior in learning, and in the faculty of diſplaying it to advantage; and he accordingly obtained, as a teacher, a much higher degree of repute. But while he profeſſed himſelf the enemy of hypotheſis, and the follower of Hippocrates, he gave into many of the prevailing errors, and ſupported many doctrines which had no foundation in truth. Mathematical ſtudies had taught him to reaſon cloſely; and, if the premiſes be admitted on which he conſtructed his ſyſtem, the conſequences muſt be allowed to be, for the moſt part, correctly deduced: but in his illuſtrations he is extremely diffuſe and fatiguing; and his repetitions are endleſs. At firſt a follower of the mechanical ſect, he ſeems to have gradually approached to the opinions of Stahl, and that at the very time when he was engaged in controverting them, and was exclaiming againſt their ſuppoſed atheiſtical tendency. His theory, accordingly, is a heterogeneous mixture of ſpeculations, few of which would be now deſerving of notice, were it not for the celebrity of their author, and the tone which he gave to ſucceeding theoriſts. Vindicating the active qualities of matter, Hoffmann conſidered the human body as a machine, which is governed by the laws of mechanics, and put in motion by a nervous fluid, or ether, contained in the brain and nerves, and the blood. The heart and all the organs of the ſyſtem were ſuppoſed by him to receive their ſtrength, their tone, their contractile and elaſtic power, from this ſubtle fluid: he even aſcribed to it a certain degree of intelligence, "vim ſenſitivam et imaginativam," by which each particle is enabled to form a correct idea of the mechaniſm of the body, and to regulate its agency accordingly! Medicine, he believed, was to be improved, not ſo much by experience, as by the ſkilful application of mechanical principles, and by the ſedulous ſtudy of proximate cauſes. All diſeaſe he held to conſiſt in irregularity of action: when too violent, ſpaſms were produced; when too weak, atony was the conſequence. Yet he agreed with Stahl in referring much to obſtructions of the humours, particularly in the *vena portæ*; but maintained that they always implied relaxation, or atony, of the veſſels. He even admitted the doctrine of corruption of the fluids; aſcribing gout, rheumatiſm, calculi, and cutaneous diſeaſes, to acids generated in the body, and converted into neutral ſalts, upon admixtion with the blood. Plethora was alſo allowed by him to be one of the chief cauſes of diſeaſe. The *ſpaſm*, or conſtriction of the membranous and minute veſſels, particularly of the ſkin, by which the blood is repelled to the interior parts, and the heart and larger arteries are incited to greater action, till they are enabled to overcome the reſiſting cauſe, was, according to Hoffmann, the origin of every deſcription of fever; and inflammation was explained by him on ſimilar principles.

As a practitioner, Hoffmann appears to have been more ſucceſsful than his rival, and to have had, indeed, a juſt title to that fame which he enjoyed. Though he inculcated the ſtrict obſervation of critical days, yet he had the courage to maintain, in oppoſition to the univerſally received opinion, that it was not always neceſſary to wait for the concoction of the morbific matter in fever; for he believed the diſorder might be ſometimes ſtopped, in the commencement, by the adminiſtration of powerful means. Veneſection was employed by him in all violent affections of the vaſcular ſyſtem; and he truſted much to the antiphlogiſtic regimen in ſthenic diſorders. Among ſudorifics he choſe only the mildeſt; and draſtic medicines were in little repute with him. The uſe of Peruvian bark in intermittents was reſcued by Hoffmann from the contempt with which the Stahlians affected to view it; he demonſtrated the great efficacy of chalybeates in various chronic complaints, and fully refuted the notion that they produced too great a conſtriction of the fibres. He inveſtigated the nature of ſeveral of the moſt famous mineral waters; ſhewed their ſafety and utility in diſorders for which they had been thought unfit; and taught to imitate them artificially. Warm and cold bathing were much commended by him for their virtues in reſtoring the proper tone of the ſyſtem; and wine, camphor, and the well-known *liquor anodynus*, were favourite remedies with him in moſt chronic diſeaſes: the laſt mentioned was generally uſed by him in the place of opium.

While Hoffmann was thus uſefully employed in diffuſing more ſound practical doctrines among his contemporaries, Boerhaave was labouring, with equal zeal, and even with greater ſucceſs, in the ſame path. Like Hoffmann, he began by commending the Hippocratic method; and, like him too, he ſoon deviated from it, by yielding to the influence of his early ſtudies, and by acquieſcing too much in the ſpirit of his age. He had enjoyed but little opportunity of acquiring a practical acquaintance with anatomy; and this want, as has been juſtly remarked, is perceivable throughout his writings. Fancying that the beſt ſyſtem of phyſic would be that which reconciled all opinions, he ſought to combine the doctrines of Hippocrates with thoſe of Sylvius and Bellini, and was therefore, in the ſtricteſt ſenſe of the word, an *Eclectic*, and not the founder of a new theory, as he has been ſometimes conſidered. He refuted, it is true, many of the errors of the chemical ſchool, and, in particular, the idea of a fermentation in the ſtomach and blood; but he embraced, in its fulleſt extent, the notion of an acid and an alkaline *cacochymia*: the tenets of the mechaniſts were adopted by him with leſs reſervation. In general, however, leſs extravagant than his predeceſſors, he enlarged the boundaries of medical ſcience by his obſervations; while, by the charms of his ſtyle and delivery, he gave a luſtre and attraction to his doctrines, which procured him diſciples from all parts of the world.

To this triumvirate, as they have been called, to Boerhaave, Stahl, and Hoffmann, pathology and therapeutics owe many of their greateſt improvements. All ſucceeding ſyſtematics have borrowed more or leſs from their ſpeculations: and, in certain univerſities, their theories, or at leaſt modifications of them, are ſtill taught. However fanciful the views of Stahl may at firſt ſight appear, it cannot be doubted that they had the effect of fixing the attention of phyſicians on a moſt important branch of the animal economy, the influence of the nervous ſyſtem upon the other organs of the body, and its co-operation in the production and cure of diſeaſes. However much we may be tempted to laugh at Hoffmann's etherial fluid, and the ſagacity and prudence which he aſcribed to it, a careful examination of his writings will probably teach us, that by this very hypotheſis he was led to the diſcovery of the relations which he pointed out between the different functions of the living frame, and of the ſympathies which are the conſequence. Conſidering how little this part of pathology had been inveſtigated, and by what erroneous notions the ſtudy of it was obſcured, we muſt allow, that Hoffmann and Stahl had no ſmall merit in opening the way to its illuſtration, though they afterwards may have caſt, upon the object of their reſearches, the falſe colouring of their reſpective theories. Hoffmann, in particular, has collected many valuable obſervations, in his treatiſe "De conſenſu partium nervoſarum," proving the reciprocal influence which the various organs exert upon one another, eſpecially thoſe which are connected by means of the ſympathetic nerve.

Among the adherents of Stahl, Porterfield, Whytt, Bordeu, and Sauvages, are the moſt eminent. The laſt-mentioned is well-known as the author of the firſt methodical Noſology, a work of great labour and reſearch, which, notwithſtanding the imperfections of its arrangement, contains much practical information, and which has ſerved as the model of all ſimilar ſubſequent undertakings. Bordeu had the merit of pointing out the importance of the cellular membrane, and of determining many of its properties which had been overlooked; while Porterfield and Whytt endeavoured to trace the laws that govern the muſcular actions of the body, and to ſhew their dependence on the nervous influence.

The majority of the phyſicians of the age, having ſtudied under Boerhaave, or his immediate diſciples, followed the ſyſtem of the Dutch profeſſor. But the new light which was thrown on phyſiological ſcience by the experiments and the ſplendid diſcoveries of Haller, tended to wean them from opinions which were but little conſonant to experience, and the fallacy of which they were now in many inſtances compelled to acknowledge. Boerhaave, in his poſthumous work "De Morbis Nervorum," had eſpouſed the ancient dogma of an ἐνορμῶν, or *impetum faciens*, which he figured to himſelf as an intermediate ſubſtance between matter and ſpirit, and to which he attributed all the ſenſations and motions of the animal frame. His nephew, Kaau-Boerhaave, developed more fully his ideas on this ſubject; and De Gorter and Gaubius, taking up the ſame views, and giving them ſomewhat greater preciſion, obtained for the hypotheſis of a *vital principle* that diſtinction which, unfortunately for the intereſts of ſcience, it has, till within theſe very few years, been allowed to claim in phyſiological diſquiſitions.

Such was the ſtate of things, when Cullen aſcended the profeſſorial chair. Led, by the duties of his office, to review and examine the various ſyſtems of phyſic which were in vogue, he ſoon perceived the inconſiſtencies of the Boerhaavian theory, and accordingly reſolved to abandon it. Stahl's doctrines, to which ſome of his contemporaries adhered, did not appear to him more ſatisfactory; and, in particular, he deemed them objectionable on account of the inert practice which they countenanced. Nor could he altogether aſſent to the ſyſtem of Hoffmann, though he conceived it to approach nearer to the truth, and was induced to adopt ſome of its fundamental principles. Among others, he took up the doctrines of ſpaſm and debility, from which he deduced all the phenomena of febrile diſorders; and he endeavoured to confirm his theory by proofs drawn from the laws of the nervous ſyſtem, and from the conſideration of the remote cauſes of the diſeaſes in queſtion. Rheumatiſm was referred by him to a ſpaſm of the muſcular fibres, ariſing from an increaſed afflux of blood; but gout he conceived to originate in atony, eſpecially in atony of the digeſtive organs. In theſe latter diſeaſes, he rejected the idea of a peculiar morbific matter; yet in his explanations of certain other complaints, as, for inſtance, of ſcrofula, he had recourſe to the ſuppoſition of an acrimony of the fluids. He laid much ſtreſs on the efforts of the *vis medicatrix naturæ*, advocated the hypotheſis of a nervous fluid and vital principle, and aſcribed to the brain a peculiar faculty, by which it was enabled to excite the muſcles to action, independently of the mind, and to which he gave the name of *irritability of the ſenſorium.* As we have had frequent occaſion to review the opinions of Cullen, in various parts of this work, eſpecially under the article Fever, we may be excuſed from entering more fully into detail in this place; particularly as there is ſo little eſſential difference between them and thoſe of his predeceſſor Hoffmann, and as the great majority of them have been exploded by the more recent improvements in phyſiology. Cullen, indeed, ſeems to have been much in the ſame ſituation with Boerhaave, as to anatomical and phyſiological learning, of which many of his ſpeculations betray a miſerable deficiency. Yet his ſyſtem continues to be taught, and, in ſome meaſure, to form the preſent creed of the Edinburgh ſchool; a diſtinction which it would ſcarcely have maintained, had it not been for the tranſcendant merits of the author as a practitioner, and for the rational and conſiſtent method of treating diſeaſes which he inculcated.

In another point of view, however, the ſpeculative doctrines of Cullen ſeem to deſerve notice, *viz.* as having afforded the firſt hint of the Brunonian theory of *excitability.* In a paſſage of his "Inſtitutions of Phyſiology," Cullen ſpeaks of a ſtate of *excitement*, or *collapſe*, of the brain and nervous ſyſtem, on which he ſuppoſes the ſtrength or debility of the other parts of the body to depend; and in his other writings, he is conſtantly labouring to prove in what manner theſe conditions may be occaſioned by the agency of various cauſes. Brown, ſeizing upon this idea, ſet about the formation of a new theory, according to which all the actions of life were to be referred to the *excitement* of the body by *ſtimuli*, and all diſeaſes reduced to the two general heads of *direct* and *indirect debility*, or debility ariſing from a deficiency, or a previous exceſs of excitement. That the doctrine of morbid excitement is ſo far founded on truth, and that many of the leading ſymptoms of diſeaſe may be referred to it, we are not inclined to diſpute; but when Brown proceeds to account for all the deviations from health upon this ſimple principle, we conceive that he has generaliſed too much, and evinced but ſmall power of diſcrimination. The excitability and the excitement of the living body doubtleſs vary much at different times, and diſeaſe is often the conſequence; but it is not true, as Brown contends, that when the excitement of any part has been unuſually increaſed or diminiſhed, a correſpondent increaſe or diminution of excitement muſt take place in all the reſt of the ſyſtem: on the contrary, it will be found, that when one part or ſeries of organs has been incited to greater action than common, the other parts generally exhibit a decreaſe of action; and *vice verſâ.* The Brunonian theory, in truth, takes but a groſs view of the laws of organic life; and, with reſpect to the claſſification of diſeaſes, it cannot be conſidered as much more refined and ſatisfactory than the theory of the *ſtrictum* and *laxum*, as taught by Themiſon and his followers. To the practical maxims which its author laboured to eſtabliſh, the ſame obſervation applies. Brown miſtook a ſingle property of animal matter for the primary cauſe of life and diſeaſe; neglecting the conſideration of thoſe various powers which the different organs poſſeſs, according to their peculiarities of ſtructure, and overlooking entirely thoſe laws by which they influence each other, and communicate or modify the affections to which they are ſeverally liable. This has been the grand defect of almoſt all pathological ſyſtems; and it was not to be expected that Brown, whoſe practical knowledge was confined, and whoſe acquirements in general were ſuperficial, ſhould have outſtripped his predeceſſors. Many of thoſe who were moſt zealous in their devotion to his ſyſtem, and who defended it moſt ſtrenuouſly on its firſt promulgation, have found it ſo incompetent a guide at the bed-ſide of the patient, that they have deemed it adviſable to qualify their belief in ſeveral eſſential articles; while others, as Frank and Reid, have been reduced to the neceſſity of completely recanting their faith. But we are, nevertheleſs, diſpoſed to think, that the general ſpread of Brunonianiſm, eſpecially on the continent, has had the beneficial effect of looſening the attachment of phyſicians to ancient prejudices, and of ſimplifying their complex, and too often incongruous, modes of practice. See EXCITABILITY.

Previous to Darwin, no one ſeems to have conceived the idea of applying the doctrine of *aſſociation* to the theory and the treatment of diſeaſe; although the tenets of Hartley were embraced by a large proportion of his countrymen, and his illuſtrations of the aſſociative actions of the nervous and muſcular ſyſtems were univerſally received. It is true that Hoffmann, and even ſome writers before his time, had remarked the ſympathy, or *conſenſus*, which ſubſiſts between particular organs of the body; but their obſervations were blended with much erroneous hypotheſis, and the rude ſtate of phyſiological ſcience, at the time, prevented them from diſcovering the extenſive application of which they were ſuſceptible. Darwin ſaw that the chief errors of preceding theoriſts had ariſen from the partial views which they had taken of the animal economy; from their conſidering the living ſyſtem as a ſimple whole, and not paying due regard to the reciprocal influence which the different organs, of which it is compoſed, have upon one another: he ſaw, too, that it was only by the ſame organic powers, by which the body is preſerved and developed, that diſeaſe was generated, and formed, and finally removed from the ſyſtem. Taking advantage of all the facts which had been accumulated by his predeceſſors, placing them ſometimes in new lights, and at other times confirming and illuſtrating them by his own obſervations and experiments, he proceeded to the conſtruction of a ſyſtem of pathology and therapeutics, founded on the general laws of animated nature. Unfortunately, however, as he advanced in his deſign, he fell into many incongruities; and the difficulties increaſing upon him, he was led to aſſume poſitions, which were not ſupported by any evidence, or countenanced by the ſlighteſt analogy. Such are his doctrine of the configurations of the organs of ſenſe, many of his remarks on the exertions of the ſenſorial power, and the hypotheſis of a retrograde action of the abſorbents. Add to this, that the language which he employed is vague and inconſiſtent, and has occaſioned much confuſion and contradiction in his ſtatements. Nor can we highly commend his diviſion of diſeaſes into thoſe of irritation, ſenſation, volition, and aſſociation; the diſtinctions being frequently arbitrary and inconcluſive, and the whole arrangement ſavouring of metaphyſical ſubtlety. The beſt part of his works, and that in which he has evinced the moſt penetration, is unqueſtionably his account of the “Catenation of Animal Motions,” and of the “Diſeaſes of Aſſociation,” particularly his “Theory of Fever.” Rejecting, as illuſive, all the explications which had been given of febrile diſorders, on chemical and mechanical principles, Darwin has traced the ſucceſſion of the ſymptoms of fever to the irregular actions of the nervous, vaſcular, and abſorbent ſyſtems; ſhewing how the derangement of one part produces a ſimilar or oppoſite affection of other parts, in conſequence of the intimate connection of the organs in queſtion, and the influence which they mutually poſſeſs. (See FEVER.) This was a great improvement in pathology, and it is only to be regretted that it ſhould have been disfigured by the imperfections to which we have before adverted. Had Darwin poſſeſſed the profound anatomical knowledge, and the acute diſcernment of Bichat, he would have probably erected a ſyſtem as finiſhed in its parts, and capable of as extenſive application, as the theory of gravitation; and as ſuperior to the feeble creations of his predeceſſors, as the philoſophy of Newton is to that of Deſcartes. But in his eagerneſs to explain every thing, he ſometimes miſtook words for facts; and his ardent imagination too often got the better of his judgment. It cannot, however, be doubted, that he had ſtruck into the right path, and purſued it to a certain extent; and that his views have ſerved to elucidate the nature of many diſorders, which before had been greatly miſunderſtood. His writings contain a rich ſtore of phyſiological obſervations, and many uſeful practical hints. If his theoretical doctrines have been regarded with diſtruſt by his countrymen, they have experienced a more favourable reception on the continent: they have been partially adopted and improved upon by ſome enlightened phyſicians, particularly by Brandis and Hufeland; and when ſtripped of the hypothetical phraſeology in which they are enveloped, they bid fair to become the foundation of a rational ſyſtem of phyſic.

To complete the hiſtory of medical ſcience, of which we have now pointed out the principal revolutions, it would be neceſſary to enumerate and inveſtigate the merits of the different diſcoveries and improvements which have taken place, in all its different branches, during the preſent age. But not to ſpeak of the delicacy of ſuch an undertaking, and the abilities requiſite for its correct and impartial performance, it is obvious that this would be, in a great meaſure, to deſcribe the exiſting condition of the art, of which the plan of our work already comprehends the details. We ſhall, therefore, content ourſelves in this place with remarking, that however much the continental nations may have extended the boundaries of the auxiliary ſciences, and however great their claims in other reſpects may be, this country has taken a decided lead in the reform of medical practice. It may boaſt of ſetting the example to Europe in the employment of the cold affuſion, and in the generally improved treatment of fever, in the revival and extenſion of the purgative method of cure, in the free uſe of mercury in cachectic diſorders, and, above all, in the introduction of the vaccine inoculation. But we muſt acknowledge, that much ſtill remains for us to accompliſh; that the theory of medicine is yet in an unſettled ſtate; that its practical application is too often wavering and fallacious: and taking a ſurvey of the various fortunes of the art, we may ſay, with Bacon, that “*medicine* is a ſcience, which hath been more profeſſed than laboured, and yet more laboured than advanced; the labour having been rather in circle, than in progreſſion.”

We ſubjoin a liſt of the beſt works on medical hiſtory, with their reſpective characters.

1. Hiſtoire de la Médecine, où l'on voit l'Origine et les Progrès de cet Art—avec fig. par Daniel le Clerc, 12mo. Genev. 1696—4to. 3d Part, Amſterdam, 1723.

A work of conſiderable merit for the time when it firſt appeared. It gives a very full view of the doctrines of the ancients to the time of Galen, and, generally ſpeaking, is written with great impartiality; though, on ſome occaſions, the author ſhews a want of diſcernment. "Nemo candidius et plenius ſcripſit *Clerico*," was the favourable judgment of Haller.

2. The Hiſtory of Phyſic, from the Time of Galen to the Beginning of the Sixteenth Century. By J. Freind. 2 Parts. London 1725—26.

This is a uſeful commentary on the hiſtory of Le Clerc, and gives, beſides, a minute account of the practice of the Arabian and middle ages; but the arrangement is defective.

3. J. H. Schulzii Hiſtoria Medicinæ, a rerum initio ad A. U. C. 535 deducta, 4to. Lipſ. 1728. Ej. Compendium Hiſtoriæ Medicæ, a rerum initio ad Hadriani exceſſum, 8vo. Halæ, 1742.

As far as this hiſtory extends, it deſerves unqualified commendation for the learning, the accuracy, and the diſcrimination which it diſplays. The account of the ſtate of medicine in ancient Egypt is the beſt which we poſſeſs; and the whole is compiled with ſuch care, that, as Ackermann obſerves, it would be difficult to detect a ſingle error in it.

4. Dictionnaire Hiſtorique de la Médecine ancienne et moderne. Par N. F. J. Eloy, 2de Ed. 4 tomes 4to. Mons. 1778.

A valuable book of reference, particularly for the lives and writings of the French phyſicians.

5. Biographical Memoirs of Medicine in Great Britain, from the Revival of Letters to the Time of Harvey. By John Aikin, 8vo. Lond. 1780.

It was the deſign of the author to furniſh a complete medical biography of Great Britain; but not meeting with ſufficient encouragement, although this part of his labours is highly creditable, he has never accompliſhed his ſcheme.

6. Inſtitutiones Hiſtoriæ Medicinæ. Auctore J. C. G. Ackermann, 8vo. Noriberg. 1792.

All Ackermann's writings bear the marks of great erudition and intelligence: his contributions to the new edition of Fabricius's "Bibliotheca Græca," have, in particular, thrown much light on the lives and writings of the Greek phyſicians. It is to be regretted, that his elegant compendium of medical hiſtory does not extend beyond the period of the Arabians.

7. Verſuch einer pragmatiſchen Geſchichte der Arzneykunde, von Kurt Sprengel. 2te Aufl. 5 Th. Halle, 1800—1803.

This is by far the completeſt hiſtory of medicine which we have; but, though the labour of fourteen years, the execution of it is very unequal. Where Sprengel could avail himſelf of the labours of others, he has given a very ſatisfactory view of the advances of the art; and his reſearches concerning its condition among the Arabians claim the merit of fulneſs, and alſo, in ſome meaſure, of originality: but there is a great falling off in the latter parts of the work; and the concluding volume proves that the author has no pretenſions to any thing like a philoſophic mind. His "View of the State of Phyſic during the laſt ten Years of the Eighteenth Century," publiſhed in 1801, is a haſty and extremely feeble performance, to call it by no ſeverer name. A French tranſlation by Geiger, of the firſt volume of the hiſtory, appeared in 1809; but according to the account given of it by Millin, it is very careleſsly executed.

8. Coup d'Œil ſur les Revolutions et ſur la Réforme de la Médecine. Par P. J. G. Cabanis, 8vo. Paris 1804.

A work well worthy of peruſal, on account of the philoſophical ſpirit in which it is compoſed, and the uſeful views which it ſuggeſts concerning the reform of the art. The hiſtorical part, however, is ſuperficial, and badly arranged. A tranſlation, with ſome notes by Dr. Henderſon, was publiſhed in 1806.

9. J. F. Blumenbachii Introductio in Hiſtoriam Medicinæ Litterariam, 8vo. Gœtting. 1786.

10. Verſuch einer Chronologiſchen Ueberſicht der Literärgeſchichte der Arzneiwiſſenſchaft, verfaſst von D. J. G. Knebel, 8vo. Breſlaw, 1799.

Theſe are two convenient manuals of the literary hiſtory of medicine. The former eſpecially is diſtinguiſhed by its neatneſs and accuracy.

The "Bibliothecæ" of Haller are too well known to require commendation in this place.

Among the minor and leſs important works the following may be mentioned.

J. C. Barchuſen Hiſtoria Medicinæ, in qua pleraque Medicorum Ratiocinia, ab Exordio Medicinæ uſque ad noſtra Tempora pertractantur, 4to. Traj. ad Rhen. 1723. H. Conringii Introductio in univerſam Artem Medicam, 4to. Hal. 1726. J. C. Lettſom, Hiſtory of the Origin of Medicine, an Oration, 4to. Lond. 1778. Walker's Memoirs of Medicine, Lond. 1799. R. Scuderi, Introduzione alla Storia della Medicina antica e moderna, 8vo. Venezia, 1800. Millar's Diſquiſitions in the Hiſtory of Medicine, 8vo. Glaſgow, 1811.

MEDICINE, *Clinical, Medicina clinica.* See CLINIC.

MEDICINE, *Characters in.* See CHARACTERS.

MEDICINE, *Pandects in.* See PANDECT.

MEDICINE-*Cheſt*, is a portable cheſt, containing all ſorts of medicines neceſſary for a campaign or voyage, together with ſuch inſtruments as are moſt neceſſary and uſeful for the purpoſes of ſurgery.

MEDIEDNIK, in *Geography*, a mountain of Boſnia; 10 miles N. of Zwornik.

MEDIES, or MEDGIES, a town of Tranſilvania; 20 miles N. of Hermanſtadt. N. lat. 46° 20′. E. long. 23° 58′.—Alſo, a town of Hungary; 10 miles N. of Zatmar.

MEDIETAS LINGUÆ, in *Law*, an inqueſt impanelled, whereof the one half conſiſts of natives or denizens, the other of aliens.

It is uſed in pleas, wherein the one party is a ſtranger, and the other a denizen. Solomon de Stanford a Jew, in the time of Edward I. had a cauſe tried before the ſheriff of Norwich, by a jury of *ſex probos & legales homines, & ſex legales Judæos de civitate Norvici.* See JURY.

This manner of trial was firſt given by the ſtat. 28 Ed. III. c. 13; before which it was obtained by the king's grant. He that will have the advantage of trial "per medietatem linguæ," muſt pray it; for it is ſaid he cannot have the benefit of it by way of challenge. (Staundf. P. C. 158. 3 Inſt. 117.) In petit treaſon, murder, and felony, "medietas linguæ" is allowed; but for high treaſon, an alien ſhall be tried by the common law, and not "per medietatem linguæ." (H. P. C. 261.) And a grand jury ought not to be "de medietate linguæ" in any caſe. (Wood's Inſt. 263.) A jury "de medietate" is alſo allowed in ſome other caſes, by analogy to this rule "de medietate linguæ." As on a "Jus Patronatus," the jury muſt conſiſt of ſix clergymen and ſix laymen.

So alſo under ſtat. 8 Henry VI. c. 12. againſt embezzling records, the jury ſhall conſiſt of ſix perſons, who are officers of any of the ſuperior courts, and ſix common jurors. So on a criminal trial in the univerſity courts, the jury muſt be half freeholders of the county, and half matriculated laymen of the univerſity. See *Univerſity* COURT. Bl. Com. book iv.

MEDIMNUM, Μεδιμνον, among the Greeks, a meaſure of capacity holding ſix Roman *modii* or buſhels.

MEDIN, in *Commerce*, called alſo Para, Fadda, Kata, and Meſria, a coin of Syria, of the ſize of an Engliſh ſilver threepence, worth a little above a halfpenny.

MEDINA, PETER DE, in *Biography*, a Spaniſh mathematician, who flouriſhed in the ſixteenth century, but of whoſe perſonal hiſtory we only know that he was a native of Seville, and the friend of the learned John Vaſæus during his reſidence in that city, who, in his "Chronicon Hiſpaniæ," ſpeaks in the higheſt terms of his ſkill in the mathematical ſciences, and particularly as they were applicable to the art of navigation. His works are, 1. "Arte de Navigar," which met with a very favourable reception, and which was tranſlated into the German, French, and Italian languages. 2. "Libro de las Grandezas y coſas memorables de Eſpanna:" this work, which is deſcriptive of the objects that are chiefly deſerving of attention in Spain, Florian Docampo has tranſcribed into his "Hiſtory of Spain." 3. "A Map of Spain," and many other pieces.

MEDINA, in *Geography*, a city of Arabia Felix, in the province of Hedsjas, about a day's journey from Jambo, on the Red ſea. It is ſituated in a ſandy plain, of moderate extent, and ſurrounded with indifferent walls. It belongs to the ſherriffe of Mecca, but of late has been governed by a ſovereign of its own, of the family of Darii Berkad. At preſent the ſherriffe rules it by a vizir, who muſt be of the royal family. Before the days of Mahomet, it was called Jathreb; but it was called Medined en Nebbi, the city of the prophet, from the period at which Mahomet, upon his expulſion from Mecca by the Koreiſhites, took refuge here, and continued to make it the place of his reſidence for the reſt of his life. The tomb of Mahomet at Medina is held in reſpect by the Muſſulmans; but they are not obliged to viſit it in order to the performance of any devotional exerciſes; however, as the caravans from Syria neceſſarily paſs near it in their return from Mecca, they turn aſide to view the prophet's tomb. This tomb is ſituated in a corner of the great ſquare; whereas the Caaba is in the middle of the ſquare at Mecca. In order to prevent the people from ſuperſtitiouſly offering worſhip to the aſhes of the prophet, the tomb is incloſed within iron rails, and is only to be ſeen by looking through theſe. It is of plain maſon-work in the form of a cheſt; placed between the two tombs, in which are depoſited the aſhes of the two firſt caliphs. It is an idle ſtory, of unknown origin, that vaſt magnets ſupport the coffin of Mahomet in the air. Although it is not more magnificent than the tombs of the founders of moſt other moſques, the building that covers it is hung with a piece of ſilk ſtuff embroidered with gold, which is renewed every ſeven years by the pacha of Damaſcus. This building is guarded by 40 eunuchs, chiefly for the ſecurity of the treaſure which is ſaid to be kept in it. This treaſure conſiſts chiefly of precious ſtones, the offerings of rich Muſſulmans. But the account given of this treaſure is blended with much fable. Niebuhr was informed by an eminent Arabian, that the guard was poſted for no other purpoſe but to keep off the populace, who had begun to throw dirt upon the tomb, which they afterwards ſcraped off, and preſerved as a ſort of relic.

MEDINA, a town of the Arabian Irak, ſeated on the Euphrates; 60 miles N.W. of Baſſora.

MEDINA, a town of Africa, the capital of the kingdom of Woolli; it is a town of conſiderable ſize, ſurrounded by a high wall of clay, guarded by an outward fence of pointed ſtakes and prickly buſhes, and containing from 800 to 1000 houſes. N. lat. 13° 38′. W. long. 12° 50′.—Alſo, a town of Africa, in Kaſſan. N. lat. 14° 45′. W. long. 9° 15′.—Alſo, a ſmall iſland in the Atlantic, near the coaſt of Africa. N. lat 19° 45′.

MEDINA *del Campo*, *Methymna Campeſtris*, an ancient town of Spain, in the province of Leon, ſituated on the Zapardiel, a ſmall river communicating with the Duero, between Toro and Tordeſillas. This town was formerly celebrated for the reſidence of ſeveral monarchs, and was then more conſiderable than it is now, and both commercial and opulent. It has ſtill three conſiderable fairs, and ſeveral great privileges: it is free from all taxes, and the inhabitants have a right to fill all offices, both in the church and civil magiſtracy, without the interference of the pope or the king. It is ſtill large, though decaying; it has a handſome ſquare, in the middle of which is a fountain ornamented with a ſtatue of Neptune. Medina del Campo is ſaid to have contained 14,000 families, though the number is now reduced to 1000. Although the population is much diminiſhed, the ancient churches and convents are ſtill remaining. According to Townſend it has 9 pariſh churches, 70 prieſts, 17 convents, and two hoſpitals. The collegiate church, built of brick, is much admired for its roof. The old handſome houſe of the Jeſuits is ſtill to be ſeen. This town was the birth-place of the Jeſuit P. J. Acoſta, and of the philoſopher Gomeſius Pereira. Cardinal Ximenes had made this place one of his principal magazines for military ſtores, collected with a view to curb the great nobility; but when, A.D. 1520, the commons of Caſtile ſought redreſs of grievances, they ſeized the magazine, and defended the city with ſuch obſtinacy, that they forced Fonteſca to retire and to leave them in quiet poſſeſſion of the ruins. The ſurrounding country is naturally fertile; 20 miles S.S.W. of Valladolid. N. lat. 41° 23′. W. long. 5°.

MEDINA *Celi*, a town of Spain, in Old Caſtile, on the Xalon, anciently called "Segoncia." N. lat. 41° 21′. W. long. 2° 27′.

MEDINA *del-Rio-Seco*, an ancient town of Spain, in Leon, ſituated on a plain, watered by the river Sequillo. The ſtreets are narrow and ill-paved. It has three pariſh churches, four convents, an aſylum for monks, and two well-endowed hoſpitals. This place was formerly famous for its population, manufactories, and fairs, on which account it was ſurnamed Little India, in Spaniſh India-Chica. In 1638, it was honoured with the title of city by Philip IV. It is ſurrounded by mountains, and the air of it is very ſalubrious. Its population, which is ſaid to have conſiſted of 30,000 perſons, is now reduced to a fourth of that number. The ſurrounding country abounds in corn and wine; 15 miles W. of Palencia.

MEDINA *Sidonia*, a town of Spain, and capital of a duchy, in the province of Seville, anciently the ſee of a biſhop, transferred to Cadiz; 20 miles S.E. of Cadiz. N. lat. 36° 25′. W. long. 6°.

MEDINA *de los Torres*, a town of Spain, in Eſtramadura; 24 miles N. of Llerena.

MEDINET FARS, a ruined town of Egypt, ſuppoſed to have been the ancient Arſinoé, a little N. of Fayoum.—Alſo, a town of Egypt, on the right bank of the Nile, oppoſite to Feſhn.

Medinet *Habu*, or, according to Mr. Bruce, *Medinet-Tabu*, a village of Egypt, near the W. bank of the Nile, where are found the remains of four temples, ſhewing the place where once ſtood the magnificent city of Thebes; 28 miles N. of Aſna.

MEDINGEN, a town of Weſtphalia, in the duchy of Luneburg; 14 miles S.S.E. of Luneburg.

MEDINSK, a town of Ruſſia, in the government of Kaluga; 32 miles N.N.W. of Kaluga. N. lat. 54° 58′. E. long. 53° 30′.

MEDIOLANUM, in *Ancient Geography*. See Milan.

MEDIR, in *Geography*, a town of Perſia, in the province of Kerman; 60 miles E. of Sirjian.

MEDITATION, an act by which we conſider any thing cloſely, or wherein the ſoul is employed in the ſearch or conſideration of any truth.

In our religion, it is uſed to ſignify a conſideration of the objects and grand truths of the Chriſtian faith.

Myſtic divines make a great difference between meditation and contemplation: the former conſiſts in diſcurſive acts of the ſoul, conſidering methodically, and with attention, the myſteries of faith, and the precepts of morality; and is performed by reflections and reaſonings, which leave behind them manifeſt impreſſions on the brain. The pure contemplative have no need of meditation, as ſeeing all things in God at a glance, and without any reflection.

When a man, therefore, has once quitted meditation and is arrived at contemplation, he returns no more; and according to Alvarez, never reſumes the oar of meditation, except when the wind of contemplation is too weak to fill his ſails.

MEDITERRANEAN, ſomething incloſed within land; or that is remote from the ocean.

Mediterranean is more particularly uſed to ſignify that large ſea which flows between the continents of Europe and Africa, entering by the ſtraits of Gibraltar, and reaching into Aſia, as far as the Euxine ſea, and the Palus Mæotis.

The Mediterranean was anciently called the Grecian ſea, and the Great ſea. It is now cantoned out into ſeveral diviſions, which bear ſeveral names. To the weſt of Italy it is called the Liguſtic or Tuſcan ſea; near Venice, the Adriatic; towards Greece, the Ionic and Ægean of the ancients, now the gulf of Archipelago. From this laſt a ſtrait, called the Helleſpont, conducts to the ſea of Marmora, the ancient Propontis; and another, now denominated the ſtrait of Conſtantinople, the ancient Boſphorus, leads to the Euxine, or Black ſea; which to the north preſents the ſhallow Palus Mæotis, or ſea of Azof, the utmoſt maritime limit of Europe in that quarter. The breadth of this ſea is very various, from 80 to 500 miles; and its length is about 2000 miles to its fartheſt extremity in Syria. This wide expanſe of ſea is beautifully ſprinkled with iſlands, and environed with opulent coaſts. Tides are not perceivable, except in the narroweſt ſtraits; but, according to phyſiologiſts, there is a current along the Italian ſhore from W. to E., and towards the African coaſt in an oppoſite direction. In the Adriatic the current runs N.W. along Dalmatia, and returns by the oppoſite ſhore of Italy. (See Current.) The chief fiſheries of this ſea are thoſe of the tunny, of the ſword-fiſh, of the ſea-dog, and of the diminutive anchovy. This ſea is alſo the chief ſeminary of the *coral*; which ſee.

According to the learned Buffon, the Mediterranean ſea was originally a lake of ſmall extent, and had received, in remote ages, a ſudden or prodigious increaſe, at the time when the Black ſea opened a paſſage for itſelf through the Boſphorus, and at that period when the ſinking of the land which united Europe to Africa, in the part that is now the ſtraits of Gibraltar, permitted the water of the ocean to ruſh in. It was alſo his opinion, that moſt of the iſlands of the Mediterranean made a part of the continents, before the great convulſions that have taken place in this quarter of the world. Sonnini, at his requeſt, and with a view of aſcertaining his opinion, ſounded the depth of the ſea between Sicily and Malta; and he found the depth from 25 to 30 fathoms, and in the middle of the channel, where the water is deepeſt, never exceeding 100. On the other hand, between the iſland of Malta and cape Bon, in Africa, there is ſtill leſs water, the lead indicating no more than from 25 to 30 fathoms throughout the whole breadth of the channel which ſeparates the two lands.

The Britiſh trade carried on by means of the Mediterranean ſea is of great conſequence to Great Britain; and the permanent preſervation of it depends on the poſſeſſion of the town and fortifications of Gibraltar.

The counterfeiting of Mediterranean paſſes, for ſhips to the coaſt of Barbary, &c. or the ſeal of the admiralty office to ſuch paſſes, is felony, without benefit of clergy. Stat. 4 Geo. II. cap. 18.

MEDITRINALIA, among the Romans, feaſts inſtituted in honour of the goddeſs Meditrina, and celebrated on the thirtieth of September. They were ſo called from medendo, becauſe the Romans then began to drink new wine, which they mixed with old, and that ſerved them inſtead of phyſic.

MEDIUM, a Latin term, ſignifying *middle*, or *mean*.

Medium, in *Arithmetic*, or an *arithmetical medium* or *mean*, called in the ſchools *medium rei*, is that which is equally diſtant from each extreme; or which exceeds the leſſer extreme, as much as it is exceeded by the greater, in reſpect of quantity, not of proportion.

Thus nine is a medium between ſix and twelve.

Medium, *Geometrical*, or *mean*, called in the ſchools *medium perſonæ*, is that where the ſame ratio is preſerved between the firſt and ſecond, as between the ſecond and third terms; or that which exceeds in the ſame ratio, or quota of itſelf, as it is exceeded.

Thus, ſix is a geometrical medium between four and nine. See *Geometrical* Proportion.

This is a medium which virtue is ſuppoſed to obſerve; whence ſome call it *medium quoad nos*, as having a view to circumſtances, times, places, perſons, &c. Diſtributive juſtice obſerves a geometrical medium; commutative juſtice, an arithmetical one.

Medium, in *Botany*, a name which has been applied, at different times, to different ſpecies of Bell-flower; ſee Campanula. Linnæus retained it for the common biennial Canterbury bell, *Viola mariana* of old authors; becauſe that plant had moſt generally received this appellation, and was univerſally believed to be the μηδιον of Dioſcorides. The real μηδιον however, though ſufficiently well figured under that name, with the ſynonym of *Mindium Rhaſis*, in Rauwolf's Travels, t. 284, was never known to Linnæus, who erroneouſly referred Rauwolf's plant to his own *Campanula laciniata*. This error was detected a few years ſince, when the late Andrew Michaux ſent ſeeds of the Mindium, or μηδιον, from Aleppo to Paris, and the fine plant they produced was deſcribed and figured by l'Heritier, in one of his Monographs, under the name of *Michauxia campanuloides*, in honour of the meritorious botaniſt and traveller who recovered this long loſt rarity. We cannot but think, as we ſuggeſted at the time, with all poſſible reſpect for M. Michaux, that the ancient name *Medium* ought to have been retained for this newly recovered genus; nor could we wiſh to call it *Mindium*, with Adanſon, the deſcription in Dioſcorides being, in this caſe, ſufficient to leave no doubt; and *Mindium* is apparently a barbarous corruption of an Arabian writer. See MICHAUXIA and MINDIUM.

MEDIUM, in *Logic*, or *medium of a ſyllogiſm*, called alſo the *mean*, or *middle term*, by the Italians *mezzo termino*, is an argument, reaſon, or conſideration, for which we affirm, or deny any thing: or, it is the cauſe why the greater extreme is attributed to, or denied of the leſs, in the concluſion.

Thus, in the ſyllogiſm, "Every good thing is to be deſired: but all virtue is good; therefore all virtue is to be deſired:" the term *good* is the medium: *virtue* the leſs extreme, and *to be deſired* the greater.

It is called medium, as being a kind of mediator between the ſubject and predicate; or becauſe the extremes are ſo diſpoſed as to affirm or deny, by means hereof. Some call it *argumentum tertium*, a third argument; and others ſimply *argumentum*, as being the cauſe why we aſſent to the concluſion.

Mediums, or middle terms, are the things principally ſought for, in diſcourſing; ſo that the invention of mediums makes the moſt eſſential part of logic. But the rules commonly given by logicians for that purpoſe, are mere impertinencies. In effect, no ſuch rules can be given; nor have we any way of coming at ſuch mediums or reaſons, but by a cloſe attention to clear ideas.

MEDIUM, in *Muſic*. Rouſſeau has made an article of this word in his dictionary, calling it "that part of the voice which is moſt diſtant from the extremities of its compaſs, and which is generally the moſt full, ſweet, and powerful." The ſame might be ſaid of the middle tones of moſt inſtruments. The top of the voice is the moſt brilliant, but almoſt always in falſet; the bottom is grave and majeſtic, but leſs clear and compact. The middle tones of the voice are not only produced with the greateſt facility, but are the moſt melodious and grateful to the ear.

MEDIUM, in *Mechanical Philoſophy*, is that ſpace or region through which a body paſſes in its motion towards any point.

Thus ether is ſuppoſed to be the medium in which the heavenly bodies move. Air is the medium in which bodies move near our earth. And water is the medium in which fiſhes live and move. And glaſs is alſo a medium of light, as it affords a free paſſage.

That denſity or confiſtence in the parts of the medium, by which the motion of bodies in it is retarded, is called *the reſiſtance of the medium;* which, together with the force of gravity, is the cauſe of the ceſſation of the motion of projectiles.

MEDIUM, *Subtile*, or *Ætherial*. Sir Iſaac Newton makes it probable, that, beſides the particular aerial medium in which we live and breathe, there is another more univerſal one, which he calls an *ætherial* medium; vaſtly more rare, ſubtile, elaſtic, and active, than air; and by that means freely permeating the pores and interſtices of all other mediums, and diffuſing itſelf through the whole creation; and by the intervention of this he thinks it is, that moſt of the great phenomena of nature are effected. See ÆTHER.

This medium he ſeems to have recourſe to as the firſt and moſt remote phyſical ſpring; and the ultimate of all natural cauſes. By the vibrations of this medium, he takes heat to be propagated from lucid bodies; and the intenſeneſs of heat increaſed and preſerved in hot bodies, and from them communicated to cold ones.

By this medium he takes light to be reflected, inflected, refracted, and put alternately in fits of eaſy reflection and tranſmiſſion; which effects he alſo elſewhere aſcribes to the power of attraction; ſo that this medium appears the cauſe and ſource even of attraction.

Again, this medium being much rarer within the heavenly bodies, than in the heavenly ſpaces, and growing denſer, as it recedes farther from them, he ſuppoſes the cauſe of the gravitation of theſe bodies towards each other, and of the parts towards the bodies.

Again, from the vibrations of this ſame medium, excited in the bottom of the eye by the rays of light, and thence propagated through the capillaments of the optic nerves into the ſenſory, he takes viſion to be performed; and ſo hearing, from the vibrations of this or ſome other medium, excited in the auditory nerves by the tremors of the air, and propagated through the capillaments of thoſe nerves into the ſenſory; and thus of the other ſenſes.

And again, he conceives muſcular motion to be performed by the vibrations of the ſame medium, excited in the brain at the command of the will, and thence propagated through the capillaments of the nerves into the muſcles; and thus contracting and dilating them.

The elaſtic force of this medium, he ſhews, muſt be prodigious. Light moves, according to the eſtimated diſtance of the earth from the ſun in his time, at the rate of conſiderably more than 70,000,000 miles in about ſeven minutes; yet the vibrations and pulſes of this medium, to cauſe the fits of eaſy reflection, and eaſy tranſmiſſion, muſt be ſwifter than light, which is yet 700,000 times ſwifter than ſound. The elaſtic force of this medium, therefore, in proportion to its denſity, muſt be above 490,000,000,000 times greater than the elaſtic force of the air, in proportion to its denſity; the velocities and pulſes of the elaſtic mediums being in a ſubduplicate ratio of the elaſticities and the rarities of the mediums, taken together. And thus may the vibration of this medium be conceived as the cauſe alſo of the elaſticity of bodies.

Farther, the particles of this medium being ſuppoſed infinitely ſmall, even ſmaller than thoſe of light; if they be likewiſe ſuppoſed, like our air, to have a repelling power, whereby they recede from each other, the ſmallneſs of the particles may exceedingly contribute to the increaſe of the repelling power, and conſequently to that of the elaſticity and rarity of the medium, and ſo fit it for the free tranſmiſſion of light, and the free motions of the heavenly bodies. In this medium may the planets and comets roll without any conſiderable reſiſtance. If it be 700,000 times more elaſtic, and as many times rarer, than air, its reſiſtance will be above 600,000,000 times leſs than that of water; a reſiſtance that would make no ſenſible alteration in the motion of the planets in ten thouſand years.

And is not ſuch a medium better diſpoſed for the heavenly motions than that of the Carteſians, which fills all ſpace adequately, and without leaving pores, and is vaſtly denſer than gold, and therefore muſt reſiſt more?

If any aſk how a medium can be ſo rare? let him tell how the air, in the upper regions of the atmoſphere, can be above a hundred thouſand times rarer than gold; how an electrical body can, by friction, emit an exhalation ſo rare and ſubtile, yet ſo potent, as though its emiſſion occaſions no ſenſible alteration in the weight of the body, yet it ſhall be diffuſed through a ſphere of two feet in diameter, and carry up leaf-copper, or leaf-gold, at the diſtance of a foot from the electrical body: or how the effluvia of a magnet can be ſo ſubtile, as to paſs a plate of glaſs without any reſiſtance or diminution of force; yet ſo potent, as to turn a magnetic needle beyond the glaſs. That the heavens are not filled with any other, but ſuch a ſubtile ætherial medium, is evident from phenomena: whence elſe are thoſe laſting and regular motions of the planets and comets, in all manner of courſes and directions; and how are ſuch motions conſiſtent with that reſiſtance which muſt reſult from that denſe fluid medium, wherewith the Carteſians fill the heavens?

The reſiſtance of fluid mediums ariſes partly from the coheſion of the parts of the medium, and partly from the vis inertiæ of matter. The firſt, in a ſpherical body, is nearly as the diameter, or, at moſt, as the factum of the diameter, and the velocity of the body. The latter is as the ſquare of that factum. Thus are the two kinds of reſiſtance diſtinguiſhed in any medium; and, being diſtinguiſhed, it will be found that almoſt all the reſiſtance of bodies, moving in ordinary fluids, ariſes from the vis inertiæ. The part which ariſes from the tenacity of the medium, may be diminiſhed, by dividing the matter into ſmaller parts, and making thoſe more ſmooth and ſlippery; but the other will ſtill be proportional to the denſity of the matter, and cannot be diminiſhed any other way, but by a diminution of the ſame.

Thus the reſiſtance of fluid mediums is nearly proportional to their denſities; and thus the air we breathe, being about nine hundred times lighter than water, muſt reſiſt about nine hundred times leſs than water: as, in effect, the ſame author has found it does by experiments on pendulums. Bodies moving in quickſilver, water, or air, do not appear to meet with any other reſiſtance but what ariſes from the denſity and tenacity of thoſe fluids; which they muſt, were their pores filled with a denſe and ſubtile fluid.

Heat, it is found, diminiſhes the tenacity of bodies very much; yet does it not decreaſe the reſiſtance of water ſenſibly. The reſiſtance of water, therefore, ariſes chiefly from its vis inertiæ; conſequently, if the heavens were as denſe as water or as quickſilver, they would not reſiſt much leſs: if abſolutely denſe, without any vacuum, be the particles never ſo ſubtile and fluid, they would reſiſt much more than quickſilver. A ſolid globe, in ſuch a medium, would loſe above half its motion, while it moves thrice the length of its own diameter; and a globe not perfectly ſolid, ſuch as the planets, would loſe more.

To make way, therefore, for the laſting motions of the planets and comets, the heavens muſt be empty of all matter, except, perhaps, ſome very fine effluvia, from the atmoſpheres of the earth, planets, and comets; and ſome ſuch ætherial medium as we have deſcribed. A denſe fluid can ſerve for no purpoſe, in the heavens, but to diſturb the celeſtial motions, and make the frame of nature languiſh; and in the pores of bodies, it can only ſerve to check the vibrating motion of their parts, wherein their heat and activity conſiſt. Such a medium, therefore, unleſs we had ſome evidence of its exiſtence, muſt be given up; and, that given up, the hypotheſis of light conſiſting in a preſſion falls alſo to the ground.

MEDIUM *Participationis*, in the *Schools*. is that ſaid to be compounded of the two extremes. Thus, man, who is partly body, partly mind, is a medium by participation of the two extremes; ſo is warmth the medium of heat and cold, &c.

MEDIUM *Negationis*, or *Remotionis*, is that from which both extremes are derived; or it is a ſubject capable of receiving both extremes, and yet not neceſſarily poſſeſſed of either.

In which latter ſenſe, the will is a *mean* with reſpect to virtue and vice; and the underſtanding, with reſpect to knowledge and ignorance.

MEDIUM *Quod*, or *Medium Suppoſiti*, is ſomewhat between the agent and patient, which receives the action of the one before it arrive at the other.

In this ſenſe, air is a medium between the fire and the hand heated thereby.

MEDIUM *Quo*, is the form, or faculty, whereby an agent produces an effect: in which ſenſe, heat is ſaid to be the medium or mean whereby fire acts on the hand.

MEDIUM *ſub Quo*, is that which renders the power to act complete in general, without determining it to any particular object: in which ſenſe, light is the medium under which the eye perceives any colour.

MEDIUM *in Quo*, is that, by inſpection whereof a power is produced in any thing, of knowing or perceiving another: ſuch is a ſpeculum, as it ſhews an object; an image, as it repreſents the reality, &c.

MEDIUS, in *Geography*, a town of Perſia, in Farſiſtan; 30 miles S.W. of Yeſd.

MEDIUS *Harmonicus*, Lat., in *Muſic*, with the Germans implies the middle ſound of a triad or common chord, as E in the chord of C. (Walther.) See MEDIANTE.

MEDLAR, in *Botany*. See MESPILUS.

MEDLAR, *Parſley-leaved*. See SERVICE-*Tree*.

MEDLE, in *Geography*, a town of the iſland of Cuba; 62 miles N. of St. Yago.

MEDLERSLO, a ſmall iſland in the N. part of the gulf of Bothnia. N. lat. 61° 13′. E. long. 21° 39′.

MEDLEY. See CHANCE-*Medley*.

MEDLEY, in *Muſic*, during the early part of the laſt century, a piece of pleaſantry, or rather muſical buffoonery, was frequently practiſed by Engliſh compoſers in compoſing ſymphonies from fragments of vulgar tunes, and popular compoſitions, which were called *medley overtures*. Charke, Jack James, and even Arne, in his early days, condeſcended to divert himſelf, more, perhaps, than the public, by theſe muſical ſalmagundies; of which, however, no one of theſe muſicians can be ſtyled the inventor. Dr. Pepuſch ſeems to have given them the hint in his pleaſant and appropriate overture to the Beggar's Opera; of which the firſt movement is a burleſque of the beginning of Handel's overture in Otho; and the ſubject of the fugue in the firſt part of "I'm like a ſkiff in the ocean toſt," and the ſolo paſſages for hautbois, the ſecond part.

MEDMAN, in *Geography*, a town of the duchy of Berg, containing three churches for perſons of different religious profeſſion; ſix miles E.N.E. of Duſſeldorp. N. lat. 51° 17′. E. long. 6° 43′.

MEDNIKI, a town of Samogitia, the reſidence of the biſhop; 28 miles N.E. of Konigſberg.

MEDNOE, a town of Ruſſia, in the government of the Tver, on the Tvartza; 32 miles W.N.W. of Tver.

MEDOC, a county of France, ſo called before the Revolution, in form of a peninſula, between the Garonne and the ſea, the north part of which is overflowed by the ſea. On a rock at the mouth of the Garonne is a fine light-houſe, called "La Tour de Cordouan."

MEDOCTU, a ſettlement of America, in New Brunſwick, ſituated on the W. ſide of St. John's river; 35 miles above St. Anne's. N. lat. 46° 12′. W. long. 67° 35′.

MEDOLA, a town of Italy, in the department of the Panaro; 18 miles S. of Modena.

MEDOLI, a town of Italy, in the department of the Mincio; 17 miles N.W. of Mantua.

MEDRA, a town of Africa, in Lower Guinea, capital of a country near the river Camerones.—Alſo, a town of Perſia, in the province of Mekran; eight miles N. of Kich.

MEDRASHEM, a town of Algiers; 40 miles S. of Conſtantina.

MEDSHETISAR, a village, being one of the Perſian havens on the Caſpian, is ſituated, as is alſo Farabat, on the ſouthern coaſt, in the province of Mazanderan. Of theſe two villlages Medſhetiſar is the moſt convenient, from its vicinity to Balfruſch, capital of the province, where the Ruſſians and Armenians convey their merchandize: the traffic, however, is much diminiſhed on account of the impoſitions of the khan of Mazanderan. The chief productions of this country are ſilk, far inferior to that of Ghilan, rice and cotton, which are largely exported. Merchants from Kaſhan, Iſpahan, Schiras, and Khoraſan, reſort to Balfruſch, and bring for ſale the Perſian and Indian commodities.

MEDUA, a town of Algiers, at the foot of mount Atlas, in the midſt of ſprings; 180 miles S.W. of Algiers.

MEDVADITZA, a river of Ruſſia, in the country of the Coſſacks, which riſes about ten miles N. from Saratov, and runs into the Don, about eight miles N.W. from Spaſkaia.

MEDVEDIVA, a town of Ruſſia, in the government of Irkutſk, on the Ilim; 64 miles S.W. of Orlenga.

MEDVEZEI, a cape on the N. coaſt of Nova Zembla. N. lat. 77° 20′. E. long. 68° 34′.

MEDVEZHI, five ſmall iſlands of Ruſſia, in the Frozen ſea; 60 miles from the mouth of the Kolima. N. lat. 72° to 72° 20′. E. long. about 156°.

MEDVEZI, a ſmall iſland of Ruſſia, in the ſea of Ochotz, at the mouth of the river Uda. N. lat. 55° 10′ to 55° 16′. E. long. 137° to 138°.

MEDUKKA, a town of Arabia, in the province of Yemen; 36 miles S. of Saade.

MEDULLA, in *Anatomy*, the fat ſubſtance which fills the cavity in the middle of a long bone. See MEDULLARY *Syſtem*.

MEDULLA *Oblongata*, one of the diviſions of the contents of the cranium. See BRAIN.

MEDULLA *Spinalis*, the medullary cord contained in the canal of the vertebræ. See BRAIN.

MEDULLA, in *Vegetable Phyſiology*, the Pith of plants, is lodged in the centre or heart of the vegetable body, where it is as aſſiduouſly protected as the brain and ſpinal marrow of animals. In parts moſt endued with life, like the root, or eſpecially young growing ſtems or branches, the *medulla* is uſually of a pulpy ſubſtance; but tolerably firm though rather brittle. Its colour is pale green or yellowiſh, with a watery tranſparency, the ſubſtance being very juicy. Its juices partake but little, or not at all, of the peculiar flavour of the plant, they being more of the nature of ſap. Still there is no perceptible flowing from this part when wounded, at any time of the year, as far as we have obſerved. In branches or ſtems more advanced in growth, the *medulla* is found of a drier, more white, and evidently cellular texture. In this ſtate it is known to every body in the full-grown branches of Elder, and the ſtems of Ruſhes, *Juncus conglomeratus*, *effuſus*, &c. In theſe it is dry, highly cellular, ſnow-white, extremely light and compreſſible, though but ſlightly elaſtic. Such are its different appearances, at different periods of growth, in many common ſhrubs, as the Currant-tree, Lilac, Mock-orange, *Hydrangea*, &c. In the laſt-mentioned ſhrub, though nearly akin to the Elder, as well as in the *Aucuba japonica*, the pith is very abundant, and remains unuſually long in its primary green juicy ſtate. The pith of many annual ſtems, abundant and highly ſucculent while they are growing, becomes little more than a web, lining the hollow of the adult ſtem, as in ſome Thiſtles. Many Graſſes and Umbelliferous plants, as the Hemlock and Chervil, have always hollow ſtems, lined only with a thin ſmooth coating of pith, exquiſitely delicate and brilliant in its appearance. The inner part of ſuch hollow ſtems is, in ſome inſtances, divided into ſeparate cavities, by tranſverſe partitions. Such is the caſe at every joint, knot, or ſubdiviſion of the ſtem. There are a few graſs-like plants, with unbranched hollow ſtems, internally divided by numerous membranous partitions, perceptible to the touch in the living plant, and to the ſight in the dry one; witneſs *Juncus articulatus* and its allies, in which the longitudinal hollow of the ſtem is ſimple; and *Cyperus articulatus*, in which it is a congeries of parallel tubes. We mean not to ſay that the tubes in this laſt-mentioned inſtance are certainly medullary. They may or may not; but obſervations on the living plant could alone determine this. It is poſſible they may be ſap-veſſels, and that the tranſverſe ſtricture is not complete, ſo as to prevent the paſſage of fluids along this highly vaſcular ſubſtance. But as other ſpecies of this tribe have the central part of their ſtems filled with cells, or tubes frequently interrupted, through which no fluid can run, it is moſt probable that *Cyperus articulatus* differs from ſuch merely in having all its tubes interrupted at the ſame point of elevation, and that the aſſemblage of numerous partitions gives a frequently jointed appearance to the whole ſtem. *Andromeda acuminata*, Sm. Exot. Bot. t. 89, is found to have its hollow ſtem intercepted by very numerous tranſverſe partitions; and the ſame may be ſeen in other inſtances. The diſtinction between a hollow ſtem, only lined with *medulla*, and a ſolid one, entirely filled up with that ſubſtance, by no means indicates any material difference between the plants ſo circumſtanced. Some ſpecies of *Hieracium* have the one ſort of ſtem, others the other, and this difference is often of uſe, for ſpecific diſtinction, in that difficult genus.

It is much eaſier to deſcribe the appearances of the *medulla*, which are few and but little varied, than it is to underſtand the true nature, or phyſiology, of this part. There is ſcarcely any concerning which a greater variety of opinions, or at leaſt more oppoſite ones, have been held.

Du Hamel, an excellent obſerver, though not always a correct theoriſt, conſidered this part as not in any reſpect different from the reſt of the cellular ſubſtance, diſperſed through the vegetable body, and ſerving to hold its different parts together; nor did he attribute any particular function, in the vegetable economy, to any part of this ſubſtance.

Linnæus on the contrary thought the *medulla* the ſeat of life, and prime ſource of vegetation. He conceived that its vigour was the main cauſe of the propulſion of the branches. His lively fancy formed to itſelf an idea of this organ altogether his own, as a living body of peculiar vivacity and energy, ſtriving to enlarge itſelf in every direction, and ſucceeding beſt where it found leaſt reſiſtance. Thus he explains the growth of plants, and eſpecially of trees, at their extremities only; the cortical ſubſtance, as he terms it, of the vegetable being, (conſiſting of its wood and bark, including the vaſcular ſyſtem,) affording leſs reſiſtance where it is younger and thinner, while it derives energy itſelf from the powers of the ſubſtance it confines. His idea of the animal phyſiology was ſimilar. He conceived the brain and nerves of animals to be analogous to the pith of plants, and that it was confined by their cortical ſubſtance, for ſo he called their bones and muſcles, as the pith is by the more ſolid parts of plants. He thought he traced the origin of the ſtamens, or male organs of vegetables, to their wood; and that of the piſtils, or female ones, to their pith. Hence he

deduced

ofduced a fine fanciful hypotheſis, that the mule offspring croſs impregnation ſhould reſemble its father in external habit and characters, and its mother in internal qualities, which opinion he alſo extended to the animal creation; nor did he want facts to ſupport it. Both kingdoms were ranſacked to ſupply them; for ſome facts may be found to ſupport any hypotheſis, any at leaſt conceived by a mind ſo able, ingenious, and intelligent as that of Linnæus. Mule animals, whether thoſe properly ſo called, produced between different ſpecies, or whether thoſe engendered between varieties of the ſame ſpecies, are often found to reſemble the father in their form or coat, while their conſtitution and diſpoſition are more like the mother. The ſame thing may be obſerved in mule plants. Linnæus is unqueſtionably right in attributing the origin of the ſubſtance of the ſeed of plants to the female part of the flower, the function of the pollen being only to communicate life, or a power of vegetation, to the embryo, and not to convey any ſubſtance, or corpuſcule, out of which the rudiments of the future plant are to be formed. At leaſt this ſeems the moſt reaſonable opinion, even from a contemplation of the experiments of thoſe who have laboured to overſet altogether his doctrine of the ſexes of plants. It is difficult to ſay whether the embryo of a ſeed be formed at all before impregnation, becauſe, if formed, it is very ſoon obliterated in caſe impregnation fails, a mere cavity being found in its place when the ſeed is at all advanced. But we have ſeen much more reaſon to believe its obliteration, rather than the contrary; and in moſt caſes of non-impregnation, the cotyledons are obliterated alſo. See COTYLEDONES, EMBRYO, and FECUNDATION *of Plants.*

In another office which he attributed to the *medulla* or pith, Linnæus was unqueſtionably miſtaken. He thought it the origin of the wood; believing that a layer was every year added internally to the body of a tree from this ſubſtance. Du Hamel refuted this opinion, by experiments, which clearly proved the wood to be depoſited by the bark, as we have explained in the articles CORTEX, and CIRCULATION *of the Sap.*

But while we thus reject opinions of the great Swediſh naturaliſt, which have been proved to want a ſolid foundation, it may be worth while to examine how far his general idea of the importance of the *medulla* may be defenſible. No one can deny that there is a great analogy between this part and the nervous ſyſtem of animals, with reſpect to ſituation and protection, as well as in its general uniformity of appearance and texture in widely different orders of plants; while the differences in theſe reſpects which it exhibits in other tribes, are not at all greater than thoſe found in the nervous ſyſtems and brains of different claſſes of the animal kingdom. If, moreover, it be ſaid, that the pith is of too ſimple a conſtruction to allow a belief of its being of ſo great importance to the vegetable conſtitution, as to be the ſeat of life, or immediate organ of vegetation; ſurely we are as little able to diſcover any thing in the form or texture of the brain and nerves, to account for their wonderful but undeniable properties. Scarcely any phenomenon in the animal frame is leſs intelligible, than the change in the pith of a plant from its ſucculent ſtate, to that dry congeries of an infinite number of cloſe cells or veſicles, impervious to fluids, and having no communication with each other. Yet the moiſture eſcapes by no means readily from the pith in its juicy ſtate; for a thin ſlice of it in that ſtate dries very ſlowly. The ingenious Mr. Knight has ſuppoſed the *medulla* to be a reſervoir of moiſture, to which the growing vegetable may have recourſe, when its ſap-veſſels are occaſionally exhauſted by inordinate perſpiration. "Plants," ſays this excellent writer, "cannot, like animals, fly to the ſhade and the brook." This is undoubtedly true; but, inſtead of ſuch a reſource, their leaves when exhauſted droop, or fold over each other; ſo that their pores are contracted, and the very check which their energy receives prevents further exhauſtion, and gives time for freſh ſupplies from the root. Mr. Knight has indeed ſhewn that the part in queſtion may, occaſionally at leaſt, be diſpenſed with, and removed from a branch without injuring it; but, on the other hand, he has more recently ſhewn the importance, if not of the *medulla*, of its analogous organ, the cellular ſubſtance; having found that ſubſtance capable, as he thinks, of aſſuming the vaſcular ſtructure, and actual vegetation, of what Linnæus terms the cortical ſubſtance of a plant.

The writer of the preſent article has always been partial to the opinion of the *medulla* being, ſome how or other, an organ ſubſervient to the vital energy of the vegetable frame; but we can ſtill leſs, if poſſible, comprehend its mode of action, than that of our own brain and nerves. It is branched off and diffuſed, like the nervous matter, to every part of the vegetable body, and hence may eaſily be ſuppoſed to give life and vigour to the whole, though, no more than nerves, the organ or the direct ſource of nouriſhment; for its ſtructure is ſuch that it can tranſmit no fluids for that purpoſe from the vaſcular ſyſtem; at leaſt not in any way that we can comprehend, till it has taken upon itſelf a different organization from what is natural to it. The pith however is certainly moſt vigorous and abundant in young and growing branches, and muſt be ſuppoſed ſubſervient, in ſome way or other, to their increaſe. Mr. Lindſay of Jamaica (ſee LINDSÆA), many years ago communicated a paper to the Royal Society, which, for ſome reaſon unknown to us, was never printed, the object of which was to prove a medullary knot in the leaf-ſtalk of the *Mimoſa pudica*, or Senſitive Plant, to be the ſeat of that remarkable irritability for which the plant in queſtion is celebrated. We are not however able to trace any thing of this nature in the ſtamens of the Barberry, which are no leſs remarkable for their irritability. Nor can we trace, to any great extent, the nervous ſyſtem of the inſect tribe, even where we are not prevented by the minuteneſs of the object of our examination; though the animals of that tribe yield to none in the ſuſceptibility and energy of their nervous ſyſtem. In both caſes the tranſparency of the parts may account for this difficulty.

We can therefore only reaſon by analogy concerning the functions of parts, whoſe ſtructure cannot be aſcertained, much leſs their mode of action. We ſhall conclude this article with the mention of one phenomenon, eaſily obſervable by any perſon who will beſtow attention upon it. There are ſeveral ſpecies of Graſs, amongſt which are the Common Cat's-tail, *Phleum pratenſe*, and the Floating Fox-tail, *Alopecurus geniculatus*, whoſe nature is to have an entirely fibrous root. Their proper ſtation is in moiſt, or even watery ſituations. But if they chance to eſtabliſh themſelves in ground whoſe degree of moiſture varies occaſionally, or eſpecially in very dry ſpots, as on the top of a wall, they acquire bulbous roots, of a very juicy nature. This is evidently a proviſion of Nature, to guard the plant againſt deſtruction from drought; as the tribe of naturally bulbous plants are, for the moſt part, intended to occupy dry, ſandy, or barren ground, under a burning ſun. The naturally bulbous graſs *Poa bulboſa*, if cultivated in the rich and regularly watered ſoil of a garden, gradually loſes its bulbous habit, becomes exceſſively luxuriant, and in time periſhes, in conſequence of exhauſtion from that very luxuriance, to which the annual formation of bulbs, in its proper ſandy ſituation, is a ſeaſonable check. All theſe inſtances ſurely prove the accumulation of *medulla* in ſuch bulbous roots, to be equivalent to an accumulation of vital energy. They cannot be mere reſervoirs of moiſture, for all that they can poſſibly contain is not adeqnate to the ſupply of a few minutes perſpiration from the herbage. They may indeed huſband that moiſture, ſo as to render the ſcanty ſupplies obtained by the fibres below, or by abſorption through the leaves, ſufficient to keep the half-ſtarved plant from abſolute deſtruction; their own extraordinary luxuriance proving the ſalvation of the parts which they ſeem to ſtarve, but to which they are a neceſſary and certain reſource. The juſt conſideration of fleſhy roots in general will be found to illuſtrate this ſubject; for though thoſe of biennial plants muſt be conſidered as reſervoirs of nutriment, hoarded up by the growth of the firſt ſeaſon, for the inordinate ſupply of the next; the phyſiology of perennial bulbous roots ſeems to indicate, that all are likewiſe reſervoirs of vital energy, of which the *medulla* is the immediate organ, and probably the excluſive reſidence. S.

MEDULLARY Arteries, in *Anatomy*, the arteries diſtributed on the ſubſtance which fills the interior of bones. See Medullary *Syſtem*.

Medullary *Subſtance*, is the white matter of the brain and nerves. See Brain.

Medullary *Syſtem*, is the expreſſion employed by Bichat to denote the tiſſue that occupies the interior of the bones. Its organical arrangement, vital properties, functions and diſeaſes, are imperfectly underſtood. Some remarks on it will be found under the article Bone. It is found only in the bones, and its uſes ſeem only relative to thoſe organs: yet its organization and properties are ſo different as to juſtify us in conſidering it ſeparately.

There are two kinds of it very diſtinguiſhable from each other: one occupies the cellular ſtructure in the extremities of the long bones, and in all the interior of the ſhort and flat bones: the other is found only in the middle of the former.

The firſt appears to conſiſt of the ramifications of thoſe veſſels, which enter by numerous ſmall holes of the ſurface into the common cellular tiſſue of the bone. They divide very minutely on the internal ſurfaces of the cells, producing the red appearance which characterizes that part, and which is more ſtrongly marked in proportion as the ſubject is younger. To them, and the blood which they contain, is owing the red colour of the powdery ſubſtance produced in ſawing through a bone. Fine injections propel the blood contained in this tiſſue, and make it appear in the adult as red as that of the fœtus when uninjected.

Authors have generally admitted the exiſtence of a fine membrane in theſe bony cells, and have aſſigned to it the office of exhaling the medullary fluid. Bichat repreſents it as a merely vaſcular texture, without any continuous ſurface; and obſerves, that the bone itſelf, in many points, is in contact with the medullary fluid. It poſſeſſes merely the organic ſenſibility and contractility neceſſary for the ſecretion of its fluid, and is diſtinguiſhed in that reſpect from the medullary ſyſtem of the middle of long bones, which is the ſeat of well-marked animal ſenſibility. There is no ſign of pain when it is irritated in a living animal. If it be very extenſively injured, necroſis may enſue: but ſmaller injuries have not this conſequence. Bichat perforated the extremity of a long bone in an animal, and then introduced a hot wire: it healed without necroſis.

The vaſcular network forming this ſyſtem is obſcured in the cartilaginous ſtate of the bone by the gelatine: as that is removed, the cells and veſſels become manifeſt. In the fœtus, and in the early years of life, it contains no oily fluid: at this time the blood is more abundant, and the cells are filled with ſome fluid, of which the nature is not well underſtood. Medullary oil is afterwards depoſited, and its proportion increaſes until the growth is completed. The cellular ſtructure of an adult bone expoſed to a pretty conſiderable heat parts with a large quantity of oily fluid: the ſame experiment tried on a fœtal bone produces only deſiccation of the tiſſue from evaporation of its fluids. When the extremity of a long bone of the adult is ſet on fire, the contained medullary ſubſtance keeps up the combuſtion; in the fœtus, the bone ceaſes to burn as ſoon as it is removed from the fire, as the fluids will not maintain the combuſtion. The bones, when dried, remain white and dry in the fœtus: they are yellow and greaſy in the adult at their extremities. Ebullition extracts much oil from the cellular tiſſue of adult bones, but none from thoſe of the fœtus.

The ſecond medullary ſyſtem occupies the large cavity in the centre of the long bones. Each of ſuch cavities is lined by a thin membrane, prolongations of which cover the thin portions of cellular tiſſue that project into the cavity, or paſs from one ſide to the other, and form cells in which the medullary fluid is contained. The ſituation in which it exiſts, gives to it, when conſidered altogether, a nearly cylindrical form.

It does not appear that the ends of this ſyſtem have any communication with the former: the two are ſeparated by a marked line of diſtinction, and not gradually confounded: yet it is difficult to prove the point clearly.

The great delicacy of the membrane conceals the nature of its texture: it cannot be referred either to the ſerous, mucous, or fibrous claſs, and has no analogy in its functions, &c. with the perioſteum, to which it has been often compared. A principal artery enters at the chief hole of each long bone, and ramifies on this membrane. Its branches give it, in the fœtus, a reddiſh colour, which diſappears afterwards. Expoſure of the containing cylinder to fire renders the membrane more apparent by corrugating and curling it up.

We have no means of bringing the properties that ariſes from ſtructure (proprietés de tiſſu) in this ſyſtem under our obſervation.

It enjoys animal ſenſibility in a very conſiderable degree, as we may prove by introducing a probe into the medullary cavity of a bone, by injecting an irritating fluid, or uſing any other mode of irritation.

The ſecretion and abſorption of the medullary fluid prove the exiſtence of organic ſenſibility, and of inſenſible organic contractility.

It is obvious from the preceding account, that the vital powers are more active in this than in the bony ſyſtem, conſequently that the vital phenomena muſt be more rapid, and the diſeaſes leſs prone to aſſume the chronic form, than thoſe which affect the bones.

The medullary membrane appears to exiſt in the cartilaginous ſtate of the middle of long bones; but gelatine is then depoſited in it, ſo that the whole bone is homogeneous in appearance. When oſſification begins, the gelatine is abſorbed, and the medullary cavity formed: the membrane admits red blood. At firſt, however, no oily matter is depoſited in the cells: inſtead of it, there is a reddiſh mucilaginous fluid, which exhibits nothing of a greaſy appearance when preſſed between the fingers. No particles of oil ſwim in the water after it has been boiled. The middle of a long bone expoſed to heat burns with the formation of inflamed drops: nothing of this kind occurs in the fœtus.

The function of the medullary membrane is to depoſit, by exhalation, the medullary fluid, and to convey it again into the blood by abſorption. It muſt therefore poſſeſs exhalants and abſorbents as well as blood-veſſels, although we cannot demonſtrate them anatomically. In this point of view the medullary ſyſtem reſembles the fat. It is hardly poſſible for us to know whether the exhalation be augmented or diminiſhed by any cauſes. It is however certain, that in phthiſis, dropſy, or other affections in which extreme general debility is produced by a gradual reduction of the vital powers, the medullary fluid loſes its eſſential characters, and aſſumes an appearance altogether different from its natural one, without any alteration in the texture of the membrane. It has a mucilaginous or gelatinous appearance, almoſt like that of the fœtus.

That the medullary membrane has a cloſe connection with the nutrition of the bone is rendered evident by the experiments of Troja, in which it is ſhewn that its deſtruction is followed by the death of the bone, and the formation of a new one, to which the perioſteum ſerves as a nutritive parenchyma. The common way of proceeding has been to ſaw off the extremity of a long bone, and to introduce a red-hot wire into the medullary cavity, ſo as to diſorganize the part completely. Soon after the perioſteum ſwells, becomes inflamed, and extremely ſenſible to the touch. The inflammation diſappears, and the ſenſibility is gradually rendered leſs acute. The internal layers of the membrane receive a depoſition of gelatine, and thus a cartilaginous ſheath is formed including the dead bone. After a certain time, of which the length may vary from many cauſes, phoſphat of lime is depoſited, and converts the cartilaginous into a bony ſheath. The inner bone is now a dead body ſurrounded on all ſides by a living one. Bichat, Anatomie Generale, tom. ii.

MEDULLARY *Sarcoma*, in *Surgery*, a name given by Mr. Abernethy to a kind of ſarcomatous ſwelling, the conſiſtence of which reſembles that of the medullary ſubſtance of the brain. It is ſuppoſed by ſome to be a ſpecies of fungus hæmatodes. See FUNGUS and TUMOUR.

MEDUMACK, in *Geography*, a river of America, in the diſtrict of Maine, which runs into the ſea, N. lat. 44°. W. long. 69° 15′.

MEDUNA, a town of Italy, in the country of Friuli; 12 miles W. of Concordia.

MEDUNCOCK, a plantation of America, in Lincoln county, Maine; 40 miles E.S.E. of Wiſcaſſet, containing 380 inhabitants.

MEDUS, or MEDINUS, a name given by the writers of the middle ages to a ſtone brought from Media, of which they ſay there were two kinds, the one black, and the other green. They attribute many ſtrange virtues to theſe ſtones; the black they ſay was a fatal poiſon when taken inwardly, but that if wetted with milk, and rubbed upon the ſkin of a woman with child, it cauſed her to bring forth a boy. This ſeems to be only a falſe hiſtory of the *medea* of Pliny.

MEDUSA, in *Botany*, is a name beſtowed on this genus by Loureiro, from the long curling hairs of its capſule reſembling the ſnakes which are fabled to have covered the head of Meduſa. This name however is untenable, from its having been previouſly applied to deſignate a genus of *Vermes*. We are only acquainted with this plant as it occurs in Loureiro, and being unable to refer it to any other genus, we muſt be content to give that author's account of it. —Loureir. Cochinch. 406.—Claſs and order, *Monadelphia Polyandria*. Nat. Ord. . . . . . .

Gen. Ch. *Cal.* Perianth inferior, permanent, of five, ovate, hairy, incurved, ſpreading leaves. *Cor.* Petals five, ovate-oblong, curved, inflexed, afterwards reflexed towards the top, longer than the calyx. *Stam.* Filaments five, thread-ſhaped, united at the baſe into a tube, equal in length to the corolla; anthers incumbent. *Piſt.* Germen ſuperior, nearly round; ſtyle awl-ſhaped, hairy, the ſame length as the ſtamens; ſtigma ſimple. *Peric.* Capſule ovate, three-lobed, covered with numerous, long, twiſted hairs, of one cell and three valves. *Seeds* ſix, roundiſh.

Eſſ. Ch. Monogynous. Calyx of five leaves. Petals five. Capſule with one cell, three valves, and ſix ſeeds.

1. M. *anguifera*. Snake-bearing Meduſa. Cay chôm chôm dât, of the Cochin-Chineſe, *Loureiro*.—A *tree* of middling ſize, with aſcending *branches*. *Leaves* alternate, ovate-oblong, ſerrated, pointed, ſmooth. *Flowers* red, not many on a ſtalk. *Capſule* hairy, opening in three lobes, which expand horizontally.

MEDUSA, in *Natural Hiſtory*, a genus of the Vermes, Molluſca claſs and order, of which the generic character is, Body gelatinous, orbicular, and generally flat underneath; the mouth central, beneath.

The animals of this genus have been commonly denominated "ſea-nettles," from the opinion that the larger ſpecies, when touched, excite a tingling ſenſation, and a ſlight redneſs of the ſkin: they are ſuppoſed to conſtitute the chief food of cetaceous fiſh; and moſt of them ſhine with great ſplendour in the water. The form of their body, while at reſt, is that of the ſegment of a ſphere, of which the convex ſurface is ſmooth, and the flat part provided with ſeveral tentacula. The body is tranſparent, and ſo gelatinous, that it is reduced almoſt to nothing by evaporation, when left on the ſhore. Several coloured lines may be ſeen within, but there is nothing that would lead one to think there is a circulation going on. The lines, which are more numerous towards the borders, ſeem to be appendages of the alimentary cavity. Theſe animals ſwim well, and appear to perform that motion by rendering their body more or leſs convex, and thus ſtriking the water. When left on the ſhore they are motionleſs, and look more like flat cakes of jelly, than living animals. There are about forty-four ſpecies diſtributed into two ſections, *viz.* A. Body with ciliate ribs: and B. Thoſe that have a ſmooth body. Many of the ſpecies are to be found in the ſeas about our own country, and will be marked as ſuch with aſteriſks.

A. *Body with ciliate Ribs.*

Species.

INFUNDIBULUM. The ſpecific character of this is, body ovate, with nine ciliate ribs. It inhabits the Indian, Mediterranean, and North ſeas; is about three inches and a half long. The body is obtuſely eight-angled, hollow, tranſparent, open at the larger extremity, and of a firm gelatinous ſubſtance. It contracts and expands with great facility: ribs purpliſh, and furniſhed with a ſingle row of ſhort and ſlender fibres.

PILEUS. The body of this ſpecies is globular with ciliate ribs, and two ciliate cirri. It is found in the Mediterranean ſeas.

CUCUMIS. This is oblong with eight ciliate ribs, with cirri. It is found in the Greenland ſeas, and moves very ſlowly by means of the fibres on the ribs: when touched it contracts itſelf into the form of an apple. The body is white mixed with blue, and covered with irregular red ſpots: it has two apertures, terminal meeting in the oblong middle cavity. It probably derives its name from its ſhape and appearance.

OVUM. Ovate, with eight ciliate ribs and two pair of cirri, one pair of which is very long. Inhabits the Greenland ſeas, and reſembles a hat, ſeldom larger than a pigeon's egg. The body is lucid and exceedingly fragile; the fragments, while alive, are blue.

B. *Body ſmooth.*

Species.

PORPITA. The body of this ſpecies is flat above, beneath it is a little convex, grooved, and villous. It is found in India.

* CRUCIATA. This ſpecies has a body marked with a milk-white croſs. It inhabits the European ſeas. It has the appearance of a tranſparent colourleſs jelly; the body is ſurrounded at the margin with very fine fibres: the croſs is marked with a brown ſpot on each arm. It is luminous when under ſun-ſhine.

HYSOCELLA. The body is convex, having ſixteen rays, and four united tentacula beneath. It is found in the ſea round Portugal. The body above is whitiſh, the rays compoſed of extremely minute reddiſh-brown dots; beneath it is concave; the tentacula are longer than the body, lanceolate, and marked with reddiſh ſtriæ.

* ÆQUOREA. This is a flattiſh ſpecies, with a villous inflected tentaculate margin. It is extremely ſimple, ſoft, and fringed at the margin with white.

* AURITA. Convex above, with an inflected fringed margin; beneath with four arched cavities near the centre.. It is frequently found floating on the ſurface of the ſea; is from two to four inches in diameter. When the ſun ſhines upon the animals of this ſpecies, they reflect a beautiful ſplendour.

* CAPILLATA. The body is convex, with ſixteen indentations round the margin, and numerous ſlender filaments beneath. It inhabits the ocean, and is about eight inches in diameter. The body is deſcribed as whitiſh, ſemi-pellucid, fragile; above convex, beneath flat with a rough circle; within this there are eight pair of rays; and a number of curled fibres and appendages from the centre: the margin is divided into eight portions, each of which is emarginated.

* PILEARIS. This has a capitate diſk, with eight ſmall holes on the border: beneath it is arched and hairy. The body has an irregular reflected margin.

MARSUPIALIS. This is found in the Mediterranean; is ſemi-oval with four tentacula on the margin, and reſembles a purſe.

HEMISPHÆRICA. This, as its name denotes, is hemiſpherical, with four tranſverſe ribs beneath, and marginal tentacula and globules: the margin is entire: is not a quarter of an inch in diameter, and is found in the European ſeas.

PELAGICA. Hemiſpherical-concave, with a crenate incurved margin and eight tentacula. It is found in the American and Atlantic ſeas.

NOCTILUCA. This ſpecies is depreſſed, with reddiſh-brown warts and dots: margin with eight red tentacula.

* FUSCA. The body of this has ſixteen brown rays and a brown circle in the middle; the circumference is edged with alternate crooked fangs and oval tubercles. It inhabits the coaſt of Cornwall. The tentacula are four, lacerated, and a little exceeding the body.

* PURPURA. The body of this ſpecies is decorated with pale purple rays, and a light purple croſs in the centre, between each bar of which is a deep purple horſe-ſhoe-ſhaped mark.

* TUBERCULATA. With fifteen brown rays meeting at the centre, and ſmall oval tubercles round the margin; it has four tentacula plain, and much longer than the body. It inhabits the coaſt of Cornwall.

* UNDULATA. This derives its name from its undulate margin; it has fangs on the projecting parts; beneath it has four orifices, between which is a ſtem divided into eight ragged tentacula. It is found on the coaſt of Cornwall.

* LUNULATA. The margin is tuberculate; beneath in the centre are four conic appendages forming a croſs, with ſeveral others, like ſerrate leaves, ſurrounding it. The tentacula are eight, not longer than the margin, and between each is a ſemi-lunar aperture. It inhabits the coaſt of Cornwall.

NUDA. Orbicular, blue, without creſt; the tentacula of the diſk are naked, with three rows of glands. It is found in the Mediterranean, and is never an inch in diameter. The body has a whitiſh diſk above, and radiate with concentric ſtriæ, the margin and border blue; the tentacula are filiform and blueiſh-hyaline.

VELELIA. This alſo is orbicular, blue, with an oblique ſimple creſt or membrane, and numerous tentacula beneath. It inhabits the Atlantic and Mediterranean ſeas. The body is flat, thin oval, and marked with numerous tentacula beneath.

SPIRANS. Oval, blue, with oblique divided creſt or veil, and numerous tentacula beneath. It is about two inches long, and inhabits the Mediterranean. Body thin, convex, and terminating in a whitiſh central knob above, blue with a brown border; creſt two-parted and ſtriate; the tentacula are filiform.

PULMO. Hemiſpherical-concave, with a fringed border; beneath ſtriate, the ſtem with four openings and eight arms. It inhabits the Tuſcan ſea. This has been very minutely deſcribed in the following terms:

" *Body* gelatinous, pellucid, tough, cryſtalline. The *head* is large, hemiſpherical, concave beneath, and marked with numerous ſtriæ, croſſed by ſixteen diſtant ligaments, each emitting a ſhort branch on both ſides. *Border* fringed with numerous roundiſh ſcallops. *Stem* large, thick, ſquare, with four ſemi-oval openings, each of which has a large lobe above, and a ſmaller beneath. Eight *branches* or *arms* proceeding from the lower part of the ſtem, ſub-cylindric, pendent, and wrinkled behind; beſides theſe, there are ſixteen ſubtrigonal appendages riſing from the beginning of each branch, bifid in front, and terminated on the upper ſide by a flat wrinkled ſurface; the branches end in as many ſub-pyramidical branchiæ, the two exterior ſides of which are prominent, and ending in a thickly wrinkled ſurface: theſe are terminated by eight oblong ſub-triangular thick pendent bodies, ending in three flat acute membranaceous pieces. Within the openings is a flexuous ſtriate blueiſh-yellow band."

TYRRHENA. This, as its name imports, is found in the Tuſcan ſea. It is convex; the margin crenate, and furniſhed with very long fibres or threads; beneath are four tentacula. The body is ſmooth, tender, hyaline, ſpotted with red; beneath are four cavities, each marked with a red band.

TUBERCULARIS. The diſk of this is prominent; the margin is eight times divided and ſtriate beneath; it has eight tubercles. It is found in the Tuſcan ſea. The body is hyaline, and it is often two pounds weight; beneath fulvous, with innumerable curved fibres; tubercles blueiſh-white, ending in two ſtems, terminated by a pellucid whitiſh membrane, which is flaccid and blue or white at the tip.

UTRICULUS. This ſpecies is bottle-ſhaped, with a very long granular central tentaculum beneath; margin with numerous blue tentacula tipt with white. Inhabits the ocean; is hyaline, with about thirty marginal cirri.

Caravella. Body ovate, with very long central tentacula beneath, and a crenulate veil above. It is found in the Atlantic, and inflames the hand by its touch. The body is thin, ſmooth, ſhining, bluciſh, hyaline, and tapering on each ſide; the creſt runs through the whole length of the back; it is ſemi-lunar, compreſſed, furrowed with branched grooves, and marked with roſy veins; tentacula jointed, blue, fragile, and intermixed with ſhorter tubercles.

Umbella. Tentacula of the diſk naked, of the margin glandular; margin membranaceous, crenate. Inhabits the Mediterranean and Indian ſeas. The body is rigid, depreſſed, with radiate grooves above; beneath with a clavate trunk in the middle, ſurrounded with ſhort clavate tubes; tentacula jointed with three rows of glands.

Dimorpha. Back eminent; beneath a minute croſs ſurrounded with five apertures; the margin is ciliate. It is found in the North ſeas. The body, when expanded, is orbicular, with a ſquare inflected margin; beneath it is concave; the back is divided into four parts by radiate grooves, with an elevated central croſs and white fibres.

Campanula. The diſk is gibbous; the border wide and ciliate; beneath is a hairy croſs. It inhabits the Greenland ſeas. The body is conic-orbicular, beneath hollow and ſnowy; the fringe of the margin and croſs yellow; the latter is often white.

Digitata. Hyaline, with a piſtil beneath in the centre; margin ciliate. An inhabitant of the Greenland ſeas. It leaps with its margin bent in. Body very minute, conic, ſtriate; fringe yellow or white, and hooked within; piſtil ending in a yellow or white pencil.

Frondosa. Margin of the diſk varied with white opaque ſpots; it has eight tentacula, is dichotomous, and is beſet with white pedunculate warts terminating in tufts. It is ſmall, and found in the Archipelago. The body is flattiſh, a little convex above; the border is membranaceous, and fringed with white faſciculi; beneath is a villous nucleus, which in the leſſer ones is eight-angled, and in the larger ones ten-angled.

Tetrastyla. This is hemiſpherical, without tentacula; furniſhed with four marginal tubes united into a priſm. It is found in the Red ſea, and is about a ſpan and a half acroſs. Body hyaline, rather rigid; the tubes of the margin are linear, three inches long, ſtraight and flat.

Octostyla. Hemiſpherical, without marginal tentacula; beneath is a four-folded column, with eight many-cleft lobes at the tip, and ſixteen lateral appendages. This is likewiſe found in the Red ſea. The body is of a blueiſh-hyaline, and is a full foot in diameter; the column beneath is about an inch and a half long.

Andromeda. Hemiſpherical, without marginal arms; beneath there are eight round ramified foliaceous arms. An inhabitant of the Red ſea. The body is tranſparent, of a pale yellowiſh-brown or blueiſh colour, with white rays and an entire margin; in the middle is a ſmall black croſs; the arms are white, and a little thicker than a gooſe-quill at the inſertion.

Corona. Hemiſpherical, without marginal tentacula; beneath there are eight cultrate arms, toothed each ſide below. It inhabits the Red ſea. Body reddiſh-hyaline; it is about four inches acroſs, with a blue croſs in the middle; the arms beneath are broad, and two-lobed at the tip.

Perseæ. Hemiſpherical, hyaline, with an opaque white ring within, four times interrupted; there are no marginal tentacula. It is found in the Mediterranean. The body is about two inches wide, with a very prominent margin; it has four arms, ſub-lanceolate, about an inch long, and undulate at the margin.

Cephea. Hemiſpherical, tuberculate, reddiſh-brown; beneath are eight arms villous at their extremities, and nine long filiform tentacula. It inhabits the Red ſea. The body is pellucid, with eight paler rays; arms blueiſh, with black extremities; the tentacula are pointed.

Proboscidalis. Hemiſpherical, with a long proboſcis in the middle beneath, and ſix marginal tentacula. This ſpecies inhabits the Mediterranean. The body is hyaline, two inches and a half broad, with a prominent equal margin; proboſcis ſub-flexile, and truncate at the tip, with a fringed folded verſatile membrane.

Mollicina. Depreſſed, with twelve lateral apertures and tentacula. An inhabitant of the Mediterranean. The body is about an inch and a half in diameter, hyaline; the margin is prominent, with twelve plates.

Pileata. Ovate-campanulate, with a hyaline globe above; within is an oblong red nucleus; the margin has numerous tentacula that are yellow at the baſe. Inhabits the Mediterranean. The body is an inch and half high; the margin a little contracted.

Crucigera. Hemiſpherical, with a reddiſh croſs as wide as the body; the body is ſmall, with four very minute, white, approximate rings above; the margin is thin, prominent, variouſly flexile, and often reddiſh; the tentacula are numerous, but not ſo long as the body is wide.

Unguiculata. Orbiculate; above flat, with ſixteen rays; the margin is crenate, with ſixteen ſlightly incurved fangs. It is found about the ſhores of Jamaica, and is the ſize of a nutmeg. The body is diaphanous, blueiſh, and ſpotted.

For a deſcription of ſeveral of the above ſpecies, as affording an exhibition of light, and for an account of certain changes, recommended by Mr. Macartney, in the arrangement of the genera, and of the names of ſome of the ſpecies, we refer our readers to the article Light, *Exhibition of, by living Animals*, at the cloſe of the 20th volume of this work, having, in the preſent, confined ourſelves to the Linnæan repreſentation of the genus.

Mr. (now ſir Joſeph) Banks, in his paſſage from Madeira to Rio de Janeiro, diſcovered a new ſpecies of the meduſa, which, when brought aboard by the caſting net, had the appearance of metal violently heated, and emitted a white light. With theſe animals were taken ſmall crabs of three different ſpecies, altogether new, each of which gave as much light as the glow-worm, though the creature was not ſo large by nine-tenths. Theſe luminous animals gave that appearance to the ſea, which has been mentioned by many navigators, and of which various reaſons have been aſſigned. It appeared to emit flaſhes of light exactly reſembling thoſe of lightning, only not ſo conſiderable, but ſo frequent, that ſometimes eight or ten were viſible at the ſame moment.

Medusa's *Head*, in *Botany*. See Euphorbia.

MEDUSÆ Caput, in *Natural Hiſtory*, a name given by authors to the *ſtella marina*, called by ſome, from its various branchings, *ſtella arboreſcens*. Rumphius, Geſner, and many other authors, have deſcribed this ſtrange fiſh in its recent ſtate; and in the Acta Eruditorum, we have an accurate figure, and a very remarkable account of one which was found foſſil, and preſerved in a ſingularly perfect manner in ſtone.

The ſtone in which it was found was of the fiſſile or ſlaty kind; and it was ſo large as to extend over a piece of this ſtone of four feet in length, and between three and four in breadth. The body of the fiſh, from which all the reſt ſeem originally to have ariſen, lay at one corner of this ſtone, and the arms extended themſelves lengthways in a very diſtinct and natural manner the whole length of the ſtone; and from theſe there parted, on every ſide, other ſmaller ones; and theſe were finally divided into others more minute, in ſuch a manner as to repreſent the niceſt painting. Act. Erudit. ann. 1725, p. 377.

The ſtudy of foſſils is more improved by this ſingle ſpecimen than by thouſands of others, and by the reaſonings of almoſt as many authors. The foſſils called entrochi have always perplexed the writers on theſe ſubjects to account for: ſome having judged them a ſort of ſtony vegetables; ſome a *luſus naturæ;* and others, as different things; but in this table the whole fiſh is ſo perfectly preſerved, that there can remain not the leaſt doubt of its being really the *ſtella arboreſcens;* and in this both the figure and author's words expreſs, in the plaineſt manner poſſible, that the long arms or branches, reaching from one end to the other of the ſtone, are compoſed of a number of entrochi as it were, tied together in the ſame manner as the ſingle joints of thoſe entrochi, which we meet with, are to one another: or, in plain fact, that our entrochi, which have perplexed us ſo much to account for their origin, are in reality the fragments of the arms or branches of this fiſh. Theſe branches in this famous ſpecimen were compoſed of what we call *trochitæ*, and had many rudiments of ſmaller branches, as well as perfect ones, growing from their ſides, and would have been ſo many common entrochi, if broken off.

What was moſt remarkable in this foſſile was, however, the ſeparating of ſmaller branches which ran entire to their ends, and there terminating in an infinite number of ſmall ramifications, all growing from one head, they formed cluſters of four or five inches in diameter, and of an inconceivable beauty, reſembling the compound flower of ſome elegant plant. The matter of the large branches, when examined, appeared to be the ſame with that of the common entrochi, that is, ſpar. The author calls it *ſelenites*, but that was a word indeterminately uſed by authors, till of late, for all plated and bright foſſils.

It is plain that this complete fiſh could have no way come into this ſtone but at the time when it was yet moiſt and ſoft: and the author calls it *novum diluvii monumentum, a new remembrancer of the deluge.*

MEDUSÆ *Caput*, or *Meduſa's Head*, in *Ancient Mythology*, occurs frequently both on the breaſt-plates and ſhield of Minerva; in ſome of which it is the moſt beautiful, and in others the moſt ſhocking object. In ſome figures the face is repreſented as dead, but with the moſt perfect features that can be conceived; in others, her face is full of paſſion, and her eyes convulſed; and in many others, the look is altogether frightful, and formed on purpoſe to inſpire terror. The beauties and horrors of Meduſa's face are mentioned by the Roman poets. Ov. Met. iv. ver. 793. Lucan, lib. ix. ver. 680. Virg. Æn. viii. ver. 438. Spence's Polymetis, p. 61.

MEDWA, in *Geography*, a town of Nubia, on the borders of Dar-fûr; 80 miles N. of Cobbe.

MEDWAY, a river peculiarly connected with the county of Kent, England, was called by the Britons Vaga, a name deſcriptive of its ſinuous courſe and mazy wanderings. The Saxons changed this appellation to Medweg and Medwege, from which the preſent name is a corruption. This river has four principal ſources, one in Kent, two in Suſſex, and a fourth in Surrey. The latter riſes at Blechingly, and entering Kent, flows on to Eaton bridge and Penſhurſt, below which it is joined by one of the branches that riſe in Suſſex, and being augmented by various ſmaller ſtreams, proceeds through a beautiful country to Tunbridge. A little above this town the river ſeparates into ſeveral channels, the northernmoſt of which is navigable, and is again joined by the other diviſions about two miles below Tunbridge. Thence proceeding to Twyford bridge and Yalding, it receives the united waters of the two remaining principal branches; one of which flows from Waterdown foreſt in Suſſex, and is ſwelled by the Bewle and Theyſe rivulets; and the other of which riſes at Goldwell, near Great Chart, in Kent; this alſo receives ſeveral leſſer ſtreams in its progreſs, and is increaſed by the waters of the former branch above Hunton. From Yalding, the Medway flows in a winding direction to Maidſtone, and thence in a wildly devious channel, gradually augmenting in depth and breadth, it purſues its pictureſque courſe to Rocheſter. Proceeding hence towards Sheerneſs, it paſſes Chatham, Upner caſtle, and Gillingham fort; after which it greatly increaſes in width, and ſtill preſerving its meandering character, flows onward to the Thames, which it enters between the iſles of Graine and Shepey, having firſt united its waters to thoſe of the Swale. The Medway and its numerous tributary ſtreams are calculated to overſpread a ſurface of nearly thirty ſquare miles in the very midſt of Kent. The tide flows nearly as high as Madiſtone; but at Rocheſter bridge it is ſtrong and rapid; and below that, all the way to Sheerneſs, a diſtance of about twenty miles, the bed of the river is ſo deep, and the reaches ſo convenient, that many of the largeſt line of battle ſhips are moored here, when out of commiſſion, as in a wet dock, and ride as ſafely as in any harbour of Great Britain. In the great ſtorm of 1703, the Royal Charlotte was driven on ſhore here, and loſt.

The Medway was firſt made navigable to Tunbridge about the middle of the laſt century, under the proviſions of an act of parliament, which paſſed in the year 1740; though an act had been procured for the purpoſe in the reign of Charles II. By the laſt act, the undertakers were incorporated by the ſtyle of "The Proprietors of the Navigation of the River Medway;" and were empowered to raiſe 30,000*l.* to complete the work, in ſhares of 100*l.* each. The trade on this river is very great, and includes a vaſt variety of articles, many of them of the very firſt neceſſity, and which, before the navigation was completed, could only be obtained by a circuitous land-carriage. The river is plentifully ſtored with fiſh of various ſpecies; and was in former times much celebrated for its ſalmon and ſturgeon; the latter, in particular, were ſo abundant, that a conſiderable part of the revenues of the biſhops of Rocheſter were derived from a duty levied on their ſale. They have now in a great meaſure left the river, but are ſtill occaſionally taken of conſiderable bulk. On the Medway, and in the ſeveral creeks and waters belonging to it, within the juriſdiction of the corporation of Rocheſter, is an oyſter-fiſhery; and the mayor and citizens hold a court every year, called the Admiralty court, for regulating this fiſhery, and preventing abuſes in it. The powers of this court have been eſtabliſhed and enforced by two acts of parliament. Haſted's Hiſtory and Antiquities of Kent, 12 vols. 8vo. Beauties of England and Wales, vol. vii. by E. W. Brayley. Ireland's Pictureſque Views on the River Medway, 8vo.

MEDWAY, a poſt-town of America, in Norfolk county, Maſſachuſetts, bounded E. and S. by Charles river, which ſeparates it from Medfield; it has two pariſhes of Congregationaliſts, and contains 1050 inhabitants; 25 miles S.W. of Boſton.

MEDWAY, or *Midway*, a ſettlement in Liberty county, Georgia, formed by emigrants from Dorcheſter, in South Carolina, about the year 1780; 30 miles S. of Savannah.

MEDWI, a town of Sweden, in Eaſt Gothland, near the Wetter lake, much frequented on account of a celebrated mineral ſpring.

MEDZIBOZ, a town of Poland, in Volhynia ; 20 miles S. of Conſtantinow.

MEDZIRON, a town of Perſia, in the province of Khoraſan ; 60 miles E. of Meſchid.

MEEADAY, or Meegheoung-yay. See Crocodile *Town*.

MEEKNESS, in *Ethics*, is a virtue which conſiſts in bearing affronts, reproaches, and injuries, with a due compoſure of mind. Its oppoſite vice is *revenge*.

MEELAH, in *Geography*, a town of Algiers, in the province of Conſtantina, ſuppoſed to be the Milevum of the ancients, built in the midſt of interſperſed vallies and mountains, ſurrounded with gardens, and abundantly ſupplied with fountains ; one of which bubbles up in the centre of the city, and is received into a large ſquare baſin of Roman workmanſhip. Its pomegranates are delicious, and it ſupplies Conſtantina with herbs and fruit ; its apples are alſo ſo good, that the name of the town has been derived from that fruit ; 13 miles N.W. of Conſtantina.

MEEN, St., a town of France, in the department of the Ile and Vilaine, and chief place of a canton, in the diſtrict of Montfort. The place contains 806, and the canton 9905 inhabitants, on a territory of 202½ kiliometres, in 9 communes.

MEENAH el Dsahab, a ſea-port town of Arabia Petræa, ſituated on the E. coaſt of the gulf of Accaba, in the N. part of the Red ſea, with a ſpacious harbour, anciently "Eſion-geber ;" 50 miles S. of Ailah.

MEENDOR, a town of Hindooſtan, in the circar of Condapilly ; 18 miles W. of Maſulipatam.

MEENEES, a ſmall iſland in the Sooloo Archipelago. N. lat 6 32'. E. long. 121 35'.

MEENKOOT, a town of Bengal ; 14 miles N. of Moorſhedabad.

MEER, John Vander, in *Biography*. There were three painters who bore this name. One was devoted to the ſtudy of ſea-pieces, but he ſometimes painted battles by land, and executed them with very conſiderable ſkill. Another was an hiſtorical and portrait-painter ; but he who beſt deſerves renown, was a diſciple of Nicholas Berchem, and ſucceeded admirably in imitating the ſtyle of that maſter. The ſubjects he choſe were generally rather of a more confined nature than Berchem's, but they are touched with nearly equal clearneſs and ſpirit ; with more ſoftneſs and delicacy in their effects. He is known by the name of De Jonghe, or the Young, to diſtinguiſh him from the ſhip-painter, who was called the Old Vander-Meer. De Jonghe died in 1688.

Meer, in *Mining*, a ſpace containing twenty-nine yards in length in any vein.

Meer-*ſtake*, is a pin of wood drove into the ſuperficies of the earth, to ſhew the extent or end of a meer of ground.

Meer-*ſwiin*, in *Ichthyology*, a name given by ſome to a ſea-fiſh, more uſually known by the name of *capriſcus ;* which ſee.

MEERBECK, or Melbeck, in *Geography*, a town of France, in the department of the Lys, on a ſmall river which runs into the Mandel ; eight miles N. of Courtray.

MEERCASERAI, a town of Bengal, in the province of Chittigong ; 31 miles N.W of Iſlamabad. N. lat. 22° 47'. E. long. 91° 42'.

MEERGUNGE, a town of Bengal ; five miles S.E. of Mahmudpour.—Alſo, a town of Hindooſtan, in Benares ; 20 miles S.S.W. of Jionpour.—Alſo, a town of Hindooſtan, in Oude ; 44 miles E. of Fyzabad.

MEERGUR, a town of Bengal ; four miles N. of Dinagepour.

MEERHOLZ, a town of Germany, ſeated on the Kinzig, giving name to a branch of the houſe of Iſenburg, called Iſenburg-Meerholz ; 17 miles E. of Frankfort on the Maine.

MEERJAPOUR, a town of Bengal ; ſix miles S. of Nogong.

MEERJASERRA, a town of Bengal ; 25 miles N. of Mauldah.

MEERJEE, or Meerzaw, a town of Hindooſtan, in Canara, on the coaſt ; 10 miles N. of Onore. N. lat. 14° 28'. E. long. 72° 10'.

MEEROAT, a town of Candahar ; 45 miles W. of Ghizni.

MEERPOUR, a town of Bengal ; 11 miles S. of Calcutta.

MEERSCHAUM, Werner, *Ecume de Mer*, Broch., and *Keffekil*, Kirwan, in *Mineralogy*, a ſubſtance of yellowiſh-white colour, which occurs in maſs, of fine-grained ſtructure, earthy, paſſing into flat conchoidal, or ſmall ſlaty, with indeterminately angular, and moderately ſharp-edged fragments. This mineral is opaque, ſoft, eaſily frangible, acquires a poliſh by friction, and is unctuous to the touch Its ſpecific gravity is 1.6. In acids it may be partly diſſolved without efferveſcence, and cannot be fuſed without addition by the blowpipe. The analyſes of Wiegleb and Klaproth give the following reſults, in which there is a difference, owing to Klaproth's having analyſed the freſh earth, and Wiegleb's having examined that which was formed into a tobacco pipe, and conſequently baked, and deprived of its water and carbonic acid.

	Wiegleb.	Klaproth.	
Silex -	54.16	50.5	41
Magneſia	51 66	17.25	18.25
Lime -	-	0.5	0.5
Water -	-	25.	39.0
Carbonic acid	-	5.	
	105.82	98.25	98.75

For the uſes to which this ſubſtance is applied among the Turks, ſee Keffekil. This latter name is derived from Kaffa, a town of the Crimea, where it is ſhipped for Conſtantinople. It is alſo found in Natolia, and in the iſlands of Samos and Negropont. When dug from its thin beds, it is ſoft, and hardens by being expoſed to the air.

A ſimilar ſubſtance has been diſcovered by Fabbroni at Caſtel del Piano, near Sienna. This conſiſts of 55 parts of ſilex, 25 of magneſia, 12 of alumine, 3 of lime, and 0.1 of oxyd of iron : and has been formed into bricks which float in the water. This manufacture revives one of the loſt arts recorded by Strabo and Pliny.

MEERSSEN, in *Geography*, a town of France, in the department of the Lower Meuſe, and chief place of a canton, in the diſtrict of Maeſtricht. The place contains 1149, and the canton 11,530 inhabitants, on a territory of 115 kiliometres, in 16 communes.

MEERTA, a town of Hindooſtan, in the Subah of Agimere ; 42 miles W. of Agimere. N. lat. 26° 23'. E. long. 74° 32'.

ME'ES, Les, a town of France, in the department of the Lower Alps, and chief place of a canton, in the diſtrict of Digne; 12 miles S.W. of Digne. The place contains 2021, and the canton 6305 inhabitants, on a territory of 37½ kiliometres, in 8 communes.

MEESIA, in *Botany*, a genus of Moſſes, eſtabliſhed by Hedwig, Fund. v. 2. 97. t. 9. f. 56, 57, and named by him in memory of David Meeſe, author of the Flora Friſica, an 8vo. of 87 pages, with two plates, publiſhed in 1760. This botaniſt has alſo publiſhed an arrangement of plants, in Latin and Dutch, founded on their cotyledons and mode of germination; and a work on the Syngeneſious claſs of Linnæus. Hedwig celebrates him as having firſt ſeen the ſtamens of the *Polytrichum*, and as being the firſt perſon who ever raiſed that moſs from ſeed. *Meeſia* differs from the *Bryum* of Hedwig, ſolely in the ſhortneſs and bluntneſs of the teeth of its external fringe, which are not half ſo long as the inner one. The author indeed, in his original ſpecies, found an auxiliary character in the reticulated ſtructure of this inner fringe; but this differs only in degree, and that very ſlightly, from what is obſervable in every *Bryum*, nor is it found in the other *Meeſiæ*. Three ſpecies are all that have been referred to this ſuppoſed genus, in the lateſt work of Hedwig, his *Species Muſcorum*; and theſe have been reduced by the author of the *Flora Britannica* and others to *Bryum*. They are

1. M. *longiſeta*. Hedw. Crypt. v. 1. 56. t. 21, 22. (Bryum triquetrum; Turn. Muſc. Hib. 115. Engl Bot. t. 2394. Mnium triquetrum; Linn. Sp. Pl. 1578, excluding the ſynonyms.)—Stem ſubdivided. Branches ſimple, erect. Leaves ſpreading in three rows, ovato-lanceolate, ſharp-pointed, finely ſerrated. Capſule ſlender pear-ſhaped, oblique and incurved. Lid conical.—This fine moſs, diſtinguiſhed from all others by the length of its *fruit-ſtalks*, which extends to three or four inches, is found in bogs in Sweden, Switzerland, and, ſince the publication of Fl. Brit., in Ireland. Hedwig erroneouſly deſcribes the *leaves* as entire, notwithſtanding the elaborate detail of the two folio plates which he has devoted to this ſpecies.

2. M. *uliginoſa*. Hedw. Crypt. v. 1. 1. t. 1, 2. (Bryum trichodes; Sm. Fl. Brit. 1350. Engl. Bot. t. 1517.)—Native of bogs in Germany and Scotland. Hedwig ſays it is common on alpine calcareous rocks in Auſtria.

3. M. *dealbata*. Hedw. Sp. Muſc. 174. t. 41. f. 6—9. (Bryum dealbatum; Sm. Fl. Brit. 1350. Engl. Bot. t. 1571.)—Native of Sweden and Scotland; as well as of St. Faith's bogs, near Norwich. The *leaves* are of a ſingularly whitiſh green, finely reticulated.

Theſe two laſt ſpecies are deſcribed by the late Mr. Wood, in our article Bryum, n. 4 and 5. The firſt was omitted there, not being known at that time as a Britiſh plant.

MEETKA, in *Geography*, a country of Africa, W. of Bergoo.

MEFLESS, a town of Bohemia, in the circle of Koningingratz; 14 miles N.E. of Konigingratz.

MEGADOMESTICUS. See Domestic.

MEGÆRA, in *Mythology*, one of the three furies. She is repreſented with ſerpents on her head, and two diſtinguiſhed ones over her forehead, as her ſiſters have, and, like them, with torches. She is not mentioned ſo frequently by the Roman poets as the others are. Virgil gives us a deſcriptive picture of her, where he is ſpeaking of the puniſhment of the Lapithæ; who were ſaid to be always placed round a table very richly and plentifully ſet out, with a looſe piece of rock hanging over their heads, as juſt ready to fall; and this fury attending cloſe by, to watch and menace them, the moment they endeavoured to taſte any one of the tempting things ſet before them. Æn. vi. ver. 607.

MEGAIZEL, in *Geography*, a town of Egypt; ſix miles N. of Roſetta.

MEGALA, a town of Tunis; 3 miles N.E. of Spaitla.

MEGALARTIA, Μεγαλαρτια, in *Antiquity*, a feſtival in honour of Ceres, being the ſame with Theſmophoria.

MEGALASCLEPIA, Μεγαλασκληπεια, a feſtival in honour of Æſculapius. See Asclepia.

MAGALENSIA, or Megalesia, ſolemn feaſts celebrated among the Romans on the twelfth of April, in honour of the great mother of the gods, that is, Cybele or Rhea: wherein were ſports or combats held before the temple of that goddeſs.

They were called *megalenſia*, from the Greek μεγαλη, *great*, Cybele being accounted the great goddeſs.

MEGALONISI, in *Geography*, a ſmall iſland in the Mediterranean, near the coaſt of the Morea; two miles E. of Leucadia.

MEGALOPOLIS, in *Ancient Geography*, now *Leontari*, a large city, as its name imports, in the ſouthern part of Arcadia, upon the river Heliſſon. Pauſanias obſerves, that it was the moſt modern of the cities of Arcadia, if we except thoſe which had been renewed by Roman colonies, after the victory of Octavius over Antony. It owed its foundation to the counſels and activity of Epaminondas, who in the year 365 B.C., being deſirous of keeping the Lacedæmonians in that ſtate of ſubjection to which they were reduced, induced the Arcadians to eſtabliſh this city, and to ſettle in it a numerous colony, collected from different cities, ſo that it might ſerve as a fortreſs and a bulwark againſt Sparta. To favour them in this enterprize, and to protect them in their labours, he ſent them a guard of a thouſand choſen men, under the command of Pammenes. The city being thus fortified and defended, the Arcadians confided in its ſtrength and ſecurity; and on the other hand their enemies were the more deſirous of attacking it. To this object they directed their whole force; but the Megalopolitans for a long time vigorouſly reſiſted them. At length, however, *viz.* in the year 224 or 225 B.C. it fell, partly by ſurprize, and partly by a violation of treaties, under the power of Cleomenes, king of Sparta. The greater number of the inhabitants retired to Meſſenia, and emboldened by the counſels and example of Philopœmen, they refuſed the offer made them by Cleomenes, of remaining in their own city, on condition of concurring in the Achæan league. Philopœmen, upon their return to Arcadia, encouraged them to rebuild their city, and to adorn it with temples and magnificent edifices, which reſtored its former ſplendour. It is needleſs to enumerate its temples and ſtatues, and other ornaments. The moſt conſiderable monument which the ſouthern part of Megalopolis preſented, was the theatre, a building ſo grand and magnificent, that it even exceeded in extent and beauty all thoſe of Greece. We learn from Polybius that, next to Athens, Megalopolis was the grandeſt and moſt ſplendid city of Greece.

MEGAMETER. See Micrometer.

MEGARA, in *Ancient Geography*, the capital of the territory of the Megarians, which has been commonly compriſed in Attica, bounded eaſtward by mountains, and extends weſtward as far as a diſtrict of the iſthmus of Corinth. Megara, which had previouſly been called Niſa, derived its name either from Megarius, the ſurname of Minos, a Bœotian chief, who ſucceeded the king of Niſa, or from Megara, the name given to ancient temples erected in honour of Ceres, or from Megara, a ſuppoſed wife of Hercules. Under the reign of Codrus, the Peloponneſians having declared war againſt the Athenians, and miſcarried in their enterprize, returned and took poſſeſſion of Megara, which they peopled with Corinthians. Beſides two citadels, this city had ſeveral magnificent ſtructures and ornaments ; one was an aqueduct, diſtinguiſhed by the grandeur and beauty of its columns, conſtructed by Theagenes, tyrant of Megara ; another was a ſtatue of Diana, the protectreſs ; to which we may add, the ſtatues of the twelve great gods, attributed to Praxiteles ; a group conſecrated to Jupiter Olympius, in which was a ſtatue of this deity, with the face of gold and ivory, and the reſt of the body of burnt earth ; and upon the path that led to one of the citadels of Megara, called Caria, were a temple of Bacchus Nyctalius, another of Venus Spiſtrophia, a chapel dedicated to the Night, whence iſſued her oracles ; a temple of Jupiter ; two ſtatues, one of Æſculapius, and one of Hygeia, executed by Briexis, and a temple of Ceres, called the Megaron ; north of the citadel, near the temple of Jupiter the Olympian, was the tomb of Alcmenes, and that of Hyllus, ſon of Hercules ; a temple of Apollo and Diana, the tomb of Hippolyta, queen of the Amazons, and the tomb of Therea. Beſides theſe edifices, there were in the ſecond citadel, called the citadel of Alcathous, a tomb of Megareus, and a temple of Minerva, with her ſtatue, the body of which was gilt, and the face, feet, and hands were of ivory, &c. &c. See Pauſanias in Attica, c. 39—44.

MEGARA was alſo the name of a town on the eaſtern coaſt of Sicily, on the gulf of Megara, otherwiſe called Xiphonius, N. of Syracuſe. This city, which is ſaid to have been built here by the Greeks of Megara, the city of Achaia, (ſee the preceding article,) gave name to the mountain, called " Hybla Megara " This colony, 100 years after its eſtabliſhment, founded Salinus, which was deſtroyed by Marcellus when he beſieged Syracuſe. The ruins of Megara are now ſcarcely diſcernible.

MEGARA, a town of Illyria.—Alſo, a town of Pontus. —Alſo, a town of Aſia, in Syria, dependent upon Apamæa.—And alſo, a town of Greece, in the Peloponneſus.

MEGARA, in *Geography*, a town of European Turkey, in the province of Livadia, on the coaſt of the gulf of Engia, once the capital of a republic, now very much reduced ; 26 miles W. of Athens.

MEGARBE, a town of Nubia ; 9 miles W.S.W. of Maſuah.

MEGARIS, or the MEGARIDE, in *Ancient Geography*, a country of Attica. See MEGARA *ſupra*.

MEGARIS, a town of Italy, in Campania, placed by Pliny between Naples and Pauſilipo.

MEGATHERIUM, in *Natural Hiſtory*, a genus of the claſs Mammalia, order Bruta. This is generally known by the name of *mammoth*. It has a near reſemblance to the elephant, but its having never been found alive, nor with its organs in a perfect ſtate after death, its generic character cannot be accurately aſcertained. By ſome accounts from St. Peterſburg, it is ſuppoſed that the animal ſtill exiſts in a living ſtate, though it has hitherto eſcaped the reſearches of modern naturaliſts. Its reſidence appears to have been confined to a line in the northern hemiſphere, extending from Siberia to the banks of the Ohio, and the common name of mammoth was firſt given to the ſkeleton when dug from the earth by a Siberian peaſant. The following is the beſt account we have of this animal : it was received from St. Peterſburg, and relates to a ſpecimen found, though not alive, yet in a complete and almoſt perfect ſtate of preſervation. A Tungooſe chief, in the ſummer of 1799, when the fiſhing in the river Lena was over, repaired, according to annual cuſtom, to the ſea-ſide. Leaving his family in their huts, he coaſted along the ſhore in queſt of the tuſks of the mammoth, when he accidentally perceived, in the midſt of a rock of ice, a large ſhapeleſs block, not at all reſembling the logs of drift wood commonly found there. He climbed the rock, and examined it all round, but could not aſcertain what it was. The next year he returned, and found the carcaſe of a *trichecus roſmarus*, and obſerved that the maſs which he had ſeen before was freer from ice, but that there were two ſimilar pieces by the ſide of it. Theſe proved to be the feet of the mammoth. In 1801, the ſide of the animal and one of its tuſks appearing very diſtinctly, he acquainted his wife and ſome of his friends with what he had found. An alarm was inſtantly ſpread : the aged people affirmed that a ſimilar monſter had been ſeen once before, and that the whole family of the perſon who diſcovered it ſoon became extinct. At firſt the chief, terrified at the report, abandoned his prize, fell ſick, and was brought nearly to the grave ; but on his recovery, he was more reſolute, and was determined not to relinquiſh the expectation of the profit he might make of the tuſks. It was not, however, till the fifth year, that the ice had melted ſufficiently to diſengage the mammoth, when it fell over on its ſide on a bank of ſand. The Tungooſe was quite ſatisfied to take away the tuſks, which he bartered for goods to the value of 50 rubles, or rather more than 11*l.* Being ſatisfied with the prize, the carcaſe was left to be devoured by the bears, wolves, and foxes. Previouſly to this he had made a rude drawing of it, which repreſented it as having pointed ears, ſmall eyes, horſe's hoofs, and a briſtly mane extending along the whole back. In 1806, Mr. Michael Adams, of Peterſburg, being at Yakoutſk, heard of the circumſtance, and proceeded to the ſpot, in order to inveſtigate every thing relating to it. Before his arrival, the ſkeleton was ſtripped of its fleſh, but was itſelf entire, with the exception of one fore-foot. The vertebræ, one of the ſhoulder-blades, the pelvis, and the remaining three extremities, were held firmly together by the ligaments of the joints, and by ſtrips of ſkin and fleſh. It received ſome damage in the removal to Peterſburg, a diſtance of almoſt 7000 miles. The ears, however, were preſerved, and the pupil of the left eye was perfectly diſtinguiſhable. From other parts it proved to be a male, with a long mane, but had neither tail nor trunk. From the ſtructure of the os coccygis, Mr. Adams did not entertain a doubt that it had a ſhort thick tail, and he thinks it muſt have had a proboſcis. The ſkin was of a deepiſh grey colour, and covered with reddiſh hair and black briſtles. The head weighed 460lb. ; the two horns weigh 400lb.: the entire animal was $10\frac{1}{2}$ feet high, and full ſixteen feet long. Mr. Adams has ſeen the tuſks, and ſays they are ſo curved as to form three-fourths of a circle. They are curved in the direction oppoſite to thoſe of the elephant, bending towards the body of the animal. In 1801, Mr. William Peale, proprietor of the muſæum at Philadelphia, ſucceeded in obtaining a ſkeleton ſo nearly complete, that, by a few additions only, he rendered it, as it were, perfect. This ſkeleton was brought to London, and exhibited eight or nine years ago.

The generic name of *Megatherium* was firſt given to it by M. Cuvier, who has accurately examined the ſkeleton ; and to the generic name he added the trivial one of *Americanum*. In Dr. Shaw's Zoology it is deſcribed as a ſpecies of the Manis genus, and is denominated Manis megatherium. According to Cuvier, the ſkeleton which he ſaw at Madrid was twelve feet long, and about ſix in height. The ſpine is compoſed of ſeven vertical, ſixteen dorſal, and four lumbar vertebræ. It has ſixteen ribs ; the ſacrum is ſhort, the oſſa ilia very broad. The thigh-bones are exceſſively thick, and the leg-bones ſtill more ſo in proportion. The entire ſole of the foot bore on the ground in the act of walking. The ſhoulder-blade is much broader than long: the fore-limbs are longer than the hind. The head is the greateſt ſingularity of the ſkeleton. The occiput is elongated and flattened, but is convex above the eyes. The two jaws form a conſiderable projection, but without cutting teeth, all grinders, with a flat crown, and grooved acroſs.

This quadruped, in its character, differs from all known animals: and each of its bones, conſidered apart, alſo differs from the correſponding bones of all known animals. This reſults from a compariſon of the ſkeleton with that of other animals, for none of the animals which approach it in bulk, have either pointed claws, or a ſimilarly formed head, ſhoulder-blades, clavicle, pelvis, or limbs. "As to its place in the ſyſtem of quadrupeds," ſays the French naturaliſt, "it is perfectly marked by the ſole inſpection of the ordinary indicatory characters, that is, the claws and teeth. Theſe ſhew that it muſt be claſſed in the family of unguiculated quadrupeds, deſtitute of cutting teeth, and in fact it has ſtriking relations with thoſe animals in all parts of its body. This family is compoſed of the daſypus, bradypus, manis, myrmecophagus, and Cape ant-eater, or orycteropus. The thickneſs of the branches of the lower jaw, ſurpaſſing even that of the elephant, ſeems to prove that this vaſt animal was not content with leaves, but, like the elephant and rhinoceros, broke on the ground the branches themſelves; its cloſe and flat-crowned teeth appearing very proper for that purpoſe." Cuvier thinks there are indications that this animal had a trunk, but that it muſt have been ſhort, ſince the length of the head and neck together only equals that of the fore-legs. He places it between the bradypus and the daſypus genera, becauſe to the ſhape of the head of the former it joins the teeth of the latter. It would be neceſſary to know particulars, of which a ſkeleton cannot inform us, in order to determine to which of theſe it approached the moſt. "This adds," ſays Cuvier, "to the numerous facts which apprize us that the animals of the ancient world were all different from thoſe we now ſee on the earth, for it is ſcarcely probable that if this animal ſtill exiſted, ſo remarkable a ſpecies would have hitherto eſcaped the reſearches of naturaliſts. It is alſo a new and very ſtrong proof of the invincible laws of the ſubordination of characters, and the juſtneſs of the conſequences deduced for the claſſification of organized bodies: and under both theſe views, it is one of the moſt valuable diſcoveries which have for a long time been made in natural hiſtory."

MEGE, in *Geography*, a town of Perſia, in Farſiſtan; 10 miles S. of Iſpahan.

MEGE'VE, a town of France, in the department of the Leman, and chief place of a canton, in the diſtrict of Bonneville. The place contains 3075, and the canton 9951 inhabitants, on a territory of 180 kiliometres, in ſeven communes.

MEGGIO, a town of Africa, in Fez; nine miles from the Mediterranean.

MEGHARISH Uzzur, or Acra, a town of Arabia, in the province of Hedsjas; 85 miles E.S.E. of Madian.

MEGHEM, or Megen, a town of Brabant, on the Meuſe; 12 miles S. of Nimeguen.

MEGNITZESC, a town of Sclavonia; 18 miles W.S.W. of Verovitza.

MEGRA, a town of Ruſſia, in the government of Archangel, on the E. coaſt of the White ſea; 72 miles N. of Archangel.

MEGUNTICK, a lake of Canada, on the borders of Maine. N. lat. 45° 44'. W. long. 70° 25'.

MEHALLE' el Kebiré, a town of Egypt, capital of Garbia, the ſecond province of the Delta, and the reſidence of a bey. As there is no town more conſiderable in the Delta, it is called Kebira the Great. It has manufactories of linen and ſome ſal ammoniac works. A great deal of buſineſs is done there. The rivers which ſurround it ſerve for the conveyance of its merchandize through Egypt. Its environs are covered with villages, flocks, and the various productions of a fertile ſoil; 47 miles N. of Cairo. N. lat. 30° 50'. E. long. 31 24'.

MEHALLEBEG, a town of Perſia, in the province of Irak; 25 miles S.E. of Rai.

MEHALLET il Emir, a town of Egypt, on the Nile; ſix miles S.E. of Roſetta. N. lat. 30 50'. E. long. 30 24'.

Mehallet *il Loben*, a town of Egypt; 16 miles S. of Faoué.

Mehallet *Malek*, a town of Egypt; five miles S. of Faoué.

Mehallet *il Meſhak*, a town of Egypt; five miles N.N.E. of Tineh.

MEHAMA, one of the ſmaller Friendly iſlands, in the Pacific ocean; four miles E. of Neeneeva.

ME'HE'GAN, William Alexander, in *Biography*, was born at la Salle, in the Cevennes, in the year 1721, of a family originally from Ireland, which had followed the fortunes of James II. He was prevented from adopting the profeſſion of arms, in which his family had been diſtinguiſhed, by ill health, and cultivated the belles lettres, attaching himſelf particularly to the ſtudy of eloquence. When Frederic V. king of Denmark founded, in the year 1751, a profeſſorſhip of the French language, M. de Mèhègan compoſed a diſcourſe which was pronounced at the opening of the lectures in Copenhagen. In the following year he publiſhed a work entitled "L'Origine des Guebres; ou la Rèligion naturelle miſe en Action," which was looked upon as breathing the ſpirit of modern philoſophy. This was followed at diſtant intervals by "Conſiderations ſur les Révolutions des Arts;" "Pièces fugitives;" "Mémoires de la Marquiſe de Terville;" "Lettres d'Aſpaſie," and in 1759 "L'Origine, le Progrès, et la Dècadence de l'Idolatrie." He died in 1766, and after that event, was publiſhed, as a poſthumous work of M. Mèhègan, "Tableau de l'Hiſtoire moderne," in three vols. 12mo. This is highly eſteemed on account of the warmth and eloquence of the ſtyle, and the generally impartial and philoſophical ſpirit by which it is animated. The hiſtory commences with the year 476, and concludes with the peace of Weſtphalia in 1648. "It is," ſays his biographer, "full of picture and portrait, upon which he ſometimes throws too ſtrong a glare of colouring; he has, however, ſucceeded in making his work much more intereſting than abridgments uſually are, and at the ſame time has judiciouſly ſelected the points of inſtruction." There is an Engliſh tranſlation of it. In 1767 was publiſhed another poſthumous work of this author, entitled "L'Hiſtoire conſiderée vis-à-vis la Rèligion, les Beaux-Arts, et l'Etat," in three volumes 12mo. Gen. Biog.

MEHEM, in *Geography*, a town of Hindooſtan, in the ſubah of Delhi; 27 miles W.S.W. of Rodak.

MEHERRIN, a town of America, in North Carolina; 25 miles E. of Halifax.—Alſo, a river of Virginia, which runs into the Chouan, 20 miles N.W. of Hartford, in N. Carolina.

MEHINDEY, a river of Hindooſtan, which runs into the gulf of Caubay, about 40 miles S. of Amedabad.

MEHITPOUR, a town of Hindooſtan, in Lahore; 45 miles S.E. of Sultanpour.

MEHRIBAN, a town of Curdiſtan ; 22 miles S.E. of Sherezur.

MEHUN, a town of France, in the department of the Cher, and chief place of a canton, in the diſtrict of Bourges, ſituated on the Eure ; ſeven miles N.W. of Bourges. The place contains 1267, and the canton 7064 inhabitants, on a territory of 287½ kiliometres, in 12 communes. Charles VII. had a palace in this town, where he reſided, and ſtarved himſelf to death for fear of being poiſoned by his ſon Louis XI. N. lat. 47° 9′. E. long. 2° 18′.

Mehun, a ſmall iſland in the ſtraits of Babelmandeb. N. lat. 12° 20′.

MEHUNTPOUR, a town of Hindooſtan, in the circar of Chanderee ; 16 miles N.W. of Chanderee.

MEI, Girolamo, in *Biography*, a Florentine nobleman, mathematician, philoſopher, and theoretical muſician, who flouriſhed in the latter end of the ſixteenth century. Battiſta Doni, in his " Trattato ſecondo ſopra gl'Inſtrumenti di Taſti," or keyed inſtruments, ſays, that in the beginning of his muſical ſtudies, his partiality for the muſic of the ancients was greatly increaſed by the peruſal of the dialogue of Galilei, in which Mei had the greater part (dove il Mei ebbe la meggior parte), and ſtill more by a treatiſe written by this learned perſonage (Mei) " De Modis Muſicæ," a MS. preſented to the Vatican library by Monſig. Guarengo. Op. Om. t. i. p. 324. Doni has ſupported this aſſertion by no proof ; but in the Vatican library, among the queen of Sweden's MSS. there is a volume of inedited tracts and letters, written by Girolamo Mei, upon the muſic of the ancients, in which are diſcoverable, not only opinions ſimilar to thoſe of Galilei, but frequently the words in which they are expreſſed in his dialogue ; particularly in a letter from Mei, dated Rome, 1572, in anſwer to two that he had received from Galilei, in which he ſeems to have been conſulted concerning the uſual difficulties which thoſe have to encounter who undertake to diſcuſs the muſic of the ancients. We procured a copy of this letter entire, and conſiderable extracts from the other writings of Mei, which indeed contain the whole ſubſtance of Galilei's dialogue, except what concerns the controverſy with Zarlino relative to the muſical ſcales and proportions of the ancients.

Mei *Miſere*. See Miserere.

MEIA Sarekin, in *Geography*, a town of Aſiatic Turkey, in the government of Diarbekir ; 30 miles E.N.E. of Diarbekir. N. lat. 38° 5′. E. long. 39° 55′.

MEIANE, a town of Perſia, in the province of Comis ; 18 miles S.S.E. of Biſtan.

MEIANO, a town of Italy, in the department of the Mela ; 12 miles S.S.W. of Breſcia.

MEIAS-Farekin, a town of Aſiatic Turkey, in the province of Diarbekir ; 25 miles N.E. of Diarbekir.

MEIBOMIA, in *Botany*, a genus of Heiſter's, named after Brandanus Meibom, profeſſor of medicine at Helmſtadt, who died in 1740, aged 62, but who is not recorded as having written any botanical work. The plant on which Heiſter founded his genus is *Hedyſarum canadenſe* of Linnæus. We do not find that he has given any other character, than enumerating it among papilionaceous genera with ternate leaves ; ſee Heiſt. ſyſt. 9.

There was another profeſſor Meibom at Helmſtadt, who wrote upon beer, *de cereviſiis potibuſque et ebriaminibus extra vinum aliis commentarius*, and died in 1655, aged 65. Dryandr. Bibl. Banks.

MEIBOMIAN Glands, in *Anatomy*, very ſmall round bodies, arranged in parallel vertical lines on the inner ſurface of the tarſi of the eyelids, and ſecreting an unctuous ſubſtance, which is poured from their ducts on the ciliary edges of the palpebræ, and prevents their agglutination. See Eye.

MEIBOMIUS, John Henry, in *Biography*, a learned phyſician, was born at Helmſtadt, in Auguſt 1590. He ſpent a conſiderable time on his travels in Italy, for the purpoſes of improvement in ſcience and literature ; and, having given his attention to medicine, in which he made great progreſs, he went ultimately to Baſle, in 1619, where he was honoured with the degree of doctor of phyſic. On his return to his native place, his character obtained for him, in 1620, the appointment of profeſſor of medicine from the faculty of that univerſity ; and he continued in the office about ſix years, when he removed to Lubeck, where he had been choſen phyſician to the city, and to its biſhop. Here he paſſed the reſt of his life, which terminated in May 1655, in his ſixty-fifth year. In the latter period of his life, he employed himſelf chiefly in the inveſtigation of medical hiſtory, and left a manuſcript to his ſon, entitled " De Vitis Medicorum uſque ad ſeculum xv ;" but this work was never printed. The following are the whole of his publiſhed works, the two laſt of which appeared after his death. 1. " Hippocratis Orkos, ſive Commentarius in Hippocratis jusjurandum," Lugd. Bat. 1643, 4to. 2. " De Flagrorum uſu in re venerea," ibid. 1643, which was reprinted at London, Copenhagen, and Francfort. 3. " Epiſtola de Cynophoria, ſeu, Canis portatione ignominioſâ," Helmſtadt, 1645. 4. " De Mithridatio et Theriaca Diſcurſus," Lubec. 1652, 1659. 5. " Mæcenas, ſive, de C. D. Mæcenatis vitâ, moribus, et geſtis, Liber ſingularis," Lug. Bat. 1653. 6. " De Cereviſiis, Potibuſque et Ebriaminibus extra Vinum aliis, Commentarius," Helmſtadt, 1668, publiſhed together with the treatiſe of Adrian Turnebus, " De Vino ;" and 7. " Aurelii Caſſiodori Formula Comitis Archiatrorum," ibid. 1668 ; which is a commentary on the 19th epiſtle of the 6th book of Caſſiodorus. Eloy Dict. Hiſt.

Meibomius, Henry, ſon of the preceding, was born at Lubeck, in June 1638. After having gone through various courſes of ſtudy at Helmſtadt, and in different Dutch univerſities, he travelled into Italy and France, and took his doctor's degree at Angers, in 1663. He then continued his travels into England, whence he returned to Germany. His father's name was ſtill held in eſtimation at Helmſtadt, and his own talents and acquirements gained him conſiderable reſpect, ſo that he was ſoon enrolled among the profeſſors of that univerſity ; in which he held ſucceſſively the chairs of medicine, poetry, and hiſtory ; the laſt of which he retained at the time of his death, in March 1700, when he had reached his ſixty-ſecond year. Occupied as he ever was in the practice of his profeſſion, and in his academical labours, he nevertheleſs found leiſure to write ſeveral works, and alſo to ſuperintend the publication of the writings of others. His firſt diſſertation, " De Incubatione in Fanis Deorum, Medicinæ cauſâ, olim factâ," was publiſhed at Helmſtadt, in 1659. It contained a hiſtory of the prieſt-medicine of ancient times, and of the various ceremonies, offerings, and ſacrifices, inſtituted in different Pagan temples, in conducting this practice. He edited a treatiſe of Arnold de Boot, which had been publiſhed in London, in 1649, entitled " Obſervationes Medicæ de Affectibus omiſſis ;" with a preface, and many valuable notes, ibid. 1664. He alſo publiſhed " De Vaſis Palpebrarum novis, Epiſtola ad Joëlem Langelottum," ibid. 1666. " De Oſſium contuſione Diſputatio," ibid. 1668 ; and ſeveral other ſmall diſſertations, which evinced his great knowledge of the animal economy, and its diſorders. He ſeems to have contemplated a hiſtory of medicine, and printed, " De Medicorum Hiſtoriâ ſcribendâ, Epiſtola ad G. H. Velſchium," ibid. 1669 ; but the difficulties which he met with in inveſtigating the medicine of the Arabians arreſted his progreſs, and deterred him from publiſhing the work left him by his father. He publiſhed, however, the following: "Parentatio I. Danielis Schmidt," Dantiſci, 1687. "Ad Saxonicæ Inferioris Hiſtoriam Introductio," Helmſtadt, 1687. "Scriptores Rerum Germanicarum," ibid. 1688, in two vols. folio; and he edited Valentin. Hen. Vogler's "Introductio univerſalis in notitiam cujuſcumque generis bonorum ſcriptorum," ibid. 1700, with additions.

Some other individuals of the family of MEIBOMIUS were profeſſors at Helmſtadt; eſpecially *Henry*, the grandfather of the preceding Henry, who publiſhed ſeveral works; *Mark*, whoſe ſtudies were entirely confined to hiſtory and the belles lettres; and *Brandus*, who taught medicine, and publiſhed ſeveral academical diſſertations, about 1730. Eloy Dict. Hiſt. de Med.

MEIBOMIUS, MARCUS, a writer of great erudition, particularly in the muſic of the ancient Greeks, was deſcended from a very learned family at Helmſtadt, who ſucceſſively practiſed phyſic in that city, with great reputation.

Marcus Meibomius was born about 1611, and in 1652 he publiſhed from the Elzevir preſs, in two volumes 4to. dedicated to Chriſtina, queen of Sweden, the following work: "Antiquæ Muſicæ auctores ſeptem Græce et Latine, Marcus Meibomius reſtituit ac Notis explicavit. Amſtel. apud Lud. Elzivirium, clɔ. lx. lii." The firſt volume contains:

I. Ariſtoxeni Harmonicorum Elementorum, libri iii.
II. Euclidis Introductio Harmonica.
III. Nichomachi Geraſeni, Pythagorici, Harmonius Manuele.
IV. Alypii Introductio Muſica.
V. Gaudentii, Philoſophi Introductio Harmonica.
VI. Bacchii Senioris Introductio Artis Muſicæ.

The ſecond volume.

Ariſtidis Quintiliani de Muſica, libri iii.
Martiani Capellæ de Muſica, liber ix.

Meibomius, after this learned and elegant publication, was invited to the court of the queen of Sweden, which invitation he accepted.

Having, by his enthuſiaſtic account of the muſic of the ancients, impreſſed this princeſs with ſimilar ideas, the younger Bourdelot, a phyſician, and his rival (as a claſſical ſcholar) in the queen's favour, inſtigated her majeſty to deſire him to ſing an ancient Grecian air, while Naudet, an old Frenchman, danced *à la Grec* to the ſound of his voice. But the performance, inſtead of exciting admiration, produced loud burſts of laughter from all preſent; which ſo enraged Meibomius, that ſeeing the buffoon Bourdelot in the gallery among the ſcoffers, and having no doubt but that it was he who, with a malicious deſign, had perſuaded her majeſty to deſire this performance, immediately flew thither, and exerciſed the pugiliſt's art on his face ſo violently, without being reſtrained by the preſence of the queen, that he thought it neceſſary to quit the Swediſh dominions before he could be called to an account for his raſhneſs; and immediately went to Copenhagen, where, being well received, he fixed his reſidence there, and became a profeſſor at Sora, a Daniſh college for the inſtruction of the young nobility; here too he was honoured with the title of aulic counſellor, and ſoon after was called to Elſineur, and advanced to the dignity of Architeſorié, or preſident of the board of maritime taxes or cuſtoms; but neglecting the duty of his office, he was diſmiſſed, and upon that diſgrace quitted Denmark.

Soon after he ſettled at Amſterdam, and became profeſſor of hiſtory in the college of that city; but refuſing to give inſtructions to the ſon of a burgomaſter, alleging that he was not accuſtomed to inſtruct boys in the elements of knowledge, but to finiſh ſtudents arrived at maturity in their ſtudies; he was diſmiſſed from that ſtation.

After quitting Amſterdam, he viſited France and England; then returning to Holland, he led a ſtudious and private life at Amſterdam till 1710 or 1711, when he died at near 90 years of age.

Beſides the ſeven Greek writers on ancient muſic, Meibomius publiſhed an edition of the Greek mythologiſts; a treatiſe de Fabrica Triremium; a new edition of Vitruvius, with a commentary on the *Echeia*, or harmonic vaſes, deſcribed book 5; correcting, for a new edition, the Hebrew bible. This daring work appeared at Amſterdam, 1698, in folio, under the title "Davidis Pſalmi, et totidem ſacræ ſcripturæ veteris Teſtamenti capita—reſtituta, &c."

The moſt ſolid and celebrated of his critical works is his edition of the ſeven Greek writers on ancient muſic, in which all ſubſequent writers on the ſubject of ancient muſic place implicit faith. It is from the indefatigable and learned labours of Meibomius, in his commentaries on the Greek writers in muſic, particularly Alypius, that we are able to fancy we can decipher the muſical characters uſed by the ancient Greeks in their notation; which, before his time, had been ſo altered, corrupted, disfigured, and confounded, by the ignorance or negligence of the tranſcribers of ancient MSS., that they were rendered wholly unintelligible.

MEICHE, in *Geography*, a town of France, in the department of the Doubs, and chief place of a canton, in the diſtrict of St. Hippolyte. The place contains 690, and the canton 7864 inhabitants, on a territory of 222½ kiliometres, in 31 communes.

MEIDAN, a town of Perſian Armenia; 100 miles N.E. of Erivan.

MEIDANS, in the *Eaſtern Nations*, are a ſort of country-ſeats, where the greater people have often ſummer-houſes, to which they retire on the three days of the week in which they do not attend the paſha's divan, and where they divert themſelves with ſeeing their ſlaves ride, ſhoot, and throw the dart, while they are regaling with their pipe and coffee.

MEIDOBRIGA, in *Ancient Geography*, a town of Hiſpania, in Luſitania, S.W. of Nuba Cæſarea. It was formerly a powerful city; and its inhabitants were called Plumbarii, on account of the mines of lead which were found in its vicinity. Some traces of it have been diſcovered in a place called Armenha. South of this town was a chain of mountains, denominated "Mons Herminius."

MEIDON, or MEIDUN, in *Geography*, a town of Egypt, at ſome diſtance from the left bank of the Nile, near which is the moſt ſoutherly of the pyramids; it is thought to occupy the ſcite of the ancient Nilopolis; 32 miles S. of Cairo.

MEJEDDAH, a town of Algiers, on the Shellif; five miles N.E. of Seedy-Abid.

MEJERDAH, or MAI-SEAR-DA, a ſea-port town of Algiers, in the province of Tremecen, conſiſting of meanly-conſtructed cottages. From this place a great quantity of corn is exported to Europe; 42 miles W. of Tremecen. N. lat. 35° 8′. W. long. 1° 35′.

MEJERDAH, a river of Africa, formed by the union of the Sujeraſs and the Serrat, on the borders of Algiers; after traverſing the country from W. to E. it runs into the Mediterranean at Porto Farina. It purſues a winding courſe through a country, which it contributes to fertilize, and in this reſpect, as well as by its encroachments on the ſea, it reſembles the Nile. This river was anciently called "Bagrada," or "Brada." See Bagrada.

MEILAN, a town of European Turkey, in Natolia; 18 miles W.N.W. of Kiangari.

MEILHAN, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diſtrict of Marmande; ſix miles W.N.W. of Marmande. The place contains 2414, and the canton 9552 inhabitants, on a territory of 170 kiliometres, in 10 communes.

MEILHUYS, a town of Norway, in the government of Drontheim; 14 miles S.W. of Drontheim.

MEIMARG, a town of Grand Bucharia; 36 miles S.E. of *Bokhara*; which ſee.

MEIMEND, a town of Perſia, in Segeſtan; 40 miles W. of Candahar. N. lat. 33° 5′. E. long. 65° 45′.

MEINAM, ſignifying the "Mother of Waters," a large river of Siam. According to Loubere, this river, when it enters the dominions of Siam, is ſo ſmall that it can only convey ſmall boats, ſcarcely ſufficient for carrying above four or five perſons. It is afterwards very much augmented, at the town of Lancocevan, by another conſiderable river from the north, of the ſame name, or rather by the reunion of a branch of the ſame river. Loubere's account of the ſmallneſs of the ſtream has been doubted, and it has been ſuggeſted, that it was only obſtructed in its courſe by rapids or cataracts. When we advert to the regular inundations, ſimilar to thoſe of the Nile and Ganges, which are rivers of long courſe, and other circumſtances, we may infer that the Meinam is of a more diſtant and higher origin than the mountains of Yunnan in the weſt of China; and that the Thibetian Alps furniſh its ſource in that of the Nou Kian of the Lamas, ſuppoſed to be the Thaluan or river of Martaban, which has no Delta, nor any marks of ſo diſtant an origin, but is repreſented by Loubere and d'Anville as a ſhort and inſignificant ſtream. The Meinam is celebrated among the oriental rivers. Kæmpfer ſays, that it is very deep and rapid, always full, and larger than the Elbe. He adds, that the inhabitants ſuppoſe its ſource to be in the mountains, which give riſe to the Ganges, and that it branches through Cambodia and Pegu; an account ſomewhat confirmed by the diſcovery of the river Anau, which connects the Meinam with the rivers of Cambodia. The inundations are in September, after the ſnows have melted in the northern mountains, and the rainy ſeaſon has commenced. In December the waters decline, and by degrees ſink to their former level. The ſame intelligent traveller informs us, that the water in the earth ſwells before the river riſes; that the wells are nitrous, but the water of the Meinam, though muddy, is pleaſant and ſalutary; that the inundations are chiefly diſcernible towards the centre of the kingdom, not near the ſea; that the rice is reaped in boats, and the ſtraw left in the water; that a feſtival is celebrated in December, when the wind begins to blow from the north, and the inundation abates. The banks of the Meinam are generally low and marſhy, but thickly peopled from Yuthia to Bankok, below which are wild deſarts like the Sunderbunde of the Ganges. Monkies, fire-flies, and moſkitoes ſwarm on the fertile ſhores. Pinkerton.

MEINART. a town of Germany, in the county of Hohenlohe; 7 miles S.E. of Ohringen.

MEINAU, an iſland in the N.W. part of the lake of Conſtance, with a commandery of the Teutonic order; about three miles in circumference. In 1805 it was added to Baden, once ſo celebrated for its wine; 14 miles N. of Conſtance.

MEINOR. See Mainour.

MEINUNGEN, in *Geography*, a town of Germany, in the county of Henneberg, belonging to the prince of Saxe-Weimar, ſituated amidſt mountains, on the river Werra; 21 miles N. of Schweinfurt. N. lat. 50° 37′. E. long. 10° 40′.

MEÏONITE; *Hyacinthe blanche de Somma*, Romé de l'Iſle; *Hyacinthine*, Delameth.

The colour of this mineral is a greyiſh-white.

It occurs ſeldom maſſive; generally in priſmatic cryſtals, the primitive form of which is a rectangular priſm with ſquare baſes. The principal modifications are

The rectangular four-ſided priſm, acuminated by four planes placed on the lateral edges.

The preceding with lateral edges truncated (*dioctaèdre*, Haüy, fig. 76.) The truncating planes are often ſeen on two oppoſite edges only.

The ſame, but with lateral edges bevilled, and the bevilment again truncated; the edges formed by the lateral and acuminating planes likewiſe replaced by a plane, (*ſouſtractif*, Haüy, fig. 77.)

Often one of the acuminating planes increaſes at the expence of the others which ſometimes entirely diſappear.

The cryſtals are ſmall, ſeldom middle-ſized, cloſely grouped together. They are ſplendent, with a vitreous luſtre, eſpecially when viewed in the direction of the longitudinal fracture.

Longitudinal fracture foliated, the folia parallel with the four ſides of the priſm; croſs fracture conchoidal: the former is indicated by fiſſures obſervable in the interior.

It is ſemi-tranſparent paſſing into tranſparent.

It is hard, ſcratching glaſs.

Before the blowpipe it effervesces, and eaſily melts into a ſpongy white glaſs.

We are ſtill without an analyſis of this ſubſtance.

Meïonite is found at Capo di Bove, near Rome, in baſalt with melilite, augite, leucite; and on Monte Somma, among the volcanic ejections of Veſuvius, with calcareous ſpar or granular limeſtone.

This mineral ſubſtance was firſt diſcovered by Romé de l'Iſle, who conſidered it as a variety of Veſuvian; Haüy afterwards found it to be a diſtinct ſpecies, to which he gave the name it now bears, and which has been alſo adopted by Werner, who at firſt conſidered it as a variety of feldſpar.

From meſotype-zeolite, with which it might be confounded at firſt view, the meïonite differs in not forming a jelly with nitric acid.

MEIOSIS, in *Rhetoric*, is a figure, which is a ſpecies of the hyperbole.

MEIRONNES, in *Geography*, a town of France, in the department of the Lower Alps, and chief place of a canton, in the diſtrict of Barcelonnette. The place contains 554, and the canton 3252 inhabitants, on a territory of 335 kiliometres, in three communes.

MEISENHEIM, a town of France, in the department of the Sarre, and chief place of a canton, in the diſtrict of Birkenfeld. The place contains 1730, and the canton 7512 inhabitants, in 21 communes.

MEISNER, Balthasar, in *Biography*, an eminent German Lutheran divine, was born in Saxony in the year 1587. At the age of fifteen he was ſent to purſue his academical ſtudies at the univerſity of Wittemberg, where he took his degree of M.A., and acquired much reputation by his diligence and talents. He ſtudied alſo at the univerſities of Straſburg, Tubingen, and Gieſſen; but in 1611 he returned to Wittemberg, and was appointed profeſſor of moral philoſophy, and in 1614 he was elected to the theological chair, which he filled with great ſucceſs during the remainder of his life. He died in 1626, leaving behind him works that bear witneſs to his learning and zeal, of which we may notice "Commentarius in Hoſeam:" "Meditationes Sacræ in Evangelia:" "Anthropologia Sacra," in two vols. quarto, and "Philoſophia Sobria, hoc eſt, conſideratio Queſtionum Philoſophicarum," in three vols. quarto.

MEISSANG, in *Geography*, a town of Africa, in Kaarta; 52 miles E. of Kemmoo.

MEISSAU, a town of Auſtria; 34 miles N.W. of Vienna.

MEISSEN, *Margraviate of*, a principality of Saxony, founded in the 10th century, and united in 1422 to the electorate of Saxony. Its boundaries have been various at different periods.

Meissen, a city of Saxony, capital of the margraviate above-mentioned, ſituated on the Elbe, at its confluence with the Meiſſe, whence its name. Out of ſeveral juriſdictions that formerly belonged to this town aroſe the four prefecturates of Meiſſen, to which pertain ſeveral villages. In the centre of the old citadel, the other parts of which are in a ruined ſtate, is the part called "Albretſchſburg," in which is carried on the celebrated manufacture of the excellent Miſnian porcelain. At this place is alſo a manufacture of cloth. The firſt foundation of this town was begun by king Henry I. about the year 930; 14 miles N.W. of Dreſden. N. lat. 51° 19′. E. long. 13° 27′.

MEKAM Ali, a town of the Arabian Irak, on the Euphrates, oppoſite to Baſſora.

Mekam *ul Kidr*, a town of the Arabian Irak, on the Euphrates; 26 miles S.S.E. of Hellah.

MEKARA, a name of the Hindoo goddeſs *Parvati*, which ſee.

MEKEHOAN, in *Geography*, a town of Arabia, in the province of Oman, on the Perſian gulf; 45 miles W.S.W. of Julfa.

MEKELBURG, a town of Pruſſia, in the province of Bartenland; 12 miles S.S.E. of Bartenſtein.

MEKES, a town of Curdiſtan; 30 miles S.S.E. of Betlis.

MEKKIAS, ſignifying meaſure, a name given to the Nilometer, ſituated on an iſland in the front of old Cairo, about 500 yards in breadth. It is there, in front, that upon the graduations of a pillar the riſe of the river is meaſured, and from the obſervations made upon it, public cryers go about the ſtreets of Cairo, proclaiming the ſucceſſive heights of the water, in which are centered all hopes of fertility and abundance. This Nilometer is ſaid to have been built by the Arabs. The iſland on which it ſtands is called "Roudda," or gardens, becauſe it is laid out in gardens, and inhabited only by gardeners. See Nilometer.

MEKLAF al Asfat, a town of Arabia, in Yemen; 75 miles N. of Hafec.

MEKZARA, a country of Africa, on the S. ſide of the Niger, between Caſhna and Melli.

MEL, Gaudio, Fiamingo, in *Biography*, a Flemiſh muſician, by whom the Italians have been generally underſtood to mean Claude Goudimel, a native of Franche Compté, and a Hugonot, who was one of the firſt compoſers of muſic to the French tranſlation of the pſalms by Clement Marot and Theodore Beza; and who was murdered at Lyons in 1572, on the fatal day of the maſſacre of Paris.

There are certain difficulties in this account, of which we ſhall ſpeak further elſewhere. See Palestrina.

Mel, in *Geography*, a town of Italy, in the Treviſan; 12 miles N.W. of Ceneda.—Alſo, a ſmall iſland in the Atlantic, near the coaſt of Africa. N. lat. 10° 15′.

Mel. See Honey.

Mel *Cedrinum*, in the *Materia Medica of the Ancients*, a term uſed to expreſs a ſort of liquid manna, uſed rather as a pleaſant ſweet in foods than as a medicine, and which ſeems to have been the ſame with the *mel roſcidum* of Galen, and with the liquid manna of mount Sinai; that mountain having been the place where it was annually collected in large quantities even in Galen's time; and the account Bellonius gives of the manner of collecting it in his time, agreeing very well with what Galen has left about it. It is, however, an error in Bellonius, to ſuppoſe this to be the *terenjabin* of the Arabians, that being evidently a ſolid, not a liquid ſubſtance, and being from all accounts the ſame with what is now called *manna Perſicum*, or Perſian manna.

The mel cedrinum is a term uſed only by Hippocrates for this ſubſtance, and ſeems ſo odd, that many are apt to believe there is an error of the text, and that the author never meant any ſuch thing. Foeſius is of opinion, that theſe ought to be read as two diſtinct names, with a comma between them, and that the author only meant by them two ſubſtances very well known in his time, which were common honey, and the liquid ſubſtance called *cedrinum*, or *cedria*.

Mel *Roſcidum*, a name given to a kind of liquid manna collected in their time, as it is at preſent, in conſiderable quantities, on mount Sinai. The monks who collect it call it *terenjabin*, after the name of a kind of manna, common among the Arabians. But this is an error, the terenjabin of thoſe authors not being a liquid manna, but the ſmall round kind, collected from the *alhagi maurorum*, and now called *manna Perſicum*. It does not appear that the *mel roſcidum*, or any other ſpecies of manna, was uſed in medicine by the ancients; this was eſteemed a curioſity, rather than a thing of any uſe, by Galen; and other authors ſay, it was ſweeter than honey itſelf, with no farther account; whence it ſeems rather to have been uſed as a delicacy than as a medicine. See Terenjabin, and Manna *Perſicum*.

MELA, Pomponius, in *Biography*, an ancient geographical writer, was a native of Spain, and flouriſhed A.D. 45. His great work, entitled "De Situ Orbis," divided into three books, is written with elegance, great perſpicuity, and brevity. The beſt editions are thoſe of Gronovius 1722, and Reinhold in 1761. Voſſius gave an edition of it with copious notes. In the laſt edition by Gronovius are added five books "De Geographia," written by ſome later writer.

Mela, in *Geography*, a department of Italy, deriving its name from a river which riſes on the confines of the Trenton, and after croſſing the Breſſan, runs into the Oglio, near Uſtiano. The department is compoſed of part of the Breſſan, and has a population of about 190,689 inhabitants, who elect 15 deputies.

Mela. See Meelah.

Mela, a river of the Morea, which runs into the ſea; 8 miles S.W. of Patras.

Mela, a ſurgeon's inſtrument, called alſo ſpeculum, and by the vulgar a probe.

Its uſe is to probe ulcers, or draw a ſtone out of the penis; its form is various, according to the uſe it is intended for.

MELADA, in *Geography*, a ſmall iſland in the Adriatic, a little to the N. of Iſola Groſſa. N. lat. 44° 35′. E. long 15° 56′.

MELÆNA, in *Medicine*, μελαινα νουσος in the language of Hippocrates (ſee his book περι νουσων, ſect. 5. book ii. edit. Föes.) a diſeaſe characterized by a diſcharge of black matter by ſtool.

This affection ſometimes occurs together with *hæmatemeſis*, or vomiting of blood, and ſometimes without that ſymptom. The ancients conſidered that the black matter thrown off by the bowels, was that modification of bilious matter which they denominated *black bile:* but recent obſervation has aſcertained that it conſiſts principally of blood, in a grumous or ſemi-coagulated ſtate, which is poured out ſlowly from the veſſels of the inner coat of the inteſtines. It is obſerved generally to be connected with obſtruction or congeſtion of ſome of the abdominal viſcera, as of the liver, ſpleen, or meſentery. Great debility, and frequent fainting accompany the diſeaſe; the pulſe is often quickened, though but moderately; and other ſymptoms of fever are ſeldom urgent. There is commonly ſevere pain in the ſtomach and abdomen, with loſs of appetite, nauſea or vomiting, head-ache, and other ſigns of derangement of the digeſtive organs.

Gentle purgatives and clyſters have been recommended for this complaint from the time of Hippocrates downwards: and they are as beneficial in this affection, as in the hæmatemeſis, to which it bears much affinity. (See HÆMATEMESIS.) Dr. Home employed the diluted ſulphuric acid, in addition to laxatives, and, as he believed, with conſiderable advantage. Emetics he juſtly deems uſeleſs, if not injurious, and ſhunned the uſe of opium, as tending to ſhut up the matter that nature was carrying off. Opiates, however, combined with gentle cathartics, tend rather to aid the operation of the latter, by removing the ſpaſmodic conſtrictions which take place in the bowels, and thus alſo afford material relief to the pains. See Home, Clinical Experiments, ſect. 7.—Alſo Hoffman, Med. Rat. Syſt. tom. iv. part ii. ſect. 1. cap. 3. Morgagni de Sed. et Cauſis Morbor. epiſt. xxx. art. 17. Sauvages, claſs ix. gen. 11. Portal, Mem. ſur pluſieurs Maladies, tom. ii. p. 129.

MELAGGE, in *Geography*, a river which riſes in Algiers, formed by the union of ſeveral ſtreams; which, in its courſe, takes the name of "Sarratt," and runs into the Mejerda, on the borders of Tunis.

MELAIPOUR, a town of Hindooſtan, in the circar of Schaurunpour; 20 miles E.N.E. of Schaurunpour.

MELALEUCA, in *Botany*, from μελας, *black*, and λευκος, *white*, a very fine exotic genus of trees and ſhrubs, ſo named by Linnæus, becauſe the principal, and indeed original, ſpecies was called *Leucadendron*, and *Arbor alba;* words ſynonimous with its appellation in the Malay tongue, *Caju-puti*, or White Tree. We know not why the idea of black was aſſociated with white in the above name. Linn. Mant. 14. Sm. Tr. of Linn. Soc. v. 3. 273. Schreb. 332, excluding the ſynonyms. Willd. Sp. Pl. v. 3. 1428. Mart. Mill. Dict. v. 3. Juſſ. 323. Lamarck Illuſtr. t. 641. Gærtn. t. 35.—Claſs and order, *Polyadelphia Icoſandria.* Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, turbinate, in five deep, roundiſh, often coloured, equal ſegments. *Cor.* Petals five, roundiſh, inſerted into the rim of the calyx, between its ſegments. *Stam.* Filaments very numerous, in five ſets, inſerted into the calyx, either oppoſite to, or alternate with, the petals, various in length and ſtructure; anthers roundiſh, incumbent. *Piſt.* Germen inferior, nearly globular; ſtyle thread-ſhaped, declining, ſhorter than the ſtamens; ſtigma obtuſe. *Peric.* Capſule globoſe, coated, of three cells and three valves, the partitions from the centre of each valve. *Seeds* numerous, minute, angular.

Eſſ. Ch. Calyx ſuperior, in five deep ſegments. Petals five. Stamens numerous, very long, in five parcels. Style one. Capſule of three cells.

A fine genus of aromatic trees and ſhrubs, with lateral infloreſcence, and ſimple entire leaves, all, except the firſt ſpecies, the produce of New Holland. This genus was confounded by the younger Linnæus, the two Forſters, Schreber, and many other botaniſts, whom Juſſieu ſeemed diſpoſed to follow, with three other genera; ſee FABRICIA, LEPTOSPERMUM, and METROSIDEROS. From the two firſt it is clearly diſtinguiſhed, as their characters will ſhew; from the laſt it differs merely in having the ſtamens aſſembled in five ſets, not ſimply icoſandrous; the habits of theſe two genera, and every part of their fructification, except the ſtamens, being alike. How very different the form of the filaments is in different ſpecies of *Melaleuca*, will appear by their deſcriptions; ſome being united to a great extent, others but ſlightly; ſome in a pinnate, others in a palmate manner; all which being conſidered, their union at all ſeems to afford but an artificial character. This however is a ſufficiently clear, and, both genera being numerous, a very commodious diſtinction.

Eleven ſpecies of *Melaleuca* are deſcribed, by the writer of this article, in the third volume of the Linnæan Society's Tranſactions, and one in the ſixth. Theſe are all adopted by Willdenow. We ſhall here make ſome addition to the number, and Mr. Brown, in the ſecond volume of his Prodromus, will probably increaſe it much more. The whole are diſtributed into two ſections.

* *Leaves alternate.*

1. M. *Leucadendron.* Greater Cajeput Tree. Linn. Mant. 105. Suppl. 342, α. Sm. Tr. of Linn. Soc. v. 3. 274. (Myrtus Leucadendra; Linn. Sp. Pl. 676.. Arbor alba; Rumph. Amboin. v. 2. 72. t. 16.)—Leaves alternate, lanceolate, pointed, obliquely falcate, five-ribbed. Footſtalks, young branches, and germen, ſmooth.—Native of ſome parts of the Eaſt Indies, eſpecially the Molucca iſlands, Ceram and Amboyna, growing in hilly places, flowering from January to March, and ripening fruit from Auguſt to November; but according to Rumphius, it is rarely propagated by ſeed. This is deſcribed by that accurate writer, as a large *tree*, as thick as a man's body, or much thicker, with many irregular widely ſpreading *branches*, but not of a lofty growth. *Leaves* ſcattered, on ſhort ſmooth *footſtalks*, lanceolate, entire, ſmooth, tapering at each end, but moſt at the extremity, curved laterally into a ſickle ſhape, from five to eight inches long, ſcarcely an inch broad in the wideſt part, furniſhed with five principal ribs, connected by intermediate interbranching veins. *Stipulas* none. *Flowers* white, in long, looſe, ſomewhat whorled ſpikes, whoſe ſmooth common ſtalk terminates in a leaf-bud, and becomes a branch. The bundles of *ſtamens* are $\frac{3}{4}$ths of an inch long, and each divided nearly to the baſe. *Germen* ſcarcely ſo large as a hemp-ſeed, globoſe, ſmooth, quite ſeſſile, the *capſules* remaining long firmly fixed to the branch, ſurmounted by leaves, after the ſeeds have fallen out, as is common to the whole genus. Rumphius ſpeaks much of the reſinous and aromatic properties of this tree, its whitiſh or grey aſpect, and its agreeable ſhade. The wood is hard and heavy, but eaſily ſplits and ſoon decays, being neither beautiful nor uſeful. The outer bark is of a ſpongy nature, and much uſed for caulking veſſels, as it ſwells in the water; but is nevertheleſs liable to ſhrink again, and give way. It is called *baru*, a name given to all ſubſtances uſed for that purpoſe. An oil is obtained by firing the tree, which ſoon becomes thick and is uſed for candles. Rumphius ſays nothing of any fine eſſential oil being procured by diſtillation from this tree; ſee the next ſpecies.

2. M. *minor.* Leſſer Cajeput Tree. Arbor alba minor;

Rumph. Amboin. v. 2. 76. t. 17.)—Leaves ſcattered, elliptic-lanceolate, bluntiſh, ſtraight, five-ribbed. Young branches and germens downy.—Native of Amboyna, but leſs frequent than the foregoing, with which it has been confounded by every body but Rumphius. We now venture, for the firſt time, to diſtinguiſh them. This is ſmaller in all its parts, and rather a ſhrub than a tree. The young *leaves* are extremely ſilky; adult ones nearly ſmooth, about two (ſcarcely three) inches long, and one broad, exactly elliptical, and not oblique or falcated. *Footſtalks* broad and very ſhort, ſomewhat hairy. Young *branches*, where the *flowers* are ſeated, denſely clothed with white ſilky prominent down, as is likewiſe the *germen*. The *calyx* is but ſlightly downy. *Fruit* ſmooth, depreſſed and truncated.

The late Mr. Chriſtopher Smith, from whom we have received ſpecimens of both theſe plants, aſſured us of this being what yields the oil of Cajeput, and Rumphius gives the ſame account. (See CAJEPUT.) The bark is woody and brittle throughout, not externally corky like the former. The ſtructure of their parts of fructification is the ſame in both, eſpecially the form of the *ſtamens*. Rumphius's plates are by no means calculated to give a juſt idea of the foliage of either, eſpecially of the preſent, but his deſcriptions are excellent.

3. M. *viridiflora*. Green-flowered ribbed Melaleuca. Gærtn. v. 1. 173. t. 35. Sm. Tr. of L. Soc. v. 3. 275. (M. Leucadendron; Forſt. Prod. 38. Linn. Suppl. 342, β. Metroſideros quinquenervia; Cav. Ic. v. 4. 19. t. 333.)—Leaves alternate, elliptic-lanceolate, ſtraight, bluntiſh, coriaceous, five-ribbed. Footſtalks and young branches downy. Germen nearly ſmooth.—Native of New Caledonia and New South Wales. The younger Linnæus confounded it with both the preceding. From the firſt it is abundantly diſtinct. With the ſecond it more agrees in the ſhape of its *leaves*, but differs in their thick rigid texture, and much longer more downy *footſtalks* The *flowers* are twice as large, green, not white, with a ſmooth or very ſlightly hairy *germen*. The form of the *ſtamens* is the ſame. The young *leaves* of the preſent ſpecies are finely downy, but ſcarcely ſilky.

4. M. *ſuaveolens*. Sweet-ſcented Melaleuca. Gærtn. v. 1. 173. t. 35.—Leaves alternate, elliptical, ſingle-ribbed. Flower-ſtalks axillary, forked, downy, twice as long as the footſtalks. Filaments ſhorter than the petals, ſomewhat pinnate. Native of the warmer part of New Holland, near Endeavour river. A plate of this, communicated by ſir Joſeph Banks to Linnæus, is in our poſſeſſion. It appears to be a handſome *tree*, with elliptical ſmooth entire *leaves*, tapering at each end, ſingle-ribbed, five or ſix inches long and two broad. *Footſtalks* an inch long. *Flower-ſtalks* nearly twice that length, downy, axillary, ſometimes in pairs, forked, each bearing ſeven handſome white *flowers*, whoſe *ſtamens* are much ſhorter than the *petals*, and pinnated in their lower part. The *germen* and *calyx* are downy.

5. M. *laurina*. Laurel-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 3. 275.—Leaves alternate, obovato-lanceolate, ſingle-ribbed. Flower-ſtalks axillary, forked, downy, about as long as the footſtalks. Filaments rather ſhorter than the petals, ſomewhat pinnate.—Native of New South Wales, communicated by ſir Joſeph Banks. It is very nearly related to the laſt, but not at all aromatic, which that ſhould ſeem by its name to be, and the *leaves* of the preſent are broadeſt towards the top, very narrow and taper at their baſe. The *footſtalks* are bordered, and ſo connected with the leaf, it is hard to fix the limits of each. *Flower-ſtalks* axillary, not an inch long, forked, ſilky, bearing five or ſeven *flowers*, half the ſize of the *ſuaveolens*. *Stamens* hairy, rather ſhorter than the *petals*. *Germen* and *calyx* downy.

6. M. *ſtypheloides*. Sharp Twiſted-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 3. 275.—Leaves alternate, ovate, twiſted, many-ribbed, with a ſpinous point. Calyx-teeth ſharp-pointed, ribbed.—Native of Port Jackſon, New South Wales. This has the habit of a *Styphelia*, and is ſcarcely at all aromatic. The numerous *leaves* are ſeſſile, ſcattered, not an inch long, ovate, twiſted, rigid, pungent, entire, ſmooth, rather glaucous, ſtriated with innumerable nerves. Young *branches* very hairy, bearing in their lower part ſhort crowded circles of ſeſſile white *flowers*. *Germen* and *calyx* downy; the teeth of the latter erect, rigid, ſpinous, ribbed. *Stamens* palmate, much longer than the *petals*. M. Ventenat ſays, there were many fine plants of this ſpecies, in his time, at Malmaiſon, but none had then bloſſomed.

7. M. *ſquarroſa*. Various-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 6. 300. Donn. Cant. ed. 4. 186. (M. myrtifolia; Vent. Malmaiſ. t. 47.)—Leaves ſcattered or oppoſite, ovate, pointleſs, five or ſeven-ribbed. Calyx-teeth pointleſs, ſmooth.—Native of the eaſt and weſt coaſts of New Holland. We firſt ſaw it in the Cambridge garden in 1799 The *leaves* ſpread in three or four rows, according as they are ſcattered or oppoſite, they have about ſeven remote ribs, and are blunt without any ſpine. *Flowers* white, encircling the hairy branches in long denſe maſſes. *Germen* and *calyx* ſmooth, the latter blunt, without thorns or ribs. *Stamens* much longer than the *petals*, collected into five bundles, but not completely, many of the filaments being diſtinct, as in the genus *Citrus*; ſo that the limits between *Melaleuca* and *Metroſideros* here become almoſt evaneſcent. The *ſtigma* too in this ſpecies is quite ſimple, not ſo tumid or capitate as in moſt other *Melaleucæ*.—Perhaps *M. decuſſata* of Mr. Donn's *Hort. Cant.* ed. 5. 186, is but a variety of this.

8. M. *dioſmifolia*. Green-flowered Reflexed Melaleuca. Andr. Repoſ. t. 476.—Leaves ſcattered, reflexed, elliptic-oblong, obtuſe, ſingle-ribbed. Calyx-teeth rounded, ſmooth.—Native of King George's Sound, on the weſt coaſt of New Holland, where it was found by Mr. Menzies. We gathered it in flower, in June 1807, in the conſervatory of Claude Scott, eſq. at Sundridge park, Kent. A tall ſhrub, with many ſpreading *branches*, clothed with numerous, ſcattered, crowded, ſtalked, reflexed *leaves*, about half an inch long, nearly elliptical, dark green; ſmooth and even above; dotted and ſingle-ribbed beneath. The *flowers* are green in every part, rather large, thickly crowded for an inch or two along the middle part of each branch, their long *ſtamens*, which are united by their baſe into five bundles, projecting horizontally all round. The *anthers*, or at leaſt their *pollen*, is yellow. *Stigma* obtuſe. *Capſules* large, thickly coated, crowded into irregularly angular figures.

9. M. *microphylla*. Small-leaved Melaleuca.—Leaves ſcattered, imbricated, cylindrical, obtuſe, ſomewhat ſpreading. Flowers crowded at the upper part of the branches. This hitherto nondeſcript ſpecies was gathered near King George's Sound, on the weſt coaſt of New Holland, by Mr. A. Menzies, who favoured us with a ſpecimen. The *ſtem* is ſhrubby, much branched in a determinate manner; the *branches* ſmooth, whitiſh, leafy throughout. *Leaves* very numerous, crowded, a little ſpreading, about a quarter of an inch long, cylindrical or obſcurely quadrangular, very

blunt, unarmed, ſmooth, pale green, with a ſtrong aromatic reſinous flavour; each ſupported by a ſhort, ſlender, ſmooth *footſtalk*, jointed at its baſe. *Flowers* white, crowded into an oval ſpike at the ſummits of a few of the branches, which are not extended beyond them, but ſtill the infloreſcence is lateral. *Stamens* in five ſets, thoſe of each ſet united, a good way up, into a flat linear baſe or common filament, which reaches beyond the *petals*. *Germen* and *calyx* ſmooth. *Capſule* turbinate. This is moſt akin to the next.

10. M. *ericifolia*. Heath-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 3. 276. Exot. Bot. v. 1. 65. t. 34.—Leaves ſcattered or oppoſite, linear, acute, nerveleſs, pointleſs, a little recurved. Flowers crowded at the upper part of the branches.—Native of Port Jackſon, New South Wales. This and the laſt are the ſmalleſt we have ſeen of the genus. Both have the habit of *Ericæ*. The preſent is very ſmooth in all its parts, and has the taſte and ſmell of Coriander ſeeds. The *branches* are prettily ſtriped with green and white. *Leaves* from half an inch to an inch in length, flattiſh, linear, very narrow, acute, but without any ſpinous point, deſtitute of rib or veins, a little convex beneath. *Flowers* yellowiſh-white, crowded into oval or oblong ſpikes at the top of almoſt every branch, which is commonly a little prolonged, and leafy, above them. *Germen* and *calyx* ſmooth. *Stamens* ſtrongly united in five ſets, but their common claws do not extend beyond the petals. The *flower-buds* are reddiſh.

11. M. *nodoſa*. Needle-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 3. 276. Exot. Bot. v. 1. 67. t. 35. Vent. Malmaiſ. t. 112? Metroſideros nodoſa; Gærtn. v. 1. 172. t. 34. Cavan. Ic. v. 4. 19. t. 334.)—Leaves ſcattered, linear, ſtraight, tipped with ſpinous points. Flowers crowded near the tops of the little ſide branches. Filaments palmate.—From the ſame country as the laſt. It has long been known in the gardens. The ſtouter taller habit; ſtraight pungent *leaves* above an inch long; and the much ſhorter, almoſt globular, maſſes of yellow *flowers*, each of which is borne on a ſhort lateral branch, diſtinguiſh this ſpecies from the laſt. The flowering branches have leafy terminations. The bundles of *ſtamens* are palmate, their united part ſhorter than the petals.

12. M. *armillaris*. Slender-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 3. 277. (M. ericæfolia; Andr. Repoſ. t. 175. Vent. Malmaiſ. t. 76. Metroſideros armillaris; Gærtn. v. 1. 171. t. 34.)—Leaves ſcattered, linear, ſomewhat recurved. Flowers crowded at the lower part of the branches. Filaments very long, linear; many-cleft and radiating at the ſummit.—Native of New South Wales. It has long been in the gardens. We have ſeen it trained againſt a wall to the height of ſeveral feet, in the open air, covered with flowers in May, and requiring only the ſhelter of a mat or glaſs frame in winter. It differs from *M. nodoſa* in its leſs rigid, and ſomewhat recurved, *leaves*, ſcarcely ſpinous at the tip; much longer ſeries of *flowers*, which are white; and particularly in the long linear baſe of each cluſter of *ſtamens*, which is extended to twice the length of the petals, and then branches off at once into numerous radiating filaments of no conſiderable length. We have always found the *flowers* ſituated about the lower part of each branch; Ventenat repreſents them near the end. So, on the contrary, his plate of *M. nodoſa* has the flowers on the lower parts of very long leafy branches, very different from what we have obſerved. It ſeems therefore that the relative ſituations of the fructification vary in theſe plants, though the comparative number of flowers in each is conſtant.

13. M. *geniſtifolia*. Broom-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 3. 277. Exot. Bot. v. 1. 107. t. 55.—Leaves ſcattered, lanceolate, ſharp-pointed, three-ribbed, cloſely dotted. Flowers looſely ſcattered. Filaments pinnate in their upper part. Style hairy.—Native of New South Wales, where the firſt ſettlers called it the White Tea-tree. It is ſaid to grow "in a good ſoil, moſtly near the water-ſide," being covered with white bloſſoms in November. We have met with it in no garden. In its native ſoil the *ſtem* attains the height of twenty or twenty-five feet. The *branches* and *leaves* are ſmooth; the latter lanceolate, ſcarcely three quarters of an inch long, acute, flat, marked with three ribs, and numerous reſinous dots at the back. Their flavour is pleaſantly aromatic, not ſtrong. *Flowers* ſcattered, in alternate pairs, towards the tops of the ſmall terminal branches, which are ſlightly downy in that part. The claws of the united *ſtamens* are about as long as the petals before they divide; they then become pinnate, and towards the top are more cloſely branched. *Germen* and *calyx* ſmooth. *Style* hairy.

** *Leaves oppoſite.*

14. M. *linarifolia*. Toad-flax-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 3. 278. Exot. Bot. v. 1. 109. t. 56. (Metroſideros hyſſopifolia; Cavan. Ic. v. 4. 20. t. 336. f. 1.)—Leaves oppoſite, linear-lanceolate, three-ribbed, cloſely dotted beneath. Flowers looſely ſcattered. Filaments pinnate all the way up. Style ſmooth.—Native of the country about Port Jackſon, New South Wales. We have ſeen it flowering at Mr. Scott's of Sundridge park. In its native ſoil this ſpecies forms a large *tree*, whoſe outer bark is eaſily ſtripped off, in large light thick ſpongy flaky portions, which ſerve the rude natives as a warm wrapper for their new-born infants. The European ſettlers found it anſwer the purpoſe of tinder. The *branches* are ſmooth. *Leaves* oppoſite, nearly ſeſſile, an inch and a half, or two inches long, narrow, linear-lanceolate, acute but not pungent, marked with three ſlight ribs above, much dotted on both ſides; the mid-rib keeled beneath. *Flowers* numerous, looſely diſpoſed, cream-coloured, with a tinge of red in the *petals*. *Stamens* very long, each bundle regularly pinnate, almoſt from the very baſe to the end. *Style* ſhort, ſmooth, as well as the *germen* and *calyx*. Every part is highly aromatic, with a flavour reſembling pepper-mint.

15. M. *abietina*. Fir-leaved Melaleuca.—Leaves oppoſite, elliptic-oblong, concave, blunt, ribleſs. Flowers few, at the ends of the branches. Filaments long, linear, many-cleft at the ſummit. Communicated by Mr. Menzies, who gathered it at King George's Sound, on the weſt coaſt of New Holland. This ſeems to be a ſtout *ſhrub*, or *tree*, with numerous, ſtrong, leafy, ſmooth *branches*. *Leaves* about half an inch long, crowded, oppoſite, in pairs croſſing each other, on ſhort broad *footſtalks*; they are concave above, with a very blunt point; convex beneath, deſtitute of ribs, veins, or dots. *Flowers* reddiſh, few together, in ſhort, ovate, apparently terminal ſpikes, beſet with many imbricated, reddiſh, ribbed and keeled *bracteas*. It ſeems doubtful whether the branches be ever continued, in a leafy form, beyond the inſertion of the flowers, which if they be not, would overſet a character in the habit of this genus on which we have always depended. Our ſpecimen however is inſufficient to decide this queſtion. The bundles of *filaments* are linear and ſimple to a conſiderable extent (but not to the extremities of the *petals*, which are longer than uſual); then they ſuddenly branch off into numerous diviſions, each bearing its *anther*, as in the other ſpecies. *Style* ſmooth, longer than in the laſt, but much ſhorter than the ſtamens. *Germen* and *calyx* ſmooth.

16. M. *thymifolia.* Thyme-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 3. 278. Exot. Bot. v. 1. 69. t. 36. (M. coronata; Andr. Repoſ. t. 278. M. gnidiæfolia; Vent. Malmaiſ. t. 4. Metroſideros calycina; Cavan. Ic. v. 4. 20. t. 336. f. 2.)—Leaves oppoſite, elliptic-lanceolate, acute, ribleſs. Flowers few together, on ſhort lateral branches. Filaments oppoſite to the petals, branched more than half way down.—Native of New South Wales. It was firſt raiſed in England, if we miſtake not, by Mr. Fairbairn at Chelſea garden, and is not very uncommon in green-houſes. This ſpecies is a little, ſlender, ſmooth, buſhy *ſhrub*, about two feet high, with numerous ſmall, ſmooth, oppoſite thyme-like *leaves*, full of reſinous dots beneath, and highly aromatic. *Flowers* roſe-coloured, abundant, though but few together, on ſhort lateral *branches*, not always ſurmounted by leaves. The *germen* and *calyx* are ſmooth. *Filaments* oppoſite to the petals, which is remarkable, and as far as we can examine our dried ſpecimens of others, peculiar to this and the next ſpecies. They are twice the length of the petals, and conſiſt of one broad flat compound filament, ſending off from its margin and inner ſurface abundance of ſimple filaments with *anthers*, almoſt to its very baſe. *Style* ſmooth, rather ſhorter than the ſtamens.

17. M. *hypericifolia.* St. John's-wort-leaved Melaleuca. Sm. Tr. of Linn. Soc. v. 3. 279. Vent. Jard. de Cels, 10. t. 10. Andr. Repoſ. t. 200.—Leaves oppoſite, ſpreading, elliptic-oblong, ſingle-ribbed. Flowers numerous, on ſhort lateral branches. Filaments oppoſite to the petals, very long, linear, radiating at the ſummit.—Found in ſwamps at New South Wales. This is now not unfrequent in the green-houſes and conſervatories of England, where it makes an elegant appearance, being, in our opinion, the moſt beautiful of the genus. The *ſtem* is ſhrubby, ſix feet high, with lax ſpreading branches. *Leaves* numerous, horizontal, oppoſite, croſſing each other in pairs, elliptical, ſmooth, about an inch long, with much of the habit of an *Hypericum*. *Flowers* on ſhort, lateral, ſcattered branches, many together, in denſe cylindrical maſſes. *Calyx* and *germen* ſmooth, green, very glandular and reſinous. *Petals* green or reddiſh, with reſinous dots at the back. *Filaments* oppoſite to them, the common baſe of each cluſter three or four times the length of the petal, and of the ſame colour, linear and narrow, terminating in a very large radiating tuft of long, capillary, crimſon, ſilk-like threads, each bearing a ſmall red *anther*, with yellow pollen. Theſe crimſon threads, combining all round into a cloſe maſs, almoſt concealing the reſt of the flower, conſtitute the chief beauty of the whole. It was miſtaken for a *Bankſia* by one of the firſt convicts who went to New South Wales, and who ſent a very characteriſtic drawing to England of this plant, among ſome of leſs accuracy.

18. M. *neriifolia.* Oleander-leaved Melaleuca. Sims in Curt. Mag. v. 26. t. 1058. (M. ſalicifolia; Andr. Repoſ. t. 485.)—Leaves oppoſite, lanceolate, ſingle-ribbed. Flower-ſtalks axillary, forked, nearly ſmooth. Stamens ſhorter than the corolla, ſcarcely cohering.—Native of New Holland, we know not preciſely from what part of that extenſive country. It is ſaid to have been firſt raiſed from ſeed by Mr. Barr of Iſlington. This is very different from all the reſt of the preſent ſection, having yellow *flowers*, on axillary forked ſtalks, being next akin in habit to *M. ſuaveolens* and *laurina* of the former diviſion; but its *leaves* are oppoſite. Their figure is lanceolate, about two inches long, and the under ſide is pale. The *ſtamens* are deſcribed by Dr. Sims as collected into five bundles, ſhorter than the petals, but hardly cohering; Mr. Andrews delineates theſe bundles as oppoſite to the petals, with the filaments ſeparate almoſt to the very baſe. Whether Mr. Brown, from whom in his Prodromus v. 2, and Ait. Hort. Kew, we may expect additions to this genus, has made any generic diviſion of it, we are not informed; but Dr. Sims hints at the propriety of ſuch a meaſure.

Mention of more ſpecies than we have defined will be found in Mr. Donn's Hort. Cant. but ſome of thoſe are certainly not different. His *neriifolia* and *ſalicifolia* are, we preſume, our laſt ſpecies, under the names of Sims and Andrews. His *coronata*, and probably *fimbriata*, are our *thymifolia*, which he has likewiſe. His *dioſmæfolia* and *armillaris* we judge to be one and the ſame, as perhaps is his *ericifolia*. This intelligent botaniſt and cultivator is neceſſarily liable to be miſled, by the communications of his friends, who ſend the ſame thing under different names, nor are the plants always in a condition for determination till it is too late for his purpoſe. S.

MELALEUCA, in the *Materia Medica*. The *Melaleuca minor* is that ſpecies, which yields the *Cajeput* oil, and not the *M. leucadendron*, as mentioned under that article. See the preceding article.

The Cajeput oil, called alſo "Oleum Wittnebianum," from Wittneben, who gave an account of the proceſs for obtaining it, though unknown in Britain, is now admitted into the Materia Medica of all the principal foreign pharmacopeias. It is imported into Europe from the Eaſt Indies, and is diſtilled chiefly in the iſland of Banda. From its exorbitant price it is frequently adulterated; and is therefore ſeldom found perfectly pure in Europe. Cajeput oil appears to be a powerful medicine, and is much eſteemed in Germany, as well as in India, as a general remedy in chronic and painful complaints. It is uſed for the ſame purpoſes for which we employ the officinal ethers, to which it ſeems to have a conſiderable affinity; the Cajeput, however, is more potent and pungent; taken into the ſtomach, in the doſe of five or ſix drops, it heats and ſtimulates the whole ſyſtem, proving at the ſame time a very certain diaphoretic, by which, probably, the good effects it is ſaid to have in dropſies and intermittent fevers are to be explained. For its efficacy in various ſpaſmodic and convulſive affections, it is highly eſteemed; and numerous inſtances of its ſucceſsful employment are publiſhed by different authors, cited by Murray. It has been alſo uſed both internally and externally with much advantage in ſeveral other obſtinate diſorders, as palſy, hypochondriacal and hyſterical affections, deafneſs, defective viſion, tooth-ache, gout, rheumatiſm, menſtrual obſtructions, herpetic eruptions, &c.; of which Thunberg gives a particular relation. The doſe is from two to ſix and even twelve drops. Woodville Med. Bot. See CAJEPUT *oil*.

MELALIEH, in *Geography*, a town of Egypt; 10 miles N. of Abugirgé.

MELAMPODIUM, in *Botany*, is a Linnæan genus whoſe derivation may eaſily be traced from μελας, *black*, and πους, *a foot*. According to the deſcription of it in his *Hortus Cliffortianus*, it ſhould ſeem that Linnæus had in view the ſimilitude of the ſeed of the female florets to the foot of a goat. —In the *Critica Botanica* however it is ſaid to be named in honour of the Greek phyſician Melampus.—Linn. Gen. 445. Schreb. 583. Willd. Sp. Pl. v. 3. 2338. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 3. 269. Juſſ. 188. Lamarck Illuſtr. t. 713. Gærtn. t. 169.—Claſs and order, *Syngeneſia Polygamia Neceſſaria*. Nat. Ord. *Compoſitæ Oppoſitifoliæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common calyx* flat, much ſpreading, of five, oblong-ovate leaves, the length of the florets. *Cor.* compound, radiated; the apparently perfect florets conſtituting the

the diſk; female ones about five, making the radius: that of the florets of the diſk of one petal, funnel-ſhaped, five-toothed, erect; of the radius ligulate, ovate, entire or three-toothed. *Stam.* in the diſk, Filaments five, very ſmall; anthers cylindrical, tubular. *Piſt* in the ſame florets, Germen very ſmall, abortive; ſtyle briſtle-ſhaped, the length of the corolla; ſtigma obſolete: in the female ones, Germen nearly ovate, compreſſed, rough at the ſides, flat and membranous at the top; ſtyle very ſhort. *Peric.* none, except the unchanged calyx. *Seeds* in the diſk none; in the radius ſolitary to each floret, obovate, compreſſed, quadrangular, prickly at the ſides, crowned with a heart-ſhaped, partial calyx, involute and converging at the margin. *Recept.* chaffy, conical; ſcales lanceolate, coloured, the length of the florets.

Eſſ. Ch. Receptacle chaffy, conical. Seed-down of one leaf, converging. Common calyx of five leaves.

1. M. *americanum.* Linn. Sp. Pl. 1303. (Caltha americana, &c., Banks. Reliq. Houſt. 9. t. 21.)—Stem erect. Leaves linear-lanceolate, pinnatifid.—Found by Houſton, near Vera Cruz, in a craggy, ſandy ſoil, where it flowered and ripened fruit in March.—*Stems* herbaceous, numerous, round, villoſe, procumbent. *Leaves* oppoſite, an inch and half long, uſually with two lateral ſegments, ſometimes entire; hairy on both ſides, but more particularly at the back. *Flowers* ſolitary, yellow, upon axillary ſtalks. *Seeds* forming a crown, and ſupplying the place of the florets of the radius.

The ſpecific character of this plant given in the *Species Plantarum* of Linnæus differs ſo much from Houſton's figure, as well as from the deſcription in *Hortus Cliffortianus*, which ſeems made from the ſame ſpecimen, that we have preſumed to alter it.—Poſſibly when he wrote the ſecond edition of the *Species Plantarum*, not having any ſpecimen before him, he did not ſufficiently attend to what he had previouſly recorded.

2. M. *humile.* Swartz. Prod. 114. Ait. Hort. Kew. ed. 1. v. 3. 269.—Stem erect. Leaves toothed, ſomewhat lyrate, ſeſſile.—A native of Jamaica and St. Domingo, flowering from June to October.—Nothing is known of this ſpecies but from the authors above quoted, and not being able to refer either to a ſpecimen or a figure of it, we muſt of courſe be content with copying their ſpecific character.

3. M. *auſtrale.* Linn. Sp. Pl. 1303. Willd. n. 3. (M. auſtrale, ſeminibus quinque oblongis hiſpidis, calyce pentaphyllo, caule decumbente; Lœfl. It. 268.)—Stem decumbent. Leaves oval, ſerrated.—Found at Cumana in South America by Lœfling, who deſcribes the *Root* as perennial. *Stems* a ſpan long, ſomewhat downy, with oppoſite decumbent *branches* aſcending towards their extremities. *Leaves* oppoſite, on footſtalks, oval or obtuſely ovate. *Flowers* terminal, yellow, on ſhort footſtalks. *Seeds* furrowed, and covered with hooked hairs.

Theſe three ſpecies are all that are known of the genus *Melampodium.* Of the two laſt we are not acquainted with any figure. Profeſſor Martyn obſerves, that they are all tender plants requiring much ſhade and warmth. The ſeeds ſhould be ſown in the ſpring in a hot-bed, and the plants removed in due time into pots filled with light ſandy earth.

MELAMPODIUM, in the *Materia Medica.* See HELLEBORE and HELLEBORUS.

MELAMPUS, in *Biography*, was enumerated among the early civilizers of Greece, who thought it neceſſary to travel into Egypt to qualify themſelves for the high employments at which they aſpired in their own country. Orpheus proceeded thence a legiſlator and philoſopher; and Melampus, who had different views, commenced, at his return, phyſician and diviner, arts which in Egypt were profeſſed together. Apollodorus ſays, that he was the firſt who cured diſeaſes by medicinal potions. Phyſic had its miraculous powers during the infancy of the art, as well as muſic; and life and health being eſteemed more precious and ſolid bleſſings than the tranſient pleaſures of the ear, bore a much higher price: for though bards were often diſtinguiſhed by royalty, and their talents recompenſed by gifts and honours, yet we do not find in ancient records that any one of them ever experienced ſuch munificence as Melampus. It is related by Pauſanias, that having cured the daughters of Prætus, king of Argos, of an atrabilarious diſorder, with hellebore, he was rewarded with one of his royal patients for wife, and a third part of her father's kingdom in dowry.

MELAMPYRUM, in *Botany*, is the Μελαμπυρον of Theophraſtus, derived from μελας, *black*, and πυρος, *wheat*; its ſeeds greatly reſembling the grain of wheat, but of a darker colour. In ſome however, indeed in all the Linnæan ſpecies, they are ſo like wheat in form, ſize and colour, as to be ſcarcely diſcernible from it.—Cow-wheat.—Linn. Gen. 305. Schreb. 401. Willd. Sp. Pl. v. 3. 197. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 651. Ait. Hort. Kew. ed. 1. v. 2. 328. Tournef. t. 78. Juſſ. 101. Lamarck Dict. v. 4. 19. Illuſtr. t. 518. Gærtn. t. 53.—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Perſonatæ*, Linn. *Pediculares*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, permanent, cloven half way down into four, ſlender ſegments. *Cor.* of one petal, ringent; tube oblong, recurved; limb compreſſed: upper lip helmet-ſhaped, compreſſed, emarginate, the lateral little margins reflexed; lower lip flat, erect, the length of the upper, obtuſe, cloven half way down into three, equal ſegments, marked with two prominences in the middle. *Stam.* Filaments four, awl-ſhaped, curved, concealed under the upper lip, two of them ſhorter; anthers oblong. *Piſt.* Germen ſuperior, acuminate; ſtyle ſimple, in place and length like the ſtamens; ſtigma obtuſe. *Peric.* Capſule oblong, oblique, pointed, compreſſed, its upper margin convex, the lower ſtraight, of two cells and two valves, opening at the upper ſuture; partition contrary. *Seeds* in pairs (ſolitary according to Gærtner), ovate, gibbous, enlarged at the baſe.

Eſſ. Ch. Calyx tubular, four-cleft. Upper lip of the corolla compreſſed, folded back at the margin. Capſule of two cells, oblique, burſting at one edge. Seeds two, gibbous.

1. M. *criſtatum.* Creſted Cow-wheat. Linn. Sp. Pl. 842. Engl. Bot. t. 41.—Spikes quadrangular. Bracteas heart-ſhaped, imbricated, compact, toothed.—An Engliſh plant, though by no means a common one. It has been found both in Cambridgeſhire and in Norfolk, on the borders of woods, and in corn-fields, flowering in July. The ſpecimen figured in Engliſh Botany was ſent from Madingley wood, near Cambridge.—*Root* annual. *Stem* rough, much branched. *Leaves* oppoſite, linear, entire. *Spikes of flowers* terminal, imbricated, very ornamental, being of a yellow, purple and tawny colour.—Linnæus however obſerves that there is a variety which has white flowers.

2. M. *arvenſe.* Purple Cow-wheat. Linn. Sp. Pl. 842. Engl. Bot. t. 53.—Spikes conical, looſe. Bracteas fringed with narrow taper teeth.—This like the laſt may be conſidered as a rare native plant, though occurring occaſionally in various parts of England, in gravelly fields, and flowering in July and Auguſt.—*Root* annual. *Stem* about two feet

high, erect, much branched, rough. *Leaves* lanceolate, pointed, entire. *Spikes of flowers* terminal, of a yellow and purple colour, extremely ornamental, indeed ſo much ſo that Dr. Smith obſerves "we are ſcarcely worthy to poſſeſs it, for its charms, however ſtriking, have never procured it admiſſion into a flower-garden, though it may eaſily be raiſed from freſh ſeed on a dry gravelly ſoil."

3. M. *barbatum.* Bearded Cow-wheat. Willd. n. 3. Wadſtein and Keitabel Pl. Rar. Hung.—Spikes conical, looſe. Bracteas toothed and briſtle-ſhaped, not coloured. Calyx-teeth bearded. Corolla gaping.—A native of fields in the ſouth of Hungary.—This new ſpecies is adopted on the authority of Willdenow, who ſays that it is very cloſely allied to the laſt, but differs in the following particulars. *Bracteas* green, not coloured. *Calyx-teeth* furniſhed with long, tranſparent, membranous hairs at the margin. Upper lip of the corolla more hairy. *Flowers* by no means variegated, but altogether of a yellow colour.

4. M. *nemoroſum.* Many-coloured Cow-wheat. Linn. Sp. Pl. 843. Fl. Suec. 214. Fl. Dan. t. 305.—Flowers leaning one way, lateral. Bracteas toothed, heart-ſhaped, lanceolate, the upper ones coloured, ſterile. Calyx woolly.—A native of woods in the north of Europe, and eſpecially of ſome provinces of Sweden. Dr. Smith alſo found it in Savoy.—It flowers in July and Auguſt.—*Root* annual, ſmall. *Stem* ſomewhat more than a foot in height, upright, branched. *Leaves* entire, ovate, pointed, occaſionally rather arrow-ſhaped, toothed at the baſe. *Bracteas* violet-coloured, laciniated at the baſe, thoſe at the top barren. *Flowers* of a beautiful yellow and purple colour.—The ſplendour of this ſpecies has attracted the notice of various botaniſts. Linnæus mentions it in his *Flora Suecica* with great delight, which has drawn forth the following obſervation from Dr. Smith in his Tour on the Continent, ed. 2. v. 3. 149. Speaking of *M. nemoroſum* he ſays, "The red and yellow flowers, amid ſky-blue and purple bracteæ, form the richeſt combination poſſible, which, but in the hands of nature, would be tawdry. Well might Linnæus eſteem this plant worthy to decorate the palace of Flora herſelf."

5. M. *pratenſe.* Common yellow Cow-wheat. Linn. Sp. Pl. 843. Engl. Bot. t. 113.—Flowers lateral, leaning one way. Leaves in diſtant pairs. Corolla cloſed.—Common in woods and thickets throughout England, flowering through the ſummer.—*Root* annual, branched, ſpreading, ſmooth. *Stem* ſlender, branched. *Leaves* lanceolate, ſmooth, occaſionally toothed at the baſe. *Bracteas* pinnatifid, often purpliſh. *Flowers* ſolitary, all leaning one way, yellow, their upper lip fringed with denſe hairs, the lower one ſtraight; anthers cohering together at their tips.—We find the following obſervation in Engliſh Botany. "Linnæus ſays, the beſt and yelloweſt butter is made where this plant abounds. All authors have copied him, and we do not ſcruple to do the ſame, in hopes that ſomebody will in time be induced to make experiments on the ſubject in England, where this plant is far from uncommon, flowering all ſummer long."—This property of M. *pratenſe* is mentioned in the Lapland Tour of Linnæus v. 1. 110, as well as in the *Flora Lapponica* n. 240, where he confounds it with the following as one ſpecies.

6. M. *ſylvaticum.* Wood Cow-wheat. Linn. Sp. Pl. 843. Engl. Bot. t. 804.—Flowers lateral, leaning one way. Leaves in diſtant pairs. Corolla open, with its lip bent downwards.—Found occaſionally in mountainous woods or pine foreſts, flowering in July.—The habit of this ſpecies is extremely ſimilar to that of the laſt, but it is upon the whole conſiderably ſmaller.—*Root* annual. *Stem* roughiſh. *Leaves* a little broader, leſs black from drying, all of them generally entire. *Flowers* twice as ſmall, of a yellowiſh-orange colour, eſpecially at the mouth. *Capſule* marked with a net-work of prominent veins.

7. M. *lineare.* Linear Cow-wheat. Willd. n. 7. Lamarck Dict. v. 4. 23.—Leaves linear, entire. Flowers axillary. A native of Carolina, where it was diſcovered by Mr. Fraſer.—All that we know of this is from the authors above quoted, who tell us that it is more diminutive than any other ſpecies of this genus, in habit greatly reſembling *Euphraſia linifolia.*—*Root* annual. *Stem* about five inches high, round, erect, furniſhed with oppoſite, ſomewhat quadrangular, branches. *Leaves* oppoſite, ſeſſile, an inch long, little more than a line broad, acute. *Flowers* in the boſoms of the upper leaves, about three lines in length. *Calyx* half the length of the *corolla*, which is gaping, with equal lips, the upper one obtuſe, villoſe at the margin.

The ſeveral ſpecies of *Melampyrum*, though extremely elegant and ornamental when freſh, are at the ſame time remarkable for turning brown or black when dry, loſing all traces of their living beauty, and making a ſhabby appearance in the Herbarium. "The ſeeds of this genus have a remarkable reſemblance to grains of wheat; on which account (ſays Dr. Smith) we prefer the old Engliſh name to that of *Cow-graſs*, given by Dr. Stokes."

MELAN PHARMACON, a word uſed by Hippocrates, and by ſome ſuppoſed to mean common writing ink. He orders this to be poured upon the cranium, in caſe of a fiſſure, in order to diſcover how far it has penetrated. Galen ſeems to refer to this, in ſome places, and mentions his having treated of it in his book of ulcers; but as no ſuch medicine is found preſcribed here, it is probably one of the loſt compoſitions of the ancients. In the ſpurious edition of Hippocrates, his book treating on the diſeaſes of women, there is a black medicine ordered to be made of the ſquamæ and flos æris.

MELANA, or MÆLENA, in *Ancient Geography*, a town of Arcadia, in the weſtern part, on the river Alpheus, S.W. of Telphuſia.

MELANAETOS, in *Ornithology*. See FALCO.

MELANAGOGUES, MELANAGOGA, from μελας, *black*, and αγω, *I draw*, ſuch medicines as were believed to poſſeſs the particular power of evacuating *black bile*, one of the four humours of the ancient pathology.

MELANANTHERA, in *Botany*, was ſo called by Michaux, from μελας, *black*, and ανθηρα, *an anther*, becauſe of the colour of the anthers, which is ſtrongly contraſted with the white corolla. Michaux Boreali-Amer. v. 2. 106.—Claſs and order, *Syngeneſia Polygamia-æqualis*. Nat. Ord. *Compoſitæ oppoſitifoliæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common calyx* imbricated, of ſeveral, not very numerous, oval, flattiſh, cloſe-preſſed, unarmed leaves, in two rows. *Cor.* compound, diſcoid; florets uniform, numerous, all perfect, though ſome of the central ones are uſually abortive; all funnel-ſhaped, with a ſhort tube, and a much longer and wider, tubular, five-cleft, regular limb, whoſe ſegments are lanceolate and cohering. *Stam.* Filaments five; anthers forming a cylinder, ſhorter than the corolla. *Piſt.* Germen obovate, angular, abrupt; ſtyle thread-ſhaped, projecting a little beyond the anthers; ſtigmas two, oblong, revolute, ſlightly tapering. *Peric.* none, except the permanent calyx. *Seeds* turbinate, quadrangular, ſmooth, abrupt at the top, with a ſmall annular border, and a crown of very few, (about five,) erect, rough, deciduous briſtles. *Recep.* rather convex, with a firm, keeled, concave, ribbed ſcale to each floret, at length overtopping the ſeeds, and much reſembling the calyx-ſcales.

Eſſ. Ch. Receptacle convex, with obovate, keeled, rigid ſcales. Seeds ſquare. Crown of a few rough briſtles. Calyx of two rows of uniform, ovate, imbricated leaves.

Obſ. This genus differs ſo much in habit from *Bidens*, with which Linnæus confounded it, that we cannot but think Michaux right in ſeparating them. The ovate uniform calyx-leaves, and the ſcales of the receptacle, ſo cloſely reſembling them, in the ſeeding ſtate, that the whole head of ſeeds aſſumes one uniform ſcaly aſpect, added to the number and nature of the briſtles of the ſeed-crown, which are not in one or two pairs, but of an indeterminate number, all uniform, and rough with minute aſcending points, not barbed with ſharp reflexed ſpines; theſe characters are ſurely ſufficient marks of diſtinction.

1. M. *haſtata*. Michaux. v. 2. 107. (Bidens nivea β and γ; Linn. Sp. Pl. 1167. B. ſcabra, flore niveo, &c.; Dill. Elth. t. 46 and 47.)—Leaves three-lobed, ſomewhat haſtate. Scales of the receptacle lanceolate, taper-pointed.—Native of Carolina. It was cultivated in the Eltham garden before the year 1732, and flowered late in autumn. The *root* is perennial. *Stems* herbaceous, two or three feet high, rough, ſomewhat branched, leafy. *Leaves* oppoſite, ſtalked, rough and harſh, ſerrated; ſometimes ſlightly, ſometimes very deeply, haſtate. Dillenius figures both varieties. *Flowers* terminal, an inch broad, on long ſtalks. *Corollas* white. *Anthers* black. This probably is the *Bidens nivea* of Mr. Donn's Hort. Cant., which is there marked as a hardy perennial, flowering in June and July.

2. M. *deltoidea*. Michaux. v. 2. 107. (Bidens nivea α; Linn. Sp. Pl. 1167. Swartz. Obſ. 296. Ait. Hort. Kew. ed. 1. v. 3. 154. Calea aſpera; Jacq. Ic. Rar. t. 583.)—Leaves ovate or heart-ſhaped, all undivided. Scales of the receptacle bluntiſh.—Native of the Weſt Indies. Swartz ſays it grows in graſſy, cultivated, elevated ſituations, as well as near the ſea, in the ſouth part of Jamaica. The late Mr. Aiton gave us a ſpecimen from Kew garden, in 1783, as a great rarity. This is, of courſe, more tender than the former, from which it differs in the ovate, ſomewhat deltoid or cordate, form of the *leaves*, one of which is exhibited by Dillenius in his t. 47. f. 3. The *flowers* too are rather ſmaller.

MELANCHOLY. See Mental *Derangement*.

MELANCRANIS, in *Botany*, from μελανια, *blackneſs*, and κρανιον, *a head*, alluding to the dark purpliſh ſpots with which the ſcaly roundiſh head of the flowers is beſprinkled, and which give it a black aſpect. Vahl. Enum. v. 2. 239.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Calamariæ*, Linn. *Cyperoideæ*, Juſſ.

Gen. Ch. *Cal.* Scales of a *ſpike*, imbricated every way, ovate, pointed, each ſubtending an oblong, compreſſed, two-ranked, nearly ſeven-flowered *ſpikelet*, of the ſame length. Perianth inferior, of two valves, ſhorter and narrower than the corolla. *Cor.* of one lanceolate valve, cloſely dotted with purple. *Stam.* Filaments three, linear, the length of the ſcales, whitiſh dotted with purple; anthers linear. *Piſt.* Germen oblong; ſtyle ſolitary, ſmooth, cloven; ſtigmas ſimple. *Seed* one, without any briſtles at its baſe.

Eſſ. Ch. Scales chaffy, imbricated every way. Spikelets ſolitary at every ſcale, many-flowered, two-ranked. Calyx of two valves. Corolla of one valve. Style cloven.

1. M. *ſcarioſa*. Vahl. n. 1. (Schoenus ſcarioſus; Thunb. Prod. 16.)—Head oblong. Bracteas about three.—Native of the Cape of Good Hope. *Root* perennial. *Stems* in tufts, about a foot high, or rather leſs, thread-ſhaped, rigid, without joints, finely ſtriated, angular at the top. *Leaves* ſhorter, briſtle-ſhaped, channelled, dilated into a ſheathing baſe. *Head of flowers* terminal, half an inch in length, oblong, compoſed of imbricated, ovate, broad, membranous, rather rigid, ſmooth, ſhining *ſcales*, each a little ſpreading at the point, and tapering into a ſort of awn; the three lower ones barren, tipped with a briſtle-like leaf or *bractea*, which in the lowermoſt is three inches long. *Spikelets* five-flowered.

2. M. *radiata*. Vahl n. 2.—Head nearly globoſe. Bracteas numerous.—From the ſame country. Perennial. Rather taller than the firſt. *Bracteas*, or barren ſcales, at the baſe of the head of flowers, from ſix to eight, one of them half an inch long, the reſt gradually leſs, widely ſpreading, awl-ſhaped, rigid and ſomewhat pungent. *Head* the ſize of a cherry, compoſed of innumerable, ovate, crowded *ſpikelets*; their accompanying *ſcales* ſtriated and dotted with purple.

MELANCTHON, Philip, in *Biography*, an illuſtrious reformer, and coadjutor of Luther, was born at Bretten, in the Palatinate upon the Rhine, on the 16th of February 1495. His family name, in the German language, literally meant "Black Earth," which was exchanged for Melancthon, a word in the Greek tongue having the ſame ſignification. He received the early part of his education at his native place, was afterwards placed under the care of a private tutor, and then proceeded to the college of Pfortſheim, where he obtained the friendſhip of the learned Reuchlin, from whom he received the Greek name already alluded to, by which he is generally known. In 1509 he removed to Heidelberg, where he made ſo rapid a progreſs in the claſſics and other branches of literature, that before he had completed his fourteenth year he was entruſted with the tuition of the ſons of count Leonſtein. He is accordingly celebrated by Baillet, in his "Hiſtorical Treatiſe of young Men who became famous by their Study or Writings." At the age of thirteen he wrote a comedy, which he dedicated to his friend and patron Reuchlin; and at that period he was employed to make the greateſt part of the harangues and orations which were delivered in public, in the univerſity of Heidelberg. In 1511 he was admitted to the degree of B.A.; but being refuſed his ſuperior degree in the arts in the following year, he left the college, and entered himſelf at Tubingen. Here he purſued his ſtudies with great diligence and ſucceſs, and became himſelf a lecturer on the Latin claſſics. In 1513, before he had attained the age of ſeventeen, Melancthon was created doctor of philoſophy. It was about this period that Eraſmus paid him the following high compliment: "What hopes may we not entertain of Philip Melancthon, who, though as yet very young, and almoſt a boy, is equally to be admired for his knowledge in both languages? What quickneſs of invention!—what purity of diction!—what powers of memory!—what variety of reading!—what modeſty and gracefulneſs of behaviour!" While at Tubingen, Melancthon diligently ſtudied the ſacred Scriptures, and always carried about with him a bible, which he had received as a preſent from Reuchlin. This treaſure, it may be ſaid, he bound to his heart: he was hardly ever ſeen without it; and during divine ſervice, he frequently referred to its contents: and on this account, thoſe who were jealous of his riſing fame endeavoured to excite prejudices againſt him, by inſinuating that he ſpent his time at church in reading what did not belong to the ſolemnities of the ſervice. In 1518 he was appointed by the elector of Saxony profeſſor of the Greek language in the univerſity of Wittemberg, and by his inaugural ſpeech excited the higheſt applauſe and admiration. He now began to read lectures upon Homer, and the Greek text of the Epiſtle of St. Paul to Titus, which attracted vaſt crowds of auditors, and which contributed, in no ſmall degree, to promote

promote the ſtudy of Greek literature. In the year 1519 he publiſhed his "Rhetoric;" and in the following year, a treatiſe on "Logic;" and four years after this, his work on "Grammar." From the time of his ſettling at Wittemberg, Melancthon contracted a cloſe intimacy with Luther; and in the year 1519 he accompanied him to Leipſic, to be a witneſs of his eccleſiaſtical combat with Eckius. He ſeems not to have been contented to be a mere byeſtander, but joined ſo much in the debate as to provoke the rage and bitterneſs of Eckius, who found himſelf completely overwhelmed with the arguments brought againſt the cauſe, which he undertook to juſtify and defend. Melancthon, from this moment, became an advocate in the cauſe of reform, and, by the ſervices which he afterwards rendered it, made his name immortal. In the year 1520 he delivered a courſe of lectures at Wittemberg on the Epiſtle to the Romans, with which Luther was ſo highly pleaſed, that he cauſed it to be printed, and prefixed a preface of his own, recommending it to the uſe of the churches. In the following year he undertook a defence of the doctrines of Luther, in oppoſition to the univerſity of Paris, which had paſſed a ſentence of condemnation upon them. The next buſineſs of importance in which he was engaged, was to draw up, conjointly with Luther, a ſyſtem of laws relating to church government, public worſhip, the ranks, offices, and revenues of the prieſthood, and other matters of a ſimilar nature, which John, elector of Saxony, promulgated in his dominions, and which was adopted by the other princes of the empire, who had renounced the papal ſupremacy and juriſdiction. After this, Melancthon was commiſſioned, with others, to viſit all the churches in the electoral dominions, for the purpoſe of ſeeing theſe laws carried into execution.

In the year 1529, Melancthon accompanied the elector John to the diet at Spire, in which the princes and members of the reformed communion acquired the denomination of Proteſtants, in conſequence of their proteſting againſt a decree, which declared unlawful every change that ſhould be introduced into the eſtabliſhed religion, before the determination of a general council was known. In the year 1530 a diet of the empire was appointed to be held at Augſburg, with a view to put an end to the diſſentions occaſioned by religious diſputes, under the eye of the emperor, in order that he might be able to form a clear idea of the real opinions of the reformers, and of the true cauſes of their oppoſition to the Roman pontiff. The Proteſtant princes employed Melancthon to compoſe a creed, which was preſented to the emperor, and which reflects honour on the addreſs, moderation, and eloquence of Melancthon. This creed, commonly known by the name of the "Confeſſion of Augſburg," was ſeverely animadverted upon by his opponents, which led him to draw up an able reply, notwithſtanding the imperial prohibition, under the title of "A Defence of the Confeſſion of Augſburg." Recourſe was now had to conferences, in which our reformer mightily diſtinguiſhed himſelf. It was in theſe that the ſpirit and character of Melancthon appeared in their true colours; and it was here that the votaries of Rome exhauſted their efforts to gain over to their party this pillar of the reformation, whoſe abilities and virtues added a luſtre to the cauſe in which he had embarked. His gentle ſpirit was apt to ſink into a kind of yielding ſoftneſs, under the influence of mild and generous treatment. Accordingly, while his adverſaries ſoothed him with fair words and flattering promiſes, he ſeemed ready to comply with their wiſhes; but when they ſo far forgot themſelves as to make uſe of threats, then Melancthon appeared in a very different point of light: then a ſpirit of intrepidity, ardour, and independence animated all his words and actions, and he looked down with contempt on the threats of power, the frowns of fortune, and the fear of death.

As every attempt at reconciliation had proved in vain, a ſevere decree was iſſued by order of the emperor, enjoining the princes, ſtates, and cities, that had thrown off the papal yoke, to return to their duty, and their allegiance to Rome, on pain of incurring the indignation of the emperor, the patron and protector of the church. This at firſt oppreſſed the gentle ſpirit of Melancthon, till he was encouraged and animated by the exhortations of Luther; and he ſoon had the ſatisfaction to ſee the Proteſtant intereſt ſtrengthened and extended, owing to the treaty concluded at Nuremberg, of the expediency of which the emperor was made fully ſenſible, by the league of Smalkalde, and other circumſtances. Melancthon's fame was now ſpread far and wide, and he was invited by Henry VIII. to ſettle in England, and, about the ſame time, by Francis I. to take up his abode in France, with the view of employing him to pacify, or at leaſt to moderate the diſputes which had ariſen there concerning religion, and to adviſe with the French divines about reſtoring the ancient diſcipline of the church. Melancthon felt inclined to accept the latter invitation; but the elector of Saxony would not by any means give his conſent, knowing that by ſuch a ſtep he would expoſe himſelf to the reſentment of the emperor, between whom and Francis affairs began to wear a hoſtile aſpect. In 1541 Melancthon was at the famous conferences at Ratiſbon; and in 1543 he went to Cologne, to aſſiſt the elector in introducing the reformed religion into his dioceſe; but the main deſign of his journey was fruſtrated, through the oppoſition of the canons and other divines of the ſee: nevertheleſs the elector of Cologne and the elector palatine embraced the Proteſtant faith. In 1548 he aſſiſted at ſeven conferences on the ſubject of the interim of Charles V., and publiſhed a cenſure on that interim, and all the writings preſented at theſe conferences. In 1551, pope Julius III. having conſented to the aſſembling a council at Trent, the Saxon Proteſtants employed the pen of Melancthon, and the people of Wittemberg that of Bredlius, to draw up confeſſions of their faith, to be laid before the council. Soon after, the Saxon divines, with our reformer at their head, received directions from Maurice, now elector of Saxony, to ſet out towards Trent, but were ſecretly inſtructed to ſtop at Nuremberg, as Maurice had no intention to ſubmit to the emperor's views, and the ſchemes which he had been long preparing, with the deepeſt policy, for maintaining the rights and liberties of the German empire, and the ſecurity of the Proteſtant faith, and which were on the eve of being carried into execution. While he was at Nuremberg, in 1552, Melancthon received intelligence of the complete ſucceſs which had crowned Maurice's well-projected undertaking, and compelled the emperor to conclude the famous pacification at Paſſau, commonly called "The Peace of Religion."

Upon this event he intended to have returned to Wittemberg, but as that city was then infected with a plague, the univerſity had been removed for a time to Torgau, where Melancthon diſcharged the duties of his profeſſorſhip, till the infectious diſorder was completely baniſhed. To theſe duties he devoted the remainder of his life, as well as in the compoſition of various works, and the carrying on of controverſies with his Proteſtant and Catholic opponents. His laſt conference was with the doctors of the Romiſh communion at Worms. The firſt point diſcuſſed was concerning the rule of judgment in the church, which the Catholics maintained to be perpetual conſent or cuſtom;

but the Proteſtants, in conformity with their own principles, held it to be the prophetic and apoſtolical writings. In the next place the Catholics demanded a decree of condemnation againſt the followers of Zuingle, and others, when the deputies of Jena perceiving the diſpoſition of the majority to agree to this demand, broke off the conference, by ſeceding from the meeting; and thus the object of the Papiſts to promote a diviſion among the Proteſtants was effectually gained. From Worms, Melancthon went to Heidelberg, at the requeſt of Otho Henry, elector palatine, for the purpoſe of giving his advice in forming the conſtitutions of an academical inſtitution eſtabliſhed in that city. In 1559 he made an attempt to bring over the Greek churches to embrace the doctrine and diſcipline of the Lutheran church, and to live in religious communion with the Proteſtants; in which his laudable endeavours were ineffectual. He died in the following year at Wittemberg, in the ſixty-fourth year of his age, and was interred near the remains of Luther. "Nature," ſays one of this great man's biographers, "had given Melancthon a peaceable temper, which was but ill ſuited to the time he lived in. His moderation ſerved only to be his croſs. He was like a lamb in the midſt of wolves. Nobody liked his mildneſs: it looked as if he were lukewarm." He was a perſon of the middle ſtature, with lively eyes and well-proportioned limbs, but his conſtitution was delicate and his health weak, yet by the exerciſe of the moſt rigid temperance, he was enabled to purſue his ſtudies with an intenſeneſs of application that is almoſt incredible. The habits of ſuch a man cannot fail of intereſting thoſe who reflect on what he did for the world: it was his practice to go to bed immediately after an early ſupper, and to riſe at midnight to his labours. On retiring to reſt he endeavoured to diſmiſs as much as poſſible from his mind every thing that could tend to diſturb his repoſe, and for this purpoſe he always poſtponed reading ſuch letters as were brought to him in the evening till next day. He was civil and obliging to all; entirely free from envy, detraction, jealouſy, and diſſimulation; and poſſeſſed an unrivalled degree of candour and frankneſs. His principal relaxation from ſevere ſtudies was the converſation of his friends during his meals. He was humble and extremely diſintereſted, conſtantly refuſing the valuable preſents which were offered him by many great princes, and contenting himſelf with the ſmall profits of his profeſſorſhip; yet he managed his narrow income with ſuch admirable economy, that he was able to indulge his benevolent and charitable diſpoſition to an aſtoniſhing degree. According to the teſtimony of Moſheim, few worthies can be compared with him, if we conſider the extent of his knowledge, the fertility and elegance of his ſtudies, the facility and quickneſs of his comprehenſion, or the uninterrupted induſtry that attended his learned and theological labours. He rendered philoſophy and the liberal arts the ſame eminent ſervice that Luther had done to religion, by purging them from the droſs with which they had been corrupted, and by recommending them in a powerful and perſuaſive manner to the ſtudy of the Germans. He had the rare talent of diſcerning truth in all its connections and combinations, of comprehending at once the moſt abſtract notions, and expreſſing them with the utmoſt eaſe and perſpicuity. His love of peace, which was partly owing to the ſweetneſs of his natural temper, made him deſire with ardour, that a reformation might be effected without producing a ſchiſm in the church. The ſpirit of charity led him ſometimes to make conceſſions that were neither conſiſtent with prudence, nor advantageous to the cauſe in which he was engaged. But when the hour of real danger approached, when things wore a formidable aſpect, and the cauſe of religion was in imminent peril, then this mild and even timorous man, in an inſtant, as it were, was converted into a hero, looked danger in the face with unſhaken conſtancy, and oppoſed his adverſaries with invincible fortitude. Had his fortitude been more uniform and ſteady, his deſire of reconciling all intereſts, and pleaſing all parties leſs exceſſive, he muſt deſervedly have been conſidered as one of the greateſt among men.

In philoſophy he followed chiefly the principles of Ariſtotle, and had frequently recourſe to the doctrines of the Platoniſts and Stoics, but always in due ſubordination to revelation, and only ſo far as they were likely to anſwer ſome valuable purpoſes. "I would have no one," ſays he, "trifle in philoſophiſing, leſt he ſhould loſe ſight of common ſenſe; rather let him be careful, both in the ſtudy of phyſics and morals, to ſelect the beſt things from the beſt ſources. He may not, therefore, improperly be conſidered as an *eclectic*."

Melancthon was much aſſiſted in the execution of his plans by the labours of many learned Proteſtant profeſſors of the Germanic ſchools from Italy and Great Britain, who brought with them an attachment to the Peripatetic ſyſtem, and wherever they were appointed public preceptors, made that ſyſtem the baſis of their philoſophical inſtructions. From Wittemberg, Tubingen, and Leipſic, conducted after the plan which had been introduced by Melancthon, many learned men aroſe, who, becoming themſelves preceptors, adopted the ſame plan of inſtruction, which, from Melancthon's Chriſtian name, was denominated "The Philippic Method," and thus diſſeminated the Peripatetic doctrine, till at length it was almoſt every where taught in the German Proteſtant ſchools, under the ſanction of civil and eccleſiaſtical authority. The number of the works which Melancthon publiſhed, conſidering how much he was engaged as a public man, is truly aſtoniſhing. The titles of a great many of them are given in the General Biography. They are theological, moral, and philoſophical; ſome, however, relate to what is uſually denominated the Belles Lettres, and others are illuſtrative of various claſſical authors. The moſt complete edition was publiſhed by the author's ſon-in-law, Jaſper Peucer, in the year 1601, in 4 vols. fol.

This celebrated and mild reformer, the friend of Martin Luther, and author of the confeſſion of Augſburg, &c. wrote upon muſic. He compoſed his own epitaph, and died in 1560.

"Iſte brevis tumulus miſeri tenit oſſa Philippi,
Quis, qualis fuerit neſcio, talis erat."

MELANES, or Melas, in *Ancient Geography*, a gulf that lay between the Cherſoneſe of Thrace to the S.E., and a part of the continent to the N.W. It is now called the "gulf of Megariſſa."

MELANI Montes, a chain of mountains, placed by Ptolemy in Arabia Petræa, ſuppoſed by Jerome to be thoſe that are called in ſcripture Sinai and Oreb.

Melani, Alessandro, in *Biography*, the compoſer of an opera, which was extremely applauded at Bologna, Florence, and in many other theatres of Italy, in 1697, called "Il Carcicrier di ſe Heſſo."

MELANIPPIDES, a Greek poet and muſician, who flouriſhed about the ſixtieth olympiad, and whoſe poetry and muſic rendered him famous. He had a grandſon of the ſame name, who was likewiſe a great muſician; though Plutarch, in a croaking fit, accuſes him of having been one of the firſt corrupters of the ancient muſic, by the innovations which he introduced. See Timotheus.

MELANITE. See Garnet.

MELANIUM, in *Botany*, from μελας, *black* or *dark*, μελανιον being a name for the purple violet. It is applied by Browne, in his Hiſtory of Jamaica, p. 215, to a ſmall weak Jamaica plant, with a peculiarly diſagreeable and pungent ſmell, which Linnæus referred to LYTHRUM, (ſee that article,) by the name of *L. Melanium*. Sp. Pl. 641. Swartz. Obſ. 193. The author laſt mentioned ſays the flowers are purple; and this accounts for the name, for the application of which Browne, as uſual, gives no reaſon.

MELANOGÆTULI, or NIGRITÆ, or *Black Gætulians*, in *Ancient Geography*, a people of Africa, placed by Ptolemy between the mountains Sagapola and Uſargala, in a diſtrict S.E. of Gætulia Propria, to which it is contiguous, and N. of the river Niger. (See GÆTULIA.) The Melanogætuli were a people without doubt different from the Gætulians, and ſo conſidered by Ptolemy, though Cellarius inſinuates that they were a tribe of that people. Their complexion not only evinces this fact, but likewiſe ſhews, that their progenitors were different from thoſe of the Gætulians. The modern diſtrict of Wad-reag, in the province of Conſtantina, containing a collection of twenty-five villages ranged in a N.E. and S.W. direction, correſponds with a part of the country of the Melanogætuli, according to Dr. Shaw. Our learned traveller likewiſe ſuppoſes, that the country of the Beni-Mezzab, ſituated 35 leagues to the S. of the mountains of the Ammer, ſuppoſed to be part of the Mons Phraræſus of Ptolemy, the large village of Engouſah, 30 leagues to the S.W. by W. of Tuggart, the capital of Wad-reag, and the populous city of Wurglah, with their dependencies, even to the banks of the Niger, were included in Melanogætulia. As Ptolemy places the Melanogætuli next to the Pharuſii in a ſouthern direction, fixing his Nigritian Ethiopians in a tract lying to the north of the Niger; and as Mela, Pliny, and Strabo give the Nigritæ exactly the ſame ſituation with regard to the Pharuſii and the Niger, but are quite ſilent as to the Melanogætuli; it is very probable, that the Melanogætuli and Nigritæ were the ſame people. If this ſuppoſition be admitted, it will appear very credible, that their territories extended to the Niger, and that they had ſome remarkable places in thoſe parts; ſince, according to Ptolemy, many towns ſtood not far from that river, of which the principal were Paſſide, Saluce, Negira, Thige, Cuphe, Thammdicana, and Vellegia. The moſt celebrated rivers of this part were the Gir and Niger. If any credit be given to Leo and the African hiſtorians, Sabtecha, the ſon of Cuſh, firſt peopled the Sahara, between the mountains of Atlas and Nigritia, and therefore probably Nigritia itſelf, or at leaſt part of it. From the ſame author it appears, that the various Nigritian dialects bear an affinity to the Chaldee, Arabic, and Egyptian tongues; and conſequently to the Ethiopic, which does not differ widely from them. The Carthaginians had undoubtedly ſome knowledge of the Nigritæ, ſince it appears probable from Frontinus, that one part of their army conſiſted of Nigritian troops. This circumſtance will enable us to account for ſeveral antique coins with a Negro's or Nigritian's head upon them. The Nigritæ uſed chariots in their wars, and were armed after the manner of the weſtern Ethiopians with bows and arrows, as we learn from Strabo. According to the ſame author, the Pharuſii, and therefore, probably, the Nigritæ, travelled in caravans through the deſerts to Cirta, and kept open a communication with the Mauruſii. On theſe occaſions they carried bottles filled with water, tied to their horſes' bellies, leſt they ſhould periſh from thirſt in the vaſt deſerts through which they were obliged to traverſe. Hence it is undeniably clear, that theſe Pharuſian and Nigritian merchants lived at a great diſtance from Cirta, and thoſe places of Mauritania to which they reſorted; and alſo that the Negroes or Blacks held an early correſpondence with the ancient Mauritanians, Numidians, and Carthaginians. Anc. Un. Hiſt. vol. xvi. 8vo.

MELANOSCHOENUS, in *Botany*, from μελας, μελανος, *black*, and σχοινος, *a ruſh*, Mich. Gen. 46. t. 31, is *Schoenus mucronatus* of Linnæus. See SCHOENUS.

MELANO-SYRI, in *Ancient Geography*, a name given to thoſe who inhabited Syria, between the Euphrates and the Mediterranean ſea, by way of contradiſtinction to the *Leuco-Syri*, who lived in Cappadocia, towards the Euxine ſea. The former are black Syrians, and the latter white, as their reſpective appellations import.

MELANTHIUM, in *Botany*, ſo called by Clayton, from μελας, *black* or *dark*, and ανθος, *a flower*; but the firſt word is here taken in a wider ſenſe than is uſual, even in its application to flowers; for the plant of Clayton, *M virginicum*, Linn. Sp. Pl. 483, has a dull yellowiſh, lurid, but not black, hue. This plant is probably a *Veratrum*; but ſeveral others, more remarkable for the darkneſs of their flowers, have been referred to the genus before us, which now reſts upon them. It muſt not be ſuppoſed however that any of theſe is the μελανθιον of the ancient Greeks, for the deſcription in Dioſcorides, more particular and expreſſive than uſual, evidently indicates the *Nigella ſativa*, the name being applied by a metaſtaſis to the flower, which is white, the ſeeds, for which the plant was known and cultivated, being intenſely black. Sometimes indeed the plant was, for this laſt reaſon, called μελασπερμον. Our preſent buſineſs is with the Linnæan *Melanthium*, as far as we can define its limits. Linn. Gen. 179. Schreb. 240. Willd. Sp. Pl. v. 2. 266. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 326. Juſſ. 47. Lamarck Illuſtr. t. 269. Thunb. Prod. 67. (Wurmbea; Thunb. Nov. Gen. 18. t. 1. Schreb. 239. Willd. Sp. Pl. v. 2. 265. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. ed. 2. v. 2. 325. Lamarck Illuſtr. t. 270.)—Claſs and order, *Hexandria Trigynia*. Nat. Ord. *Coronariæ*, rather *Tripetaloideæ*, Linn. *Junci*, Juſſ.

Gen. Ch. *Cal.* none, unleſs the corolla be taken for ſuch. *Cor.* of ſix petals, ſometimes contracted, ſometimes combined, at the baſe, inferior, ovato-lanceolate, acute, ſpreading, equal, permanent. *Stam.* Filaments ſix, threadſhaped, erect, the length of the corolla, more or leſs attached to it, permanent; anthers globoſe. *Piſt.* Germen ſuperior, nearly globular; ſtyles three, ſpreading, threadſhaped, the length of the ſtamens, recurved at the extremity, permanent; ſtigmas ſimple. *Peric.* Capſule ovate, with three furrows, three cells, and three valves, crowned with the ſtyles. *Seeds* numerous, roundiſh.

Eſſ. Ch. Calyx none. Petals ſix, equal, bearing the ſtamens. Styles permanent. Capſule of three cells, with many ſeeds.

Obſ. The ſound Linnæan rule, that "the genus ſhould give the character, not the character the genus," induces us to follow Linnæus, and even Thunberg himſelf, the original eſtabliſher of *Wurmbea*, in reducing that genus to *Melanthium*, from which it differs merely in the combination of its petals at their baſe into an angular tube, a character which, by a compariſon of all the ſpecies together, will appear of no eſſential conſequence in this caſe. Mr. Saliſbury's *Ornithogloſſum*, received into Ait. Hort. Kew. ed. 2. v. 2. 327. (*Melanthium viride* of Linnæus and Thunberg), however alike to many of the ſpecies at firſt ſight, does ſo materially differ, in having the ſtamens inſerted into the receptacle, and, like the ſtyles, deciduous, to ſay nothing of other characters, that we cannot well retain it here. (See

Ornithoglossum.) Neither are we at all certain that ſome of the following may not require to be placed elſewhere. *M. lætum*, Willd. Sp. Pl. n. 3, is now properly referred to *Helonias*, by Mr. Ker in Curt. Mag. t. 803.

1. M. *ſibiricum*. Siberian Graſſy Melanthium. Linn. Sp. Pl. 483. (Melanthium; Linn. Am. Acad. v. 2. 349. t. 4. f. 11. Ornithogalum; Gmel. Sib. v. 1. 45. t. 8.)—Flowers panicled. Petals combined at the baſe. Capſule pointed. Leaves linear.—Native of mountainous woods in Siberia, where it was gathered by Gmelin, flowering in July. We have never ſeen a living ſpecimen. The *root* is bulbous, perennial, oblong, white. *Stem* ſlender but firm, erect, one or two feet high, nearly leafleſs, glaucous when young, terminating in a longiſh, ſomewhat compound, bracteated *panicle*, of greeniſh-white ſmall *flowers*, whoſe petals are reflexed. *Capſule* half an inch long, erect, ovate, pointed, purpliſh, ſheathed at the bottom by the combined dilated baſes of the petals, and crowned with the recurved ſtyles. It burſts in the furrows, from the top nearly to the bottom.

2. M. *capenſe*. Spotted-flowered Melanthium. Linn. Sp. Pl. 483. Thunb. Prod. 67.—Flowers racemoſe. Petals dotted, contracted at their baſe. Leaves ovato-lanceolate, with a broad ſheathing baſe—Native of the Cape of Good Hope. *Root* an ovate bulb. *Stem* two or three inches high, with a few broad, ſpreading, pointed *leaves*, and a ſhort terminal cluſter of ſpotted *flowers*, whoſe ſtamens cohere but ſlightly with the petals. We find no figure of this ſpecies.

3. M. *junceum*. Ruſh-like Melanthium. Jacq. Ic. Rar. t. 451. Curt. Mag. t. 558. Willd. Sp. Pl. n. 7. (M. triquetrum; Linn. Suppl. 213.)—Leaves linear-awlſhaped, the upper ones dilated and concave at the baſe. Spike zigzag. Petals contracted at the bottom.—Native of the Cape. It flowers in the green-houſe early in the ſpring, like other bulbs from the ſame country, and indeed reſembles an *Ixia* in its ſpike of purpliſh *flowers*, the baſes of whoſe petals are marked with a double violet ſpot. The *leaves* are glaucous, rather ſucculent, and the uppermoſt are remarkable for their tumid or inflated figure, juſt above their inſertion.

4. M. *ciliatum*. Fringed Melanthium. Linn. Suppl. 213. Thunb. Prod. 67.—Leaves ovate, ſpreading, finely fringed with cartilaginous teeth. Spike zigzag. Petals much contracted at the bottom.—Native of the Cape; we find no traces of it in the Engliſh gardens. The habit is like an *Orchis*, the lower part of the ſtem bearing two or three broad, ovate, ſpreading *leaves*, with a ſheathing baſe, their edges minutely fringed. *Spike* rather denſe, of many ſeſſile *flowers*, ſpreading every way, whoſe petals are elliptic-oblong, with a conſiderable claw, and appear to be white, minutely ſtreaked or dotted with purple or red.

5. M. *ſecundum*. Single-ranked Melanthium. Lamarck Dict. v. 4. 28. Illuſtr. t. 269. f. 2. Willd. Sp. Pl. n. 8.—Leaves linear. Spike inclined one way. Petals contracted at the bottom, with a tooth at each ſide.—Native of the Cape, where it was gathered by Sonnerat and by Bladh. The younger Linnæus confounded it with the laſt in his herbarium, and apparently in his Supplement. The preſent however is abundantly diſtinguiſhed by its narrow erect *leaves*, and eſpecially by a remarkable tooth at each ſide of the *petals*, juſt above their claw or contraction, well obſerved by Deſrouſſeaux in Lamarck. It ſeems doubtful to us whether the unilateral direction of the *flowers* be not an effect of drying. They are white or bluſh-coloured, dotted like the foregoing.

6. M. *indicum*. Indian Melanthium. Linn. Mant. 226.—Leaves linear. Flowers corymboſe. Petals linear-lanceolate, tapering at the baſe.—Sent by Koenig from Pondicherry.

This has much the habit of *Ornithogalum luteum*. The *leaves* are very narrow, erect, and riſe above the *ſtem*, which bears a ſort of leafy or bracteated *corymbus* of a very few upright *flowers*. The narrow and ſharp *petals* are of a dark purple, as well as the *ſtamens* and *piſtil*. We think, with Willdenow, that there is a connection between the filaments and petals, eſpecially as there is but a ſimple row of ſix ſcars at the baſe of the ripening germen, after the flower has fallen, which indicates that the ſtamens have no ſeparate inſertion there. The *ſtyles* are permanent, even on the ripe capſule. Nevertheleſs the whole aſpect of the plant is ſo nearly allied to that of *M. viride*, (Mr. Saliſbury's *Ornithogloſſum*,) as almoſt to ſhake our faith in that genus.

7. M. *flavum*. Yellow Melanthium. (M. uniflorum; Jacq. Ic. Rar. t. 450. Coll. v. 4. 100. Curt. Mag. t. 767. Ait. Hort. Kew ed. 2. v. 2. 327. Willd. n. 12. M. æthiopicum; Herb. Linn. Lamarck Dict. v. 4. 29. Tulipa Breyniana; Linn. Sp. Pl. 438. Willd. Sp. Pl. v. 2. 98. Thunb. Prod. 65.)—Leaves linear-lanceolate, ſheathing. Flowers ſomewhat ſpiked. Petals elliptic-lanceolate, tapering at the baſe. Stamens united to the petals more than half way up. Germen and capſule columnar.—Native of the Cape, where it was gathered by Thunberg. It is impoſſible to retain the name *uniflorum* for this ſpecies, which, as Mr. Ker obſerves, is altogether fallacious. We have therefore ventured to tranſlate the Engliſh appellation, given by him, and adopted by the learned authors of the Hortus Kewenſis. We would have called it *Breynianum* after Linnæus; but the ſynonym of Breynius ſeems very evidently to belong to ſomething elſe; we pretend not to ſay what. In this difficulty, ſenſe is ſurely preferable to the mere records of confuſion and miſtake. The *ſtem* is from a ſpan to a foot high. *Leaves* ſpreading, keeled and ſheathing at the baſe. *Flowers* from two to ſix, in a cloſe zigzag ſpike; very rarely ſolitary only. The *petals* are yellow on the upper ſide; browniſh crimſon beneath. In the dried ſpecimen this laſt-mentioned colour runs into minute oblong ſpots, which induces a ſuſpicion that the dotted appearance in ſome of the former ſpecies, known to us in a dry condition only, may not exiſt in the freſh flowers. The baſe of each petal in that now under conſideration tapers down into a long dark-red claw, to which each *filament*, of the ſame colour, is firmly united for three-fourths of its own length. The *germen* is remarkably columnar, with three longitudinal furrows. *Styles* very ſhort, thick, and recurved. *Anthers* oblong.

8. M. *eucomoides*. Dwarf Green Melanthium. Jacq. Ic. Rar. t. 450. Curt. Mag. t. 641.—Leaves ovate-oblong, ſpreading, ſheathing at the baſe. Stalk with few flowers, ſhorter than the leaves. Baſe of the petals concave, with a tooth at each ſide.—Native of the Cape; rarely ſeen in England. This is very unlike any of the former, being of a dwarf habit, with ſeveral broad, ſheathing, long, ſpreading *leaves*, recurved at their points. Among theſe ſtands a ſhort *ſtalk*, bearing one, two, or three large green *flowers*, of a ſingular and not beautiful appearance. The long baſes or claws of the *petals* are rolled in at their ſides, and crowned with a pair of broad blunt teeth, analogous to thoſe deſcribed in our fifth ſpecies. *Filaments* united to the claws. *Anthers* oblong, yellow, brown at the back. *Germen* oval, with three deep furrows. *Styles* awl-ſhaped, ſlightly recurved at the top.

9. M. *pumilum*. Little Rigid Melanthium. Forſt. Comm. Gött. v. 9. 30. t. 6. Willd. n. 14.—Leaves lanceolate,

rigid, channelled, ſharp-pointed, bearded at the baſe. Stalk with few flowers, ſhorter than the leaves.—Native of Terra del Fuego. By one of Forſter's ſpecimens in our poſſeſſion, this appears to be a mountain plant, of a dwarf-tufted habit; having numerous, crowded, ſpreading, radical *leaves*, an inch long, ovato-lanceolate, rigid, pungent and rough-edged; channelled above, keeled beneath; their ſheathing baſes denſely inveſted with long, white, ſhining, pellucid hairs. The *flowers* are ſaid to be white; in a dry ſtate they have a purpliſh tinge. They are about three or four, each ſupported on its own ſhort *ſtalk*. *Petals* not contracted at the baſe. *Styles*, according to Willdenow, (from whom we adopt the reference to Forſter,) none; the *ſtigmas* three, rarely ſix.

Willdenow juſtly obſerves that *M. luteum*, Thunb. Jap. 152, is probably diſtinct from *Veratrum luteum* of Linnæus. Having ſeen no ſpecimen, by which we might judge of its genus, we decline admitting it here.

MELANURUS, in *Ichthyology*. See Sparus *Melanurus*.

MELAONES, a word uſed by certain authors for a black kind of worm found in meadows in the month of May, which, when bruiſed, emits an agreeable ſmell. Some alſo have called a ſmall ſpecies of beetle by the ſame name.

MELAPARA, in *Geography*, a town of Bengal; 10 miles E.N.E. of Dacca.

MELAS, in *Ancient Geography*, the name of ſeveral rivers; *e. g.* a river of the Peloponneſus, in Achaia:—a river of Bœotia, which had its ſource ſeven ſtadia from Orchomenê, and diſcharged itſelf into the lake Cephiſus:—a river of Theſſaly, near Heraclea:—a river of Mygdonia:—a river of Thrace:—a river of Aſia, whoſe ſource was near the town of Cæſarea ad Argæum:—a river of Aſia, in Pamphylia:—a river of Aſia, in Armenia Minor.

Melas, μελας, in *Medicine*, ſignifying literally *black*, is a term applied by the ancients to a diſeaſe of the ſkin, which appears to be a variety of the ſcaly lepra; differing principally in the colour of the eruption from the more common form, which is white, and which was called *Alphos*, or *Leuce*. (See theſe articles.) The *leuce*, however, as we have there ſhewn, in ſtrictneſs, ought not to be confounded with *alphos*, or put under the ſame genus with it and the *melas*; ſince all the ancients, even Celſus, who has ranked all three under the head of *vitiligo*, diſtinctly pointed out the eſſential difference of the *leuce*. See Celſus, lib. v. cap. 27. ſect. 19. See alſo Leprosy.

MELASICTERUS, from μελας, *black*, and ικτερος, *icterus*, the *jaundice*, a term which has been applied by ſome writers to that ſevere and inveterate degree of jaundice, which has been alſo termed in Engliſh the *black jaundice*. (See Jaundice.) Sauvages, Noſol. Method. claſs ix. genus 12.

MELASMA, in *Botany*, ſo named by Bergius, from μελας, *black*, apparently becauſe the herb aſſumes that colour in drying. Thunberg, who likewiſe eſtabliſhed it as a genus, called it *Nigrina*, for the ſame reaſon. The younger Linnæus referred it to Gerardia (ſee that article); to which Thunberg, in his Prodromus 106, accedes, and the plant ſtands there, as well as in Willd. Sp. Pl. v. 3. 222, under the name of *Gerardia Nigrina*. (Melaſma ſcabrum; Berg. Cap. 162. t. 3. f. 4.)—Herb rough. Leaves lanceolate; ſerrated in their lower part. Stem ſquare.—Native of the Cape of Good Hope. The *ſtem* is herbaceous, above a foot high, leafy, ſomewhat branched. *Leaves* oppoſite, narrow, about two inches long, rough on both ſides, with prominent points. *Flowers* axillary and terminal, on long ſtalks, drooping, large. Nothing is recorded concerning their colour. Every part of the dried plant is as black as ink.

Melasma, (from μελας, *black*), in *Surgery*, a black and dark blue, or livid, diſcolouration of the ſkin, more commonly termed by ſurgeons an *ecchymoſis*; which ſee.

MELASPHÆRULA, in *Botany*, ſo denominated by Mr. Gawler, now Ker, who firſt eſtabliſhed the genus, from μελας, *black*, and σφαιρα, *a ball*, in alluſion to the little black and ſhining globular bulbs, ſaid to be produced at the ramifications of the ſtem, as in ſeveral lilies, the *Dentaria bulbifera*, *Saxifraga bulbifera*, and others. Theſe however have not been obſerved on the cultivated *Melaſphærula* in England or France, but Jacquin delineates them. Ker in Sims and Kon. Ann. of Bot. v. 1. 231. Curt. Mag. v. 17. 615. Ait. Hort. Kew. ed. 2. v. 1. 103. (Diaſia; Decand. in Bulletin des Sciences, n. 80. Brumaire an. 12.)—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Enſatæ*, Linn. *Irides*, Juſſ.

Gen. Ch. *Cal.* Spatha inferior, ſhorter than the corolla, of two oblong, acute, permanent valves; the outermoſt broadeſt. *Cor.* of one petal, ſuperior; tube none; limb irregular, two-lipped, ſomewhat bell-ſhaped, divided to the bottom into ſix ovate, briſtle-pointed, ſpreading ſegments, the three lower ones moſt coloured, and rather the ſmalleſt. *Stam.* Filaments three, cloſe together, ſhorter than the corolla, and aſcending under the middle ſegment of its upper lip, recurved at the ſummit; anthers oblong, incumbent. *Piſt.* Germen inferior, three-lobed, depreſſed; ſtyle thread-ſhaped, of the length and ſituation of the ſtamens; ſtigmas three, ſpreading, ſimple, bluntiſh. *Peric.* Capſule three-lobed, depreſſed, thin, of three cells and three valves, opening at the upper ſide. *Seeds* few, globoſe, without wing or border.

Eſſ. Ch. Spatha of two valves. Corolla two-lipped, in ſix deep, nearly equal, briſtle-pointed ſegments; without any tube. Stigmas three, recurved. Capſule three-lobed. Seeds globoſe.

M. *graminea*. Graſs-leaved Melaſphærula. Curt. Mag. t. 615. (Diaſia iridifolia; Redout. Liliac. t. 54. Gladiolus gramineus; Linn. Suppl. 95, excluding the ſynonyms. Willd. Sp Pl. v. 1. 221. Jacq. Ic. Rar. t. 236. Andr. Repoſ. t. 62.)—Gathered by Sparrmann and Thunberg at the Cape of Good Hope. Mr. Maſſon ſent it to Kew in 1787, where it bloſſoms in the green-houſe during moſt part of the year. The *root* is a ſmall, coated, roundiſh bulb. *Stem* near two feet high, ſlender and rigid like that of a graſs. The leaves alſo are of a graſſy habit, pale green, long and narrow. *Flowers* numerous, in a lax and ſlender panicle, ſcentleſs, ſmall, compared with many of the ſame tribe. *Spatha* green, with a filmy edge. *Corolla* of a pale greeniſh-yellow, each ſegment marked with a purpliſh-brown, central line, or rib, of which thoſe in the three lower ſegments are broadeſt and moſt conſpicuous, evincing the natural irregularity of the flower. The *ſeeds* are brown.

No other ſpecies is known. Redouté diſtinguiſhes this, after Decandolle, into two, according to the various length and uprightneſs of the foliage, but, as it ſeems to us, without ſufficient reaſon.

MELASSES. See Molasses.

MELASSO, a town of Aſiatic Turkey, in Natolia, anciently called "Mylaſa," or "Mylaſſa." It is ſituated on a fertile plain near a mountain, which furniſhes a great quantity of fine white marble. It had formerly a temple dedicated to Auguſtus Cæſar, with twenty-two columns, ſix of which were in front; and it was adorned with ſo many temples and public buildings, that a certain muſician, on entering the αγορα, or market-place, to make a proclamation, on, uſed the words ακȣετε ναοι, hear ye temples, inſtead of ακȣετε λαοι, hear ye people. Under the Romans it was a free city. It is now a large place, containing a great number of houſes, though they are mean. The air is accounted bad, and ſcorpions abound; 80 miles S. of Smyrna. N. lat. 37° 10′. E. long. 27° 40′.

MELASTOMA, in *Botany*, a very extenſive tropical genus of plants, moſt remarkable for the tranſcendent beauty and peculiarity of its foliage. The name was compoſed by John Burmann, of μελας, *black*, and ϛομα, *the mouth*; being ſynonimous with the Portugueſe appellation of one of the Ceylon ſpecies, *Bocca preto*, or Black Mouth, which aroſe from the effect of the fruit upon the lips of thoſe who eat it. Some of the Weſt Indian ſpecies are known by the name of American Gooſeberries.—Burm. Zeyl. 156. Linn. Gen. 217. Schreb. 293. Willd. Sp. Pl. v. 2. 581. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 45. Juſſ. 329. Lamarck Dict. v. 4. 31. Illuſtr. t. 361. Gærtn. t. 126. Aubl. Guian. 402—437. Swartz. Ind. Occ. 764—822. (Acinodendron; Linn. Gen. ed. 1. 129. Tococa; Aubl. Guian. 437. Fothergilla; ibid. 440. Mayeta; ibid. 443.)—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Calycanthemæ*, Linn. *Melaſtomæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-ſhaped, four or five-cleft, ſwelling at the baſe, permanent. *Cor.* Petals four or five, roundiſh, inſerted into the rim of the calyx. *Stam.* Filaments eight or ten, ſhort, inſerted into the calyx; anthers very long, terminal, ſomewhat curved, of one or two cells, opening by an oblique terminal pore, and often accompanied by a pair of ſmall ſpreading ſcales at the baſe. *Piſt.* Germen roundiſh, in the bottom of the calyx; ſtyle thread-ſhaped, declining; ſtigma blunt or capitate. *Peric.* Berry of two to five cells, roundiſh, coated with the body of the calyx, and crowned with its permanent annular rim. *Seeds* very numerous, imbedded in pulp.

Eſſ. Ch. Calyx four or five-cleft, bell-ſhaped. Petals as many as the ſegments of the calyx, inſerted, with the ſtamens, into its rim. Anthers beaked, opening at the tip. Berry of five cells, inveſted with the calyx.

Only fifteen ſpecies of this genus are defined in the 14th edition of the *Syſtema Vegetabilium* of Linnæus, but the diſcoveries of Swartz, and of various correſpondents of ſir Joſeph Banks, in the Weſt Indies, and of Aublet in Guiana and Cayenne, have very greatly increaſed that number, ſo that Willdenow deſcribes eighty-five, notwithſtanding his having referred ſome ſpecies of the above authors to *Rhexia*. We are poſſeſſed of a few that do not appear in Willdenow's liſt. The whole are diſtributed into various ſections, diſtinguiſhed by the number of ſtamens, which differ in different ſpecies from ten to eight or twelve; and the petals and ſegments of the calyx alſo from five to four or ſix. Subordinate characters of each ſection depend on the number and connection of the longitudinal ribs of the leaves, which, throughout the whole genus, are very remarkable, and in ſome form, together with the tranſverſe veins, the moſt elegant appearance imaginable. The leaves in all are oppoſite and ſimple, their two ſides generally diſferent in colour and pubeſcence, the under one being often downy, ruſty, or ſilky. Stem ſhrubby. Flowers numerous, axillary, or more generally terminal; their petals rarely yellow, uſually red, purple, or whitiſh; with, for the moſt part, yellow very handſome anthers. We ſhall ſelect examples of each ſection, marking the ſpecies by Willdenow's numbers.

Sect. 1. *Stamens* twelve. Three ſpecies in Willdenow.

1. M. *calyptrata.* Vahl. Eclog. v. 1. 40. Lamarck Dict. v. 4. 51?—Leaves elliptic-lanceolate, tapering, three-ribbed, ſmooth, ſlightly and minutely toothed. Flowers panicled.—Native of the iſland of Montſerrat.—"*Panicle* terminal, erect, four inches long; its branches ſpreading, the lowermoſt four together, the reſt oppoſite, ſmooth, their ultimate diviſions divaricated, three-flowered. *Flowers* ſtalked, covered with an acute conical lid, ſeparating all round and deciduous. *Calyx* abrupt, the ſize of a coriander ſeed. *Petals* yellow." *Vahl.*—The late Dr. Dancer ſent us from Jamaica a ſpecimen which anſwers to the above characters, except that the *flowers* ſeem fewer and larger. The teeth of the *calyx* are firmly united into a thick coriaceous conical lid, like that of an *Eucalyptus*, (ſee that article), which ſometimes ſplits at the top, but more generally falls off entire, by an irregular circular ſeparation from the body of the calyx. Within this are the *petals*. The *fruit* is crowned with a very narrow annular rim, quite diſtinct from the calyx.

3. M. *patens.* Swartz. Ind. Occ. 791.—Leaves with five or ſeven ribs, heart-ſhaped, hairy, ſomewhat toothed. Cluſter terminal, ſpreading, briſtly. Stamens twelve.—Native of the more lofty mountains of Jamaica, flowering in ſummer. The inhabitants call it the American Gooſeberry. The *fruit* is ſweet, but wants ſpirit. The *flowers* have rarely only ten *ſtamens.* It is a *ſhrub* eight or ten feet high, clothed with prominent, briſtly, browniſh-red hairs, and the branches are dark purple. *Leaves* varying in length from three to ſix inches, broad; green and briſtly above; pale and downy beneath: ribs five or ſeven, beſides the ſlender marginal ones, connected by a profuſion of reticulated veins. *Footſtalks* two or three inches long, briſtly. *Cluſters* three-forked, very briſtly, with a pair of ſmall leaves at each ſubdiviſion. *Flowers* large, with linear, briſtly, elongated calyx-teeth, and whitiſh or fleſh-coloured petals.

Section 2. *Stamens ten; leaves with three ſeparate ribs.* Eighteen ſpecies in Willdenow.

5. M. *rigida.* Swartz. Ind. Occ. 768.—Leaves three-ribbed, minutely toothed, rigid, ovate, ſomewhat heart-ſhaped; roughiſh beneath. Cluſters terminal, panicled, rough with denſe ruſty down.—Native of the Blue mountains of Jamaica; communicated by Dr. Dancer. A *ſhrub* 10 or 12 feet high; its *branches* obtuſely quadrangular, compreſſed, rough at the extremities with denſe, ſhort, dark, ruſty, ſomewhat ſtarry, pubeſcence. *Leaves* from three to ſix inches long, on long ruſty ſtalks, ovate, or ſlightly heart-ſhaped, rigid but brittle, pointed; ſmooth above; roughiſh, but of the ſame green colour, beneath; with three diſtant ribs, beſides the marginal ones, and many parallel tranſverſe veins. *Panicle* long, many-flowered, repeatedly three-forked, ruſty. *Flowers* ſmall, with white petals, each *calyx* ſubtended by a pair of long, awl-ſhaped, ruſty, deciduous *bracteas*.

7. M. *montana.* Swartz. Ind. Occ. 766.—Leaves three-ribbed, very ſlightly toothed, nearly ſmooth. Cluſter terminal; its branches deeply three-cleft, ſpreading. Petals obtuſe. Calyx abrupt, with a deciduous lid.—Communicated by Dr. Swartz from the lofty mountains in the ſouthern part of Jamaica. The *leaves*, *ſtalks*, and *calyx* are, in the dried plant at leaſt, of a light yellowiſh-green, and every part is nearly, if not quite, ſmooth. *Flowers* ſmall, white, their calyx-teeth combining to form a lid, as in the firſt ſpecies. The upper ſurface of the *leaves* is minutely granulated. Their lateral ribs are united, for a ſhort ſpace, to the middle one, ſo that they ſtrictly come under the denomination of triply-ribbed. The marginal ones are diſtinct from the very bottom.

10. M. *aſpera.* Linn. Sp. Pl. 560. (M. foliis lanceolatis trinerviis ſcabris; Linn. Zeyl. 76. n. 172. M. ſcabra trinervia;

trinervia ; Burm. Zeyl. 154. t. 72.)—Leaves ovato-lanceolate, three-ribbed, entire, rough with depreſſed briſtles. Flowers in leafy cluſters.—Native of Ceylon. We have a ſpecimen from ſir G. Staunton which anſwers well to Hermann's figure and deſcription. Theſe were miſ-applied by Linnæus to his *octandra*, as is well remarked by Retzius in his *faſc.* 4. 25. In the Linnæan herbarium a ſpecimen occurs marked *aſpera*, which is not an original one, nor, in fact, different from *malabathrica* hereafter mentioned, except that the lateral ribs of the leaves are very ſmall. *Katou Kadali*, Hort. Malab. v. 4. 91. t. 43, quoted for the preſent ſpecies, has ſtrongly five-ribbed leaves, and numerous corymboſe flowers, with an extremely hiſpid calyx. We cannot think it belongs here, and ſtill leſs the *Fragarius ruber* of Rumph. Amboin. v. 4. 135. t. 71, whoſe flowers are deſcribed as ſmall and white. Thoſe of *M. aſpera* are acknowledged on all hands to be large and purple. The Eaſt Indian *Melaſtomæ* have not yet been carefully ſtudied on the ſpot, by any accurate botaniſt, and the ſynonyms of this in particular have been much confuſed.—See *M. cyanoides*, hereafter deſcribed, a ſpecies to be introduced between Willdenow's n. 56 and 57.

12. M. *ſtrigoſa*. Linn. Suppl. 236 ; excluding the ſynonym.—Leaves ovate, three-ribbed, very briſtly, entire. Flowers terminal, ſolitary. Calyx very briſtly ; its ſegments broad and triangular.—Sent by Mutis from New Grenada. This is a much-branched *ſhrub*, whoſe numerous *leaves* are ovate, ſtalked, about three-fourths of an inch long ; paler, with three ribs very prominent, beneath. Every part is clothed with depreſſed yellow briſtles. *Flowers* large, terminal, ſolitary, purple, their petals fringed with briſtles ; and the *calyx* is peculiarly hiſpid, with broad, ſhort, triangular ſegments. It is a very handſome and remarkable ſpecies.

14. M. *velutina*. Willd. (M. holoſericea ; Herb. Linn Swartz. Obſ. 176.)—Leaves three-ribbed, ovate, acute, entire, ſeſſile, clothed on both ſides with ſilky briſtles. Cluſter terminal, four-ranked ; its branches cloven. Stem acutely quadrangular.—Native of Braſil, where it was gathered by father Panegai, and ſent by Arduino to Linnæus; as well as by ſir G. Staunton and ſir J. Banks. We know no authority for its being ſound in Jamaica.—The *leaves* are from one to two inches long, ſeſſile, remarkable for their denſe ſilky briſtly clothing. They have three principal ribs, with occaſionally two ſlighter ones near the margin, towards the baſe. *Flowers* large and handſome, purple, with a very ſilky calyx, and ten long ſtamens.—This ſpecies is totally diſtinct from the original Linnæan *holoſericea*, of which we ſhall ſpeak hereafter. See n. 53.

14—15. M. *cuprea*.—Leaves three-ribbed, elliptic-ovate, pointed, entire, on ſhort ſtalks ; nearly ſmooth above ; clothed with denſe ſtarry down beneath. Panicle terminal, thrice compound, with radiating branches.—Gathered in the Caraccas, by J. Mærter, M. D. The *branches*, *ſtalks*, *germen*, and back of the *leaves*, are all denſely clothed with fine ſtarry hairs, which, in a dried ſtate at leaſt, are of a rich copper-coloured brown. A portion of the ſame is ſeen on the upper ſurface of each *leaf*, eſpecially on the ribs. The ſegments of the *calyx* are ſmooth. *Flowers* very ſmall and numerous, cluſtered, and compoſing a ſpreading, very compound *panicle*, whoſe branches ſpread in a radiating manner, many from one point, the lower ones at each ramification being the ſhorteſt. *Petals* not expanded in our ſpecimen.—This ſhould be placed between the 14th and 15th ſpecies of Willdenow. We can refer it to none that he enumerates.

14—15. M. *ſquamuloſa*.—Leaves three-ribbed, elliptical, obtuſe, entire ; ſmooth above ; hoary beneath. Panicles terminal, compact. Calyx angular, minutely ſcaly.—Sent from New Grenada by Mutis to Linnæus. The *ſtem* is woody. *Leaves* on ſhort thick ſtalks, rigid, elliptical, ſcarcely two inches long, obtuſe, entire, with three diſtinct ribs and numerous fine tranſverſe veins. The upper ſide is green, quite ſmooth and rather ſhining ; the under hoary, with very cloſe, ſomewhat ſcaly, pubeſcence. *Panicles* terminal, compound, compact, about three inches long, many-flowered. *Calyx* turbinate, with ten ribs, and five broad ſhort teeth, covered all over with cloſe-preſſed ſcurfy ſcales. *Petals* five, ſmall, round, apparently yellow. *Berry* ſmall, furrowed, hoary. Sometimes the *flowers* appear to be ſix-cleft.—This may ſtand next to our *cuprea*, though it has no particular likeneſs or affinity to that, or any other of this ſecond ſection, being moſt allied to *liguſtrina*, another new ſpecies hereafter deſcribed, from the ſame country.

20. M. *trinervia*. Swartz. Ind. Occ. 774.—Leaves three-ribbed, ſmoothiſh, elliptical, acute at both ends ; the lateral ribs near the margin. Spikes long, axillary, in pairs. Flowers oppoſite or whorled.—Native of mountains in Jamaica. Introduced in 1793 into the ſtoves at Kew, where it blooms in July. The *leaves* are a ſpan long, ſtalked, thin and pliant, of a broad, elliptical form, pointed at each end, pale beneath, with ſlightly downy veins. Theſe *leaves* are peculiar for having the ſide ribs almoſt marginal, and very remote from the midrib, with which however they are connected by numerous tranſverſe ribs, and reticulated veins. The infloreſcence is ſo incorrectly deſcribed, that had we not authentic ſpecimens, we could not have been certain of our plant. The *flowers* are ſmall, numerous, in long downy ſpikes, two of which ſtand together in the forks of the branches, and are perhaps originally terminal, as Dr. Swartz deſcribes, but the branch is ſoon extended on each ſide beyond them ; neither are they *racemi*, for the *flowers* are perfectly ſeſſile, in diſtant pairs, or ſometimes whorls.

21. M. *repens*. Willd. n. 21. Lamarck Illuſtr. t. 361. f. 2.—"Leaves obovate, ſmooth, three-ribbed, nearly entire. Flowers ſolitary, terminal. Stem creeping."—This, which is ſaid to come from China, does not appear to us different from the *octandra* of Linnæus, which varies in the number of parts in the flower, and will be hereafter deſcribed. We are at leaſt certain that the ſynonyms of Oſbeck and Retzius, cited here by Willdenow, belong to the real *octandra*.

Section 3. *Stamens ten ; leaves with three ribs combined at the baſe.*

23. M. *parviflora*. Aubl. Guian. 433. t. 171.—Leaves ovato-lanceolate, acute at each end, obſcurely toothed, triple-ribbed, ſmooth. Panicle terminal, repeatedly three-forked.—Found by Aublet growing in moiſt ſituations in Cayenne and Guiana, where the inhabitants call it *tincta*, after the Portugueſe, and uſe it in decoction to dye black. The *ſtems* are upright, ſhrubby, ſeven or eight feet high. *Leaves* a ſpan long, pliant and quite ſmooth, green on both ſides, but paler beneath, on ſmooth *footſtalks*, ſcarcely an inch in length. They have three principal ribs, which in Aublet's ſpecimen unite into one a little above the baſe, at not more than half the diſtance expreſſed in his plate. There are beſides, as uſual, a pair of much ſlighter marginal ribs, diſtinct to the bottom of the leaf. A large, very compound, three-forked *panicle*, of ſmall white *flowers*, terminates each branch ; but it ſometimes becomes lateral by the elongation of the branch beyond. The *berries* are ſmooth, ſcarcely ſo big as a pepper-corn, and of a blueiſh colour. The plant bears flowers and fruit in April.

25. M. *arboreſcens*. Aubl. Guian. 420. t. 163.—Leaves

roundiſh-ovate, acute, entire, triple-ribbed, ſmooth. Corymbs lateral. Petals divided at the baſe.—Native of woods in Guiana. A *tree* 60 feet high, with very broad ovate ſmooth entire *leaves*, rather opaque and paler beneath, four or five inches long. Their three central ribs are united for half an inch above the baſe; two lateral ones ſpring from the bottom; and there is alſo a pair of very ſlight marginal ones, not expreſſed in the plate. The *flowers* are white, produced in lateral bracteated *corymbs*, from the ſides of the branches, much below the foliage. The *petals* are deſcribed by Aublet with divided or double claws. *Berry* as big as a ſmall medlar, yellow, ſweetiſh, and eatable, known by the name of *mêle* among the coloniſts. It ripens in November.—Willdenow juſtly points out the near reſemblance of this plant to the Linnæan *M. groſſularioides*, a ſpecies we have not ſeen, any more than himſelf, but its *leaves* are ſaid to be toothed and pointed.

27—28. M. *liguſtrina*. Leaves triple-ribbed, ovate, obtuſe, entire, quite ſmooth. Panicles terminal, compact. Calyx hemiſpherical, furrowed, ſmooth.—Sent from New Granada, by Mutis to Linnæus. The *ſtem* and *branches* are woody, and, like the whole plant, perfectly ſmooth. *Leaves* ſtalked, an inch long, broadiſh-ovate, obtuſe, entire, with three ſtrong ribs united for a ſhort diſtance from the baſe; the tranſverſe veins are very ſlender, and the marginal ribs ſcarcely diſcernible. The upper ſurface is dark green, and poliſhed; under paler and opaque, with a yellowiſh tinge. *Flowers* in compound cluſters or panicles like thoſe of Privet. *Calyx* ſhort and hemiſpherical, moſt deeply furrowed in the upper part, quite ſmooth, with ſhort, broad, blunt teeth. *Petals* ſmall, roundiſh, white or purpliſh. *Stamens* ſhort, with broad blunt anthers. *Style* obtuſe. *Stigma* concave. *Berry* ſmall, yellowiſh. All the *flowers* ſeem five-cleft. This is moſt akin to our *M. ſquamuloſa*, deſcribed in the ſecond ſection, though abundantly diſtinct, Linnæus had determined the genus of both, but left them undeſcribed.

Section 4. *Stamens ten; leaves with five combined ribs.*

28. M. *agreſtis*. Aubl. Guian. 425. t. 166.—Very hairy. Leaves ovate, long-pointed, crenate, fringed, quintuple-ribbed. Corymbs axillary and terminal, ſpreading.—Native of banks of rivers, and about old walls, in Cayenne. *Aublet.* The ſpecific name therefore muſt allude to its roughneſs of habit, not to its place of growth. The denſe ruſty-red ſpreading hairs, which clothe the *branches*, *flower-ſtalks*, *footſtalks*, ribs and margins of the *leaves*, give the plant a tawny hiſpid aſpect. The *leaves* are truly ovate, pointed, very neatly and cloſely crenate, about three inches long; their ribs diſpoſed exactly as in the *arboreſcens* laſt deſcribed, ſo that both ſpecies ought to ſtand in the ſame ſection, whichever that may be. Aublet's figure is by no means correct in this point, according to his own ſpecimen, and has miſled Willdenow.

29. M. *ſcandens*. Aubl. t. 172. is more correctly quintuple-ribbed, as that figure expreſſes; but yet not in ſo ſtriking a manner as ſome following ſpecies.

30: M. *alata*. Aubl. Guian. 410. t. 158.—Leaves elliptic-oblong, acute at each end, entire, quintuple-ribbed; rough above; downy beneath. Stem winged.—Native of uncultivated ground in Guiana and Cayenne, flowering in September, and fruiting a month or two afterward. The *ſtems* are ſix or ſeven feet high, remarkable for their four membranous wings. *Leaves* ſeſſile, ſeven or eight inches long and about half as wide, much elongated at each end; rough above; paler and clothed with ſoft tufted down beneath. They have two pair of ribs, branching at wide intervals from the central one, beſides a ſlight, nearly marginal, nerve. *Panicle* terminal, large, with ſquare, partly winged, ſtalks. *Flowers* in denſe heads, ſmall, whitiſh. *Berry* red, the ſize of a gooſeberry, not very ſucculent. A decoction of the leaves is uſed to waſh foul ulcers.

30—31. M. *nervoſa*.—Leaves elliptic-oblong, acute at each end, ſlightly crenate, quintuple-ribbed; rather hairy on both ſides. Spikes hairy, whorled.—Native of Jamaica. A ſpecimen with the above name was given to the younger Linnæus from the Bankſian herbarium. It was gathered by a man who deceived his employers, by pretending to have collected many of his plants at the iſthmus of Darien; whereas it afterwards appeared he went no further than the Weſt India iſlands. Hence ſome of his diſcoveries, being marked with a wrong place of growth, were not admitted by Dr. Swartz, (unleſs he had found them himſelf,) into his Weſt Indian Flora. Such appears to be the caſe with the preſent *Melaſtoma*, which we cannot refer to any that is deſcribed. Its *leaves* agree much in ſize, form and ribs, with the *alata* laſt deſcribed; but they are crenate, and clothed with ſimple and longer hairs, eſpecially the ribs. The *ſtem* is round, briſtly, not winged. *Flowers* in ſeſſile remote whorls, compoſing a long, terminal, hairy ſpike.

Section 5. *Stamens ten; leaves with at leaſt five ſeparate ribs.*

32. M. *hirta*. Linn. Sp. Pl. 559, excluding the ſynonyms of Plumier and Sloane. Swartz. Obſ. 175. (M. n. 4; Browne Jam. 219. Arbuſcula Jamaicenſis quinquenervis minutiſſimè dentatis foliis et caule pubeſcentibus, floſculis ex ſinu foliorum gemellis; Pluk. Almageſt. 40. t. 264. f. 1.)—Leaves ovate, pointed, crenate, five-ribbed, hairy. Flowers axillary, ſomewhat corymboſe, briſtly as well as the branches.—Native of Braſil, as alſo of Jamaica. We have a ſpecimen from Browne, nor can we account for the omiſſion of this ſpecies in Swartz's Flora, as that author likewiſe mentions in his *Obſervationes* its growing on the woody hills of Jamaica, flowering in autumn and ſpring. The *ſtem* is ſhrubby, ſix feet high, the younger *branches* very hiſpid, as are the *footſtalks*, *flower-ſtalks*, *calyx*, and both ſides of the *leaves*, eſpecially the under. All the pubeſcence is of a ruſty hue. The *leaves* are broadly ovate, not at all lanceolate, with five diſtinct ribs, beſides a pair ſcarcely diſcernible near the margin, towards the baſe. The *flowers* are white, few together, axillary and corymboſe; ſometimes ſaid to be ſix-cleft.

34. M. *Acinodendron*. Linn. Sp. Pl. 558. Swartz Obſ. 174. (Chriſtophoriana americana, malabathri foliis acuminatis, nervoſis, dentatis; Pluk. Phyt. t. 159. f. 1.)—Leaves ovate, pointed, five-ribbed, finely toothed, ſlightly hairy. Panicle terminal, compound, three-forked, roughiſh. Flowers ſomewhat capitate.—Native of Surinam. *Baker. Herb. Banks.* Dr. Swartz remarks that this is an obſcure ſpecies, the ſynonyms of which are much confounded. The Linnæan herbarium throws no light upon it, but we have received from ſir J. Banks, under the name of *M. aurea*, which is very well ſuited to the colour of the dried leaves, a Surinam ſpecimen, that indubitably accords with Plukenet's figure, which Linnæus commends; and as our ſpecimen will not agree with any other deſcribed *Melaſtoma*, we refer it to the preſent, omitting all the ſynonyms as doubtful, except the above. The *branches* are ſmooth, ſlightly quadrangular upwards. *Leaves* about three inches long, on rather ſhort hairy ſtalks, (the only character not expreſſed by Plukenet,) ovate, neatly toothed, with a ſhort taper point, and five ribs connected by numerous tranſverſe parallel veins. There is a very ſlight marginal rib near the baſe. A few golden hairs are ſprinkled over the upper ſurface, and on the ribs of the lower. *Panicle* large and ſpreading, repeatedly three-forked, roughiſh with ſcattered ſtellated down. *Flowers*

uſually two or three together, ſeſſile, with a pair of *bracteas*, at the end of each ſtalk of the panicle. *Calyx* ſmooth, turbinate. *Petals* five, apparently white or yellowiſh, obovate.

35. M. *cymoſa*. Schrad. Sert. Hannov. 18. t. 8. Vent. Malmaiſ. t. 14. (M. corymboſa; Ait. Hort. Kew. ed. 2. v. 3. 46?)—Leaves ovate, ſomewhat heart-ſhaped, pointed, ſeven-ribbed, ſomewhat hairy, with minute briſtly ſerratures. Cyme terminal. Segments of the calyx triangular.—Native of South America according to Schrader; and, if we are right in the citation of Hort. Kew., of Sierra Leone alſo. It is not probable that ſo fine a plant, for many years paſt frequently ſeen flowering in the Engliſh ſtoves, ſhould not be included in that rich catalogue, and it anſwers moſt preciſely to the character there given under the name of *corymboſa*, except that the flowers are really cymoſe. We received a ſpecimen in 1803, from the botanic garden at Liverpool, with the appellation of *M. purpurea*, under which it ſtands in the catalogue of that garden, p. 250. The *ſtems* are erect, about two feet high, ſucculent, herbaceous, ſcarcely ſhrubby. *Leaves* two or three inches long, on longiſh ſtalks, tender, of a broad, ovate, pointed figure, very ſlightly cordate at the baſe, fringed with minute briſtly teeth directed forwards. The ribs are ſeven, beſides a minute marginal pair at the baſe. Both ſides are roughiſh with minute hairs; the under one paleſt, and moſt poliſhed. *Flowers* ſeveral, roſe-coloured, in a terminal, rather drooping, ſlightly downy cyme. There are five yellow abortive anthers; the five perfect ones are purpliſh.

37. M. *elegans*, beautiful as it appears in Aublet's t. 167, is in every reſpect ſo like *hirta*, ſee n. 32, except the deeper and double crenatures of the *leaves*, that we are perſuaded it is but a variety of that ſpecies. There is no difference in the *infloreſcence* or *flowers*.

40. M. *Maieta*. Lamarck Dict. v. 4. 34. (Maieta guianenſis; Aubl. Guian. 443. t. 176.)—Leaves elliptical, pointed, five-ribbed, minutely crenate, hairy, inflated at the baſe. Flowers axillary, ſolitary, ſeſſile.—Found by Aublet in Guiana, on the banks of a rivulet fifty miles from the ſea-coaſt, flowering and fruiting in November. It is a *ſhrub* two or three feet high, the branches and foliage rough with briſtly, prominent, ruſty hairs. *Leaves* oppoſite, but very unequal in ſize, elliptical with a taper point and five ribs, without any at the margin beſides. The larger *leaf* of each pair is from three to five inches long, and diſtinguiſhed by a bladder-like ſwelling, of two cells, at the baſe, moſt prominent at the upper ſide; the ſmaller *leaf* is from one and a half to two inches long, and is uſually deſtitute of any ſuch bladder. The *flowers* are white, axillary, and ſolitary, bracteated at their baſe. It is difficult to imagine what led Aublet to diſtinguiſh this, as a genus, from *Melaſtoma*, to which it has not the ſlighteſt pretenſions. The germen in the flower is indeed apparently ſuperior, and diſtinct from the body of the calyx; but ſuch is the caſe in many *Melaſtomæ*, though thoſe parts unite into a pulpy maſs as the fruit ripens.

41. M. *heterophylla*. Lamarck Dict. v. 4. 34; and

42. M. *phyſiphora*. (Tococa guianenſis; Aubl. 438. t. 174.) agree with the laſt in having a bladdery appendage to the baſe of the larger *leaves*, or, in the latter inſtance, to their *footſtalks*.

49. M. *groſſa*. Linn. Suppl. 236.—Leaves ſomewhat heart-ſhaped, five-ribbed, entire, very rough. Flowers terminal, corymboſe. Petals briſtly at the back.—Sent by Mutis from New Granada. This very magnificent ſpecies is diſtinguiſhed by its coriaceous and briſtly appearance. The *leaves* are ſcarcely two inches long, about one broad, with five ſtrong ribs, and numerous cloſe tranſverſe veins, clothed very denſely on both ſides, with innumerable, minute, rigid, curved briſtles; paler beneath. The *branches* and *ſtalks* are all equally hiſpid, and of a ruſty hue. *Flowers* very large, purple, about five or ſix in a terminal corymboſe head. Segments of the *calyx* long and lanceolate. *Petals* obovate, above an inch long, clothed at the back, like the *calyx*, with rigid upright briſtles.

50. M. *malabathrica*. Linn. Sp. Pl. 559. Curt. Mag. t. 529?) M. foliis lanceolato-ovatis ſcabris quinquenerviis; Linn. Zeyl. 76. n. 171. M. quinquenervia hirta major, capitulis ſericeis villoſis; Burm. Zeyl. 155. t. 73. Kadali; Rheede Malab. v. 4. 87. t. 42. Fragarius niger; Rumph. Amb. v. 4. 137. t. 72.)—Leaves elliptic-lanceolate, five-ribbed, entire, rough with depreſſed briſtles. Flowers terminal, corymboſe. Calyx clothed with fringed imbricated ſcales.—Native of the Eaſt Indies. It is ſaid to have been given to Kew garden by ſir G. Staunton in 1795. We quote the Botanical Magazine with doubt, becauſe the figure is unfortunately ſo contrived as not to ſhew the *calyx*, a moſt important part in this caſe; neither does the form of the *leaves*, or the ſituation of their lateral ribs, preciſely agree with our wild ſpecimens. Of the other ſynonyms we have no doubt. Burmann, whoſe remarks on this plant are very good, obſerves that the calyx is drawn ſmooth in Rheede's figure, though deſcribed rough. Rumphius moſt happily compares it to the calyx of *Centaurea Cyanus*. It is in fact clothed with fine ſharp-pointed fringed ſcales, ſuch as we have remarked in no other ſpecies. The *petals* are large and purple, ſmooth on both ſides, but fringed with briſtles. The young *branches*, *ſtalks*, and ribs of the *leaves*, are ſcaly in a degree like the *calyx*. Sometimes the lateral ribs are ſo ſmall and ſlender as to be ſcarcely diſcernible. A ſpecimen ſo circumſtanced is in the Linnæan herbarium marked *aſpera*; ſee n. 10.

50—51. M. *granuloſa*. Lamarck Dict. v. 4. 44.—Leaves ovato-lanceolate, five-ribbed, entire; rough above with cloſe-preſſed briſtles; downy beneath. Cluſter with corymboſe branches. Calyx ſilky. Stem winged.—Gathered by Commerſon in Braſil, and given by Thouin to the younger Linnæus. A magnificent ſpecies, with *leaves* five or ſix inches long, whoſe outermoſt ribs are united at the baſe to the next. Their upper ſurface is ſo granulated, as it were, with cloſe-preſſed briſtles, as to look like the ſurface of a ſtrawberry. The *ſtem* is briſtly, nearly in like manner, and has four membranous wings. *Flowers* purple, large, and handſome, in a compound forked cluſter. *Calyx* denſely covered with ſilky hairs. This *ſhrub* is about ten feet high.

53. M. *albicans*. Swartz. Ind. Occ. 786. (M. holoſericea; Linn. Sp. Pl. 559. Willd. n. 13. Arbor racemoſa braſiliana, foliis malabathri; Breyn. Cent. 1. 3. t. 2. 4.)—Leaves ovate, acute, five-ribbed, entire; poliſhed and naked above; ruſty-white with cottony down beneath. Cluſters terminal, cottony, with cymoſe branches. Flowers ſeſſile.—Native of Braſil and of Jamaica. A *ſhrub* ſix or eight feet high, with hoary *branches*, which are ſlightly angular. *Leaves* on ſhort, thick, hoary ſtalks, elliptic-ovate, acute, three or four inches long, very ſlightly heart-ſhaped at the baſe; perfectly ſmooth and highly poliſhed above, ſo as to look, when dried, like black Spaniſh leather, as Breynius very happily remarks; on the under ſide they are entirely clothed with denſe ſoft cottony down, white with a ruſty tinge, and have five ſtrong ribs, all united at a very ſmall diſtance above the baſe. The *cluſters* are compoſed of oppoſite forked or cymoſe branches. The *flowers* are ſeſſile, ſmall, with a cottony *calyx* and white *petals*.

About this ſpecies there has been great confuſion. It is unqueſtionably the original *holoſericea* of Linnæus, (admirably deſcribed and figured by Breynius,) but not that which he afterwards called ſo in his herbarium, and which Dr. Swartz deſcribed in his *Obſ. Bot.*; ſee *velutina*, n 14. The name however of *holoſericea* is not ſo applicable to the plant before us, as that given by Swartz, by which it is moſt generally known, and which for that reaſon we have retained, as the beſt means of avoiding miſtake.

56—57. M. *cyanoides*. (Fragarius ruber; Rumph. Amb. v. 4. 135. t. 71. Katou-Kadali; Rheede Malab. v. 4. 91. t. 43.)—Leaves ovate, acute, five-ribbed, entire; roughiſh on both ſides with cloſe-preſſed briſtles. Cluſters terminal, forked. Calyx clothed with cluſtered briſtles. Bracteas ovate, fringed.—Sent from Amboyna by the late Mr. Chriſtopher Smith. We can refer it to none in Willdenow or Lamarck, but we quote without heſitation the above ſynonyms, which have been, ſurely erroneouſly, referred to the true *M. aſpera*; ſee n. 10. The preſent is rather a ſmall and weak *ſhrub*, with ſlender, grey, ſlightly briſtly *branches*. *Leaves* bright green on both ſides, paler beneath, ovate, rather pointed, three inches long, and above one broad, with five diſtinct ribs, of which the lateral ones are nearly as conſiderable as the reſt. The upper ſurface is beſprinkled with yellow cloſe-preſſed *briſtles*; the under is chiefly briſtly at the ribs and veins. *Footſtalks* briſtly, purpliſh, half an inch long. *Panicles* terminal, forked or corymboſe, a little briſtly, with a pair of ovate, concave, ſmooth though fringed *bracteas*, at each diviſion. *Calyx* denſely covered with cluſtered, ſometimes palmate, whitiſh briſtles, which are, as far as we have ſeen, peculiar to this ſpecies, and give the part in queſtion a great reſemblance to *Centaurea Cyanus*. The *petals* are ſaid by Rumphius to be white; in the Hortus Malabaricus they ſeem implied to be purple. The *fruit* is compared by the former author to a ſtrawberry, being redder on one ſide than the other. It is agreeably acid, with ſome aſtringency, and is given to children in Amboyna, to prevent what ſome learned corruptor of Engliſh may hereafter call lectimiction.

Section 6. *Stamens eight; leaves with three ſeparate ribs.*

59. M. *microphylla*. Swartz. Ind. Occ. 813; is erroneouſly placed here. It has ovate, obtuſe, hairy *leaves*, about an inch long, moſt evidently triple-ribbed. The *flowers* are ſmall, with a very hiſpid *calyx*, and ſtand in the forks of the branches, one uſually nearly ſeſſile, with two or three others on capillary, hairy, ſimple ſtalks. The *fruit* looks like that of a *Croton*, but has four furrows; nor are the leaves diſſimilar to ſome of that genus, yet we cannot refer our plant to *M. crotonifolia*, n. 35. of Lamarck. The preſent ſpecies is but ill compared by Swartz to his *hirſuta*, which we have from himſelf, and which is more related to *hirta*; ſee n. 32. It muſt always be remembered that theſe ſections of the genus, which we have adopted from Willdenow, are entirely artificial, as well as ſomewhat inconſtant.

61. M. *capillaris*. Swartz. Ind. Occ. 808.—Leaves lanceolate, pointed, three-ribbed, ſmooth, nearly entire. Stalks axillary, capillary, three-flowered. Native of hills in the ſouth parts of Jamaica. A very fair example of this ſection. It is remarkable for its extremely minute, whitiſh, ſhort-lived *flowers*, which ſtand, three together, on roughiſh, capillary, axillary ſtalks. The *calyx* has four minute upright teeth. The *berry* alſo is perhaps the ſmalleſt in the whole genus. The young *leaves* are ſomewhat downy beneath, but the full-grown ones are ſmooth, three inches long, narrow, taper-pointed, pale at the back, with three ribs, and ſtrong, ſimple, tranſverſe veins. We have a ſpecimen from its diſcoverer.

64. M. *glanduloſa*. Swartz. Ind. Occ. 799.—Leaves ovate, entire, with three ribs beſides the marginal ones, hiſpid on both ſides, with axillary tufts of briſtles at the veins beneath. Panicles terminal, three-forked, very rough. Gathered by Maſſon and Swartz on the loftieſt hills of Jamaica. This is akin to ſome of the rougheſt leaved ſpecies before deſcribed, but diſtinguiſhed by pale tufts of briſtles at the ſeparation of each vein from the midrib beneath. The *leaves* are about three inches long, and more than one broad; the briſtles of their upper ſide moſt rigid, yellow and hooked. *Panicle* ſpreading, many-flowered, exceſſively hiſpid. *Petals* four, with longiſh claws. *Stamens* eight. *Anthers* bordered at each ſide with a yellow membrane. *Style* long and prominent. We cannot but remark that this is properly a five-ribbed ſpecies, and ought to ſtand in a ſection hereafter mentioned.

67. M. *octandra*. Linn. Sp. Pl. 560. (M. foliis lanceolatis trinerviis glabris, margine hiſpidis; Linn. Zeyl. 76. n. 173, excluding the ſynonyms. M. repens; ſee n. 21.)—Leaves ovate, entire, three-ribbed, ſmooth, with a ſimple marginal row of cloſe-preſſed briſtles. Flowers terminal, moſtly ſolitary. Calyx briſtly.—Native of Ceylon and China. The *ſtem* is rather woody, but proſtrate, branched and creeping. *Leaves* about an inch long, of a broad ovate obtuſe figure, three-ribbed, beſides an occaſional pair of obſolete marginal ribs; dark green above; very pale and yellowiſh beneath; ſmooth and naked on both ſides, except a few hairs on the ribs beneath, and a very remarkable row of marginal cloſe-preſſed oblique briſtles, on the upper ſide, reſembling ſtitches of thread; theſe are ſometimes partially wanting. *Flowers* terminal, moſtly ſolitary, large, purple, very handſome. *Calyx* clothed with ſimple incurved briſtles. *Petals* fringed, barbed at the ſummit with a briſtly tuft.

Lamarck was led by the ſynonym of Burmann, erroneouſly quoted by Linnæus, to deſcribe and figure this real *M. octandra* of the latter as a new ſpecies, by the name of *repens*. This name however, we ſhould wiſh to retain, as the *flowers* in our ſpecimens are moſt frequently five-cleft and decandrous. We know not why the *leaves* have ever been deſcribed as in any degree lanceolate, they being truly ovate. Half the *ſtamens* appear to be always abortive.

69. M. *tetrandra*. Swartz. Ind. Occ. 795.—Leaves three-ribbed, oblong, pointed, entire, ſmooth, with a notch at the baſe. Cluſter erect, terminal. Stamens four.—Native of the Blue mountains in the ſouth of Jamaica, but very rare. Flowering in May. This is a middling-ſized *tree*, whoſe young branches are ſquare, and nearly ſmooth. *Leaves* three or four inches in length, and one in breadth, on long ſtalks, ſmooth, entire, pointed, rounded at the baſe, with a notch at the footſtalk. They have one ſtrong central rib, with a ſlight marginal pair only. The *flowers* we have not ſeen. Dr. Swartz deſcribes them as ſmall and white, in a terminal compound cluſter, which is rough with ruſty mealineſs. They are four-cleft, with but four *ſtamens*. *Berry* minute, roundiſh.

71. M. *anguſtifolia*. Swartz. Ind. Occ. 796.—Leaves three-ribbed, linear-lanceolate, entire; hoary beneath. Branches wand-like. Cluſters terminal, repeatedly three-forked, mealy and ruſty.—Native of Jamaica and other Weſt Indian iſlands. A ſlender *ſhrub*, diſtinguiſhed by its elegant narrow *leaves*; of a bright yellowiſh-green, and ſmooth, above; hoary and ſlightly ruſty, with beautifully regular tranſverſe veins beneath. *Cluſters* terminal, ſtalked,

with many forked, ſpreading, cymoſe branches. *Calyx* mealy. *Petals* four, pale yellow. *Stamens* eight.

Section 7. *Stamens eight*; *leaves with three combined ribs.*

78. M. *ſcabroſa.* Linn. Sp. Pl. 558. Swartz. Obſ. 174. (M. n. 5; Browne Jam. 219. t. 24. f. 3.)—Leaves ovate, crenate, triple-ribbed, rough and hairy. Branches denſely ſhaggy. Flowers axillary, aggregate, octandrous. – Native of the cooler mountains of Jamaica. A *ſhrub* about a man's height, whoſe branches are denſely covered with ſhort ſhaggy hairs, like the ſtalks and ribs of the *leaves*, which laſt are broad-ovate, three inches long, very harſh and hiſpid on both ſides, furniſhed with three ribs combined at their baſe, and two diſtinct ones nearer the margin, which is irregularly crenate. Swartz deſcribes the *flowers* as very minute, pale red, ſeſſile and axillary. Of theſe Browne's ſpecimen in the Linnæan herbarium retains two or three, which however ſtand on ſtalks, about as long as the *calyx*. The ſegments of the latter are awl-ſhaped.

Section 8. *Stamens eight ; leaves with five ribs.*

80. M. *umbroſa.* Swartz. Ind. Occ. 817.—Leaves roundiſh-ovate, pointed, finely toothed, hairy on both ſides. Cluſters axillary, compound, briſtly, ſpreading.—Found in ſeveral of the Weſt Indian iſlands. This ſpecies has very hiſpid *branches* and *ſtalks*, and is remarkable for its large, almoſt round, taper-pointed *leaves*, broader than the hand, which have five ribs, beſides the marginal ones, all running from the baſe to the extremity. The *cluſters* are axillary, and in pairs, ſcarcely longer than the footſtalks, twice compound, ſpreading widely. *Bracteas* ſpatulate, recurved, briſtly. *Flowers* white, very ſmall.

85. M. *coccinea.* Vahl. Eclog. v. 1. 48. —Leaves elliptic-ovate, pointed, five-ribbed, entire, ſmooth. Branches hiſpid at intervals.—Native of the iſland of Montſerrat. *Stem* arboreous. *Branches* bluntly quadrangular, hollow, knotty, clothed here and there with irregular interrupted tufts of horizontal pale hairs, like radicles. *Leaves* ſeveral inches in length and breadth, ſmooth, entire, with five ribs beſides the two marginal ones, the three in the centre ſlightly combined at their baſe. The *flowers* are ſaid to be ſcarlet, or occaſionally white, forming a terminal *thyrſus*, which we have ſeen but in an imperfect condition. S.

Melastoma, in *Gardening*, contains plants of the evergreen tree and ſhrubby exotic kinds, of which the ſpecies cultivated are, the American gooſeberry of Surinam (M. groſſularioides); and the ſattiny-leaved melaſtoma (M. holoſericea).

But there are other ſpecies which may be cultivated.

Method of Culture—Theſe tender plants are beſt obtained by having the entire fruits put up in their native places in dry ſand as ſoon as ripened, and immediately forwarded, which as ſoon as they arrive ſhould be taken out, and the ſeeds ſown in pots of light earth, plunging them in a moderate hot-bed of tanners' bark : when the plants are up, and fit to remove, they ſhould be planted each in a ſmall pot of light earth, replunging them in the tan-bed of the ſtove.

Afterwards they require the management of other woody ſtove-plants.

And they may alſo be increaſed by laying the young branches in the ſpring, or by planting cuttings of the young ſhoots in the ſummer ſeaſon in pots, and plunging them in a hot-bed. They ſhould afterwards have the ſame culture as the other kinds.

MELASTOMÆ, in *Botany*, a very beautiful but not extenſive natural order in Juſſieu's ſyſtem, of which the genus from whence the name is derived makes the principal part. (See Melastoma.) This order is the 90th of Juſſieu, the eighth of his 14th claſs. The characters of that claſs are given under the article Ficoideæ. It has two cotyledons, many petals, and ſtamens inſerted into ſome part of the calyx.

The *Melaſtomæ* are thus diſtinguiſhed.

Calyx of one leaf, tubular, either ſuperior or inferior, ſimple or ſurrounded with ſcales. *Petals* ſeveral, of a definite number, inſerted into the top of the calyx, equal in number to its ſegments and alternate with them. *Stamens* inſerted into the ſame place, of a definite number, which is double that of the petals ; the top of the filaments, beneath the anthers, moſtly furniſhed with two briſtles, or two auricles ; anthers long, beaked at the ſummit, attached by their baſe to the top of the filaments, and, at firſt, drooping, in conſequence of the filaments being bent inwards ; but as the latter afterwards become ſtraight, the anthers riſe upwards. *Germen* ſometimes ſuperior, enfolded by the calyx, ſometimes inferior ; ſtyle ſolitary ; ſtigma ſimple. *Fruit* either pulpy or capſular, inveſted, when ſuperior, with the calyx, which is contracted above ; when inferior, attached to the ſame part, and ſwelling beneath it, of many cells, with numerous ſeeds in each cell. *Corculum* ſuſpected by Juſſieu to be unaccompanied with albumen. *Stem* rather arboreous, or ſhrubby, or rarely herbaceous. *Leaves* oppoſite, ſimple, with three or more longitudinal ribs. *Flowers* oppoſite, either axillary or terminal, their ſtalks either ſingle or many-flowered.

The firſt ſection is ſaid to have an inferior germen, and conſiſts of *Blakea* of Browne and Linnæus, to which it is doubtful whether the *Blakea* of Aublet be properly united as one genus ; *Melaſtoma*, ſee that article ; and *Triſtemma*, a genus of Juſſieu's, brought by Commerſon from the Mauritius.

Section the ſecond is characterized by a ſuperior germen, and conſiſts of *Topobea* of Aublet, with *Tibouchina*, *Mayeta* or *Maieta*, and *Tococa* of the ſame author, which two laſt are now referred to *Melaſtoma*, there being really no generic diſtinction. To theſe are added *Oſbeckia* and *Rhexia* of Linnæus, whoſe fruits are capſular.

The plants of this order are, on the one hand, akin to the *Myrti*, and on the other to the *Salicariæ*, but diſtinguiſhed from both by their very conſpicuous large and long-beaked anthers, with appendages at their baſe. By the definite number of their ſtamens they are moreover diſtinguiſhed from the *Myrti*, to which we may add the peculiarly ribbed leaves, and rigid depreſſed pubeſcence, of many ſpecies, and the want of an aromatic quality. To the *Salicariæ* they are more ſimilar in habit.

Number of parts is one of the moſt variable circumſtances belonging to this order, the ſtamens differing in different ſpecies, and even varying ſometimes in the ſame, from eight to ten, or from ten to twelve ; and conſequently the petals and calyx-teeth from four to five or ſix ; of which the genus *Melaſtoma* affords inſtances.

MELAVERD, in *Geography*, a town of Perſia, in the province of Irak ; 45 miles N.E. of Iſpahan.

MELAUI, or Mellavoué, a ſmall and tolerably handſome town of Egypt, ſituated half a league from the W. bank of the Nile, and the reſidence of a "kiaſchef." The plain ſurrounding it is very fertile, particularly in corn, a great quantity of which is exported by way of Cairo, Suez, and the Red ſea to Mecca, and other parts of Arabia. The Chriſtians have no church, but repair to the convent on the other ſide ; 120 miles S. of Cairo. N. lat. 28° 2′.

MELAZZO, or Milazzo, anciently *Mylæ*, a ſea-port town of Sicily, in the valley of Demona, ſituated in a bay on the N. coaſt of the iſland. It conſiſts of two parts, one of which ſtands on a promontory of the ſame name, and is fortified: the other, on a bay, with a good harbour, the entrance of which is defended by a caſtle; 18 miles W. of Meſſina. N. lat. 38° 16′. E. long. 15° 23′.

MELBON, one of the cluſter of the "Seven Iſlands," in the Engliſh channel, near the coaſt of France. N. lat. 48° 54′. W. long. 3° 22′.

MELBY, a town of Norway, in the province of Aggerhuus, on the Glomme; 55 miles N.E. of Chriſtiania.

MELCAPOUR, a town of Hindooſtan, in the Candeiſh; 20 miles S. of Burhampour.

MELCHITES, or Melechites, in *Eccleſiaſtical Hiſtory*, were thoſe Chriſtians in Syria, Egypt, and the Levant, who in the ſeventh century, though not Greeks, followed the doctrines and ceremonies of the Greek church. They were called *melechites*, i. e. *royaliſts*, from the Hebrew *melech*, *king*, by their adverſaries, by way of reproach, on account of their implicit ſubmiſſion to the edict of the emperor Marcian, in favour of the council of Chalcedon. For the ſame reaſon the emperor Juſtinian had the epithet Chalcedonenſis given him.

MELCHIZEDECH, in *Biography*, king of Salem, and prieſt of the moſt high God, is mentioned in the ſcriptures, but without any reference to his genealogy, or to his birth or death: and in this ſenſe, it has been aſſerted, he was a figure of Jeſus Chriſt, as is affirmed in the epiſtle to the Hebrews, "Who is a prieſt for ever, according to the order of Melchizedech," and not according to the order of Aaron, whoſe origin, life, and death are known. When Abraham returned from purſuing the confederate kings, who had defeated the kings of Sodom and Gomorrah, and had taken away Lot with them, Melchizedech came to meet Abraham, and preſented to him bread and wine with his benediction. (Gen. xiv. 17, &c.) Abraham, being deſirous to acknowledge in him the quality of prieſt of the Lord, offered him the tythes of all that he had taken from the enemy. After this time there is no mention made of Melchizedech, till the 110th pſalm, where, in alluſion to the Meſſiah, it is ſaid, "Thou art a prieſt for ever after the order of Melchizedech." It having been aſſerted, that he was without father or mother, ſome of the early Chriſtians aſſumed that he was a celeſtial being, ſuperior to angels. Theſe obtained the name of *Melchizedechians;* which ſee.

MELCHIZEDECHIANS, or Melchisedekians, ancient ſectaries, ſo called, becauſe they raiſed Melchizedech above all creatures, and even above Jeſus Chriſt.

The author of this ſect was one Theodotus; whence the Melchizedechians become more commonly known by the name of Theodotians; all the difference between thoſe and the ſtrict Theodotians conſiſting in that particular article relating to Melchizedech; who, according to them, was the great and ſupreme virtue.

This ſect was revived in Egypt towards the cloſe of the third century by Hierax. (See Hieracites.) Thoſe alſo in later times, who have maintained that Melchizedech was the ſon of God in a human form, may be diſtinguiſhed by this appellation. See Cunæus de Rep. Hæbræorum.

MELCK, or Mölk, in *Geography*, a town of Auſtria, near the Danube. In its vicinity is a famous cloiſter of Benedictines, ſeated on a rock; its library is ſaid to conſiſt of ſome curious and valuable MSS.; 11 miles W. of St. Polten.

MELCOMBE-REGIS, a borough and market-town in the hundred of Uggeſcombe, Dorcheſter diviſion of the county of Dorſet, England, is ſituated eight miles from Dorcheſter, 127 miles from London, at the mouth of the river Wey, which ſeparates it from Weymouth. The population of Melcombe in the year 1801, according to the return made to parliament, was 2350, occupying 471 houſes. This borough has ſent two repreſentatives to parliament ever ſince the reign of Edward II. Melcombe and Weymouth are ſo frequently joined in ancient grants, that there is ſome difficulty in ſeparating them; though each had diſtinct privileges; of which Melcombe, being the favoured borough, and part of the demeſne of the crown a conſiderable time before Weymouth, had the greateſt ſhare, and is principally noticed in ſucceeding charters to the excluſion of its neighbour. Hence aroſe diſputes between the rival boroughs reſpecting their privileges: and the contention had arrived to ſo great a height in the reign of Elizabeth, that the expediency of a union became apparent; and they were accordingly incorporated by an act paſſed in the 13th year of that queen (afterwards confirmed by James I.) and directed to be called "The united town and borough of Weymouth and Melcombe-Regis." The civil government, with other local circumſtances relative to Melcombe, will be found under Weymouth. Sir James Thornhill, the celebrated painter of the cupola of St. Paul's cathedral and the halls of Greenwich hoſpital and Blenheim, was born at Melcombe in the year 1675, and died at his ſeat at Thornhill, near this town in 1734. (See Thornhill.) Beauties of England and Wales, vol. iv. Hutchin's Hiſtory of Dorcheſter, 2 vols. folio.

MELCONDA, a town of Hindooſtan, in Dowlatabad; 23 miles W. of Beder.

MELDAL, a town of Norway, in the province of Drontheim; 30 miles S.S.W. of Drontheim.

MELDFEE, in our *Old Writers*, a recompence due and given to him that made the diſcovery of any breach of penal laws, committed by another perſon, called the promoter's or informer's fee.

The word is Saxon, from *meldſeoh*.

MELDOLA, in *Geography*, a town of Italy, in the department of the Rubicon; ſeven miles S. of Forli.

MELDORP, a ſea-port of Holſtein, at the mouth of the river Myle; 50 miles N.W. of Hamburgh. N. lat. 54° 10′. E. long. 9° 4′.

MELDRUM, a town of Scotland, in the county of Aberdeen, being a burgh of barony, and holding a weekly market; 16 miles N.N.W. of Aberdeen.

MELEAGER, in *Biography*, a Greek poet, ſon of Eucrates, was a native of Gadara, in Syria, or of Atthis, a village in its territory, and is ſuppoſed to have flouriſhed about a century before the Chriſtian era. He ſpent his youth chiefly at Gadara, where he formed himſelf upon the ſtyle and manner of Menippus, an elder poet of that place. He afterwards reſided at Tyre, and finally paſſed over to Cos by way of refuge from the wars which ravaged Syria, and died there at an advanced age. He was the firſt who made a collection of the ſhort poems called by the Greeks epigrams. Of theſe he formed two ſets, under the title of "Anthologia," the *firſt* of which was a lamentable proof of the licentiouſneſs of the age and country; the *ſecond*, conſiſting of miſcellaneous pieces, has formed the baſis of the later anthologias of Agathias and Planudes. Many of the poems are the work of Meleager, and poſſeſs much elegance: an edition of the poems was given by Brunck in 1709. Gen. Biog.

MELEAGRIS, in *Natural Hiſtory*, a genus of birds of the order Gallinæ. Bill conic, incurvate; head covered with ſpongy caruncles; chin with a longitudinal membranaceous caruncle; tail broad, expanſile; legs ſpurred. According to Buffon, there is but one known ſpecies, which he ſays is a large unwieldy bird, the anterior part of the head is ſtrangely covered and ornamented with a pendulous, ſoft, and fleſhy ſubſtance, as alſo are the ſides of the head and throat; the eyes are ſmall, but bright and piercing; the bill convex, ſhort and ſtrong; a long tuft of coarſe black hairs on the breaſt, the wings moderately long, but not at all formed for ſupporting ſo large a bulk in long flights; the legs moderately long, and very robuſt. In Gmelin's edition of Linnæus, two ſpecies are mentioned, namely, the Gallipavo and Satyra, of which the following are the characteriſtics.

Species.

Gallipavo. Front and chin carunculate; breaſt of the male tufted. It inhabits America; is above three and a half feet long, is domeſticated every where, and varies much in its colours; in a wild ſtate, it lives in woods and feeds on nuts, acorns, and inſects; rooſts on the higheſt trees, is very iraſcible and impatient of any thing red; the cock ſtruts with an inflated breaſt, expanded tail, red face and relaxed frontal caruncle, and makes a ſingular inward noiſe, which, when it is uttered, ſhakes the whole body; eggs numerous, white, with reddiſh or yellow ſpots; it has eighteen tail-feathers. The female has no ſpur.

Satyra. Head with two horns; body red with eye-like ſpots. This is called the horned turkey. It inhabits India, and is leſs than the laſt ſpecies. The bill brown; noſtrils, front, and area of the eyes covered with black hair-like feathers; crown red; horn callous, blue, bent back; caruncle of the chin dilatable, blue, varied with rufous; legs whitiſh, ſpurred; it has 20 tail-feathers. The female has its head covered with feathers, without horns or gular caruncle; feathers of the head and upper part of the neck black-blue, long, decumbent; reſt of the body as in the male, red, with eye-like ſpots; ſpurs more obtuſe.

Meleagris, the Guinea-hen or Pintado, a ſpecies of *Numida*; which ſee.

Meleagris, in *Zoology*, a ſpecies of *Anguis*.

MELEDA, in *Geography*, an iſland in the Adriatic, ſeparated from the peninſula of Sabioncello by a narrow channel, belonging to the republic of Raguſa. It is about 30 miles long, and of an unequal breadth, and is interſected by many bays and inlets, which afford good harbours for fiſhermen. It produces vines, orange and lemon trees, but not ſufficient corn for the inhabitants, who amount to about 2000, occupying ſix or ſeven villages. N. lat. 43° 5′. E. long. 17° 44′.

MELELA, a town of Africa, in Barca; 76 miles S.W. of Tolometa.

MELEMBA, a town of Cacongo. S. lat. 5° 30′. E. long. 11° 55′.

MELENES, a ſmall iſland in the Engliſh channel, near the coaſt of France. N. lat. 48° 48′. W. long. 3° 31′.

MELENKI, a town of Ruſſia, in the government of Vladimir, on the Oka; 44 miles S.E. of Vladimir. N. lat. 60° 24′. E. long. 41° 24′.

MELES, Badger, in *Zoology*, a ſpecies of *Urſus*; which ſee.

MELETIANS, in *Eccleſiaſtical Hiſtory*, the name of a conſiderable party, who adhered to the cauſe of Meletius, biſhop of Lycopolis, in Upper Egypt, after he was depoſed about the year 306, by Peter, biſhop of Alexandria, under the charge of his having ſacrificed to the gods, and having been guilty of other heinous crimes; though Epiphanius makes his only failing to have been an exceſſive ſeverity againſt the lapſed. This diſpute, which was at firſt a perſonal difference between Meletius and Peter, became a religious controverſy; and the Meletian party ſubſiſted in the fifth century; but was condemned by the firſt council of Nice.

MELETIN, in *Geography*, a river of European Turkey, which runs into the Pruth, 12 miles N. of Jaſſi, in the province of Moldavia.

MELETZKOI, a town of Ruſſia, in the province of Tobolſk; 44 miles N. of Archinſk.

MELFI, a town of Naples, in Baſilicata, the ſee of a biſhop, containing ſeven churches and eight convents; five miles N.W. of Venoſa. N. lat. 41° 1′. E. long. 15° 39′.

MELFORD, Long, an extenſive village, ſituated near the river Stour, in the hundred of Babergh, and county of Suffolk, England. It is about one mile in length, whence the characteriſtic appellation *long*, and contains, according to the parliamentary returns of 1801, 450 houſes, and 2204 inhabitants, *viz.* 1034 males and 1173 females. Of theſe 1837 were returned as employed in different departments of trade. Few villages in England can boaſt of a more agreeable ſituation than this, the immediate vicinity being diſtinguiſhed by much beautiful and pictureſque ſcenery. The church, which ſtands on an elevated ſpot at the north end of the village, is a curious piece of architecture in the pointed ſtyle of the fifteenth century. Its length is 180 feet, excluſive of the ſchool-houſe at the weſtern extremity. The chancel, or eaſt end, is diſtinguiſhed for its maſonry, conſiſting of flint work, and ſquared ſtones; and beneath the parapet is an inſcription in old letters. In the north aiſle is an altar tomb for William Clopton, eſq., whoſe ſtatue, in armour, reſts on the top; he died in 1446. His ſon, John Clopton, who was ſheriff of the counties of Norfolk and Suffolk in the time of Henry VI., was interred under an altar tomb in the chancel. Near the communion table is a large and ſtately marble monument to the memory of ſir William Cordell, who was ſpeaker of the houſe of commons in the reign of queen Mary. This gentleman founded an hoſpital here, which is ſtill ſtanding, almoſt cloſe to the church. It is a reſpectable brick building, and is ſufficiently endowed for the ſupport of a warden, twelve poor men, and two women, who are required to be old and decayed houſekeepers of Melford. Several Roman urns have been dug up in this pariſh within theſe few years. At a ſhort diſtance eaſt of the church is Melford Hall, the ſeat of ſir H. Parker, bart. The houſe, a large brick building, appears to be of the age of queen Elizabeth. At the diſſolution of religious houſes, this eſtate was granted to ſir William Cordell. About half a mile north of the church is Kentwell Hall, formerly the ſeat of the Cloptons, but now the ſeat of Richard Moore, eſq. The houſe is large, and was formerly ſurrounded by a moat, three ſides of which are ſtill remaining; the fourth, or eaſt ſide, has been filled up. Beauties of England and Wales, vol. xiv. by F. Shoberl. Kirby's Suffolk Traveller.

MELGAR, a town of Spain, in Old Caſtile; 23 miles W.N.W. of Burgos.

MELGASSO, a town of Portugal, in the province of Entre Duero e Minho, ſituated on the Minho, and defended by a caſtle; 30 miles N. of Braga. N. lat. 42° 5′. W. long. 8°.

MELHANIA, in *Botany*, Forſk. Ægypt.-Arab. 64. Juſſ. 277; a genus of Forſkall's, named by him from Melhân the Arabic appellation of the hill upon which he gathered it, and which is rich in curious plants. He deſcribes this as a branched ſpreading *ſhrub*, two cubits high, with ſoft, ovato-lanceolate, ſerrated *leaves*, and yellow, axillary, ſtalked *flowers*. The *calyx* is double; the outer of three, inner of five, leaves. *Stamens* five, inſerted into a nectariferous crown, with five intermediate linear bodies, exceeding them in length. *Style* one, with five ſtigmas. *Capſule* globoſe, of five cells and five valves. *Seeds* four in each cell, angular, dotted.

The only ſpecies in *M. velutina*, deſcribed above. Juſſieu ſuſpects it to be of the ſame genus as *Dombeya* and *Aſſonia* of Cavanilles, both united under the latter name by Schreber. Our plant is *Dombeya velutina*, Willd. Sp. Pl. v. 3. 726. (Pentapetes velutina; Vahl. Symb. v. 1. 49.) We have already objected to this *Dombeya* in deſcribing the true one. See Dombeya.

MELHUA, or Melluah, in *Geography*, a town of Syria, in the deſert; 20 miles S.E. of Aleppo.

MELIA, in *Botany*, a name adopted by Linnæus for this tree, apparently becauſe its leaves reſemble thoſe of the *Aſh*, which is doubtleſs the true Μελια of the ancient Greeks. Linn. Gen. 211. Schreb. 286. Willd. Sp. Pl. v. 2. 558. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 39. Juſſ. 265. Lamarck Illuſtr. t. 352. Cavan. Diſſ. 363. (Azedarach; Tourneſ. t. 387.)—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Trihilatæ*, Linn. *Meliæ*, Juſſ.

Gen. Ch. *Cal.* Perianth of one leaf, very ſmall, five-toothed, erect, obtuſe. *Cor.* Petals five, linear-lanceolate, ſpreading, long. Nectary cylindrical, of one leaf, the length of the corolla, with a ten-toothed mouth. *Stam.* Filaments ten, very ſmall, ſituated within the apex of the nectary; anthers oblong, not protruding beyond it. *Piſt.* Germen conical; ſtyle cylindrical, the length of the nectary; ſtigma capitate, with five, conniving valves. *Peric.* Drupa globoſe, ſoft. *Seed* a roundiſh, five-furrowed, five-celled nut.

Eſſ. Ch. Calyx five-toothed. Petals five. Nectary cylindrical, toothed at its mouth, bearing the anthers. Drupa a nut of five cells.

1. M. *Azedarach*. Common Bead-tree, or Pride of China.—Linn. Sp. Pl. 550. Sims in Bot. Mag. t. 1066. Sm. Inſ. of Georgia, v. 2. t. 90.—Leaves bipinnate; leaflets ſmooth, about five. Native of Syria, and common in Spain. Cultivated, in 1656, by Mr. John Tradeſcant jun. It flowers from June to Auguſt. This beautiful *tree* grows to a large ſize in warm countries, and is much branched. *Leaflets* ovate, notched, pointed, green above, paler beneath. *Flowers* lateral, in long, looſe panicles. Petals white, ſtreaked with pink. *Fruit* oblong, the ſize of a cherry, of a pale yellow when ripe.—The pulp which ſurrounds the nut is poiſonous, and "in the ſouthern parts of Europe, the *nuts* are threaded for beads to aſſiſt the devotion of good Catholics, for which purpoſe they are peculiarly ſuited, having a natural perforation through the centre; hence the tree has been called *arbor ſancta*, and by the Spaniards *arbol parayſo*." *Sims.*

2. M. *ſempervirens*. Evergreen Bead-tree. Swartz. Prod. 67. Ind. Occ. v. 2. 737. (M. Azedarach β; Linn. Sp. Pl. 550. Azadirachta indica, &c.; Com. Hort. Amſt. v. 1. 147. t. 76.)—Leaves bipinnate; leaflets ſomewhat rugoſe, generally about ſeven.—A native of the Eaſt and Weſt Indies, in which latter country it is called Indian lilac. In ſeparating this from the laſt ſpecies, we have the authority of Swartz, who ſays that the whole plant is conſiderably ſmaller, that the *leaflets* are of a brighter green, ſeldom more than ſeven, ſomewhat wrinkled, more deeply and unequally ſerrated and pointed. In addition to theſe marks of diſtinction its *foliage* is not deciduous. The author of the Botanical Magazine has not thought proper to diſunite them, but we do not think his reaſons concluſive.

3. M. *Azadirachta*. Aſh-leaved Indian Bead-tree. Linn. Sp. Pl. 550. Cavan. Diſſ. t. 208. (Aria Bepou; Rheed. Hort. Mal. v. 4. t. 52.)—Leaves pinnate.—A native of the Eaſt Indies, flowering in June and July.—The ſtem of this tree is large and thick. The *wood* of a pale yellow; the *bark* of a dark purple, and very bitter. *Leaves* compoſed of five or ſix pairs of oblong, pointed leaflets, terminated by an odd one. Theſe are oppoſite or alternate, on long footſtalks, ſmelling diſagreeably. *Flowers* ſmall, white, lateral, in long, branching panicles. *Fruit* oval, the ſize of ſmall olives, green, turning yellow, and purple when ripe; its pulp abounds with an acrid and bitter oil, ſome of which was ſent by Dr. Roxburgh to the Preſident of the Linnæan ſociety in 1792, with the character of an excellent vermifuge.

4. M. *dubia*. Cavan. Diſſ. 364.—Leaves bipinnate; leaflets broadly lanceolate, acute, ſerrated, the terminal one larger.—Sent by M. Sonnerat to Lamarck from the Eaſt Indies.—All that we know of this ſpecies is from Cavanilles, who ſays that he ſaw a ſingle ſpecimen of it in Lamarck's herbarium without any name, but that he eaſily diſcovered it belonged either to *Trichilia* or *Melia*, and that he referred it to the latter genus from its fruit. The *flowers* reſemble thoſe of *M. Azadirachta*.

5. M. *compoſita*. Willd. n. 5.—Leaves pinnate; lower leaflets ternate, on ſtalks. Calyx and corolla downy.—A native alſo of the Eaſt Indies.—At the end of Willdenow's deſcription of this ſpecies, he ſays, that *M. dubia* of Cavanilles ſeems very nearly allied to it.—It occurs nowhere but in the above quoted author, upon whoſe ſole authority we adopt it. The pubeſcence of the *calyx*, and outer ſide of the *petals*, ſeems to be the great mark of diſtinction. The *fruit* is unknown.

Melia, in *Gardening*, compriſes plants of the deciduous and evergreen exotic tree kinds, of which the ſpecies cultivated are; the common bead-tree (M. azedarach); the evergreen bead-tree (M. ſempervirens); and the Indian evergreen bead-tree (M. azadirachta.)

Method of Culture.—Theſe different plants are all capable of being increaſed by ſeeds, which in the firſt ſort are obtained from abroad, and ſhould be ſown in pots of light rich earth in the ſpring, plunging them in a hot-bed of tanners' bark or dung, under frame and glaſſes, giving frequent waterings, and freſh air, when the plants are come up, being fully expoſed in a moderate ſhade, during the ſummer, and placed under a frame in the autumn, &c. to have the free air all winter in open weather, and be ſheltered from froſt.

But in the following March they ſhould be planted in ſeparate ſmall pots, plunged in a bark-bed, &c. Though this laſt is not abſolutely neceſſary, yet when practiſed, it greatly facilitates their rooting and early growth.

After they have been managed in this way for three or four years, and ſhifted occaſionally into larger pots; ſome of the ſtrongeſt and moſt woody plants may be planted out in the full ground under a warm wall, or in a dry ſheltered part of the ſhrubbery. The proper ſeaſon for this work is the firſt fortnight in April. And ſome plants ſhould likewiſe be placed in pots, to have the management of greenhouſe exotic plants, leſt thoſe in the open ground ſhould be deſtroyed by the froſt during the winter ſeaſon.

The ſeeds in the ſecond and third ſorts, ſhould be ſown in pots, and plunged in the bark-bed, and managed nearly as the firſt ſort; but, as being much more tender, muſt be always kept in pots, and plunged in the tan-bed in the ſtove during their early growth; afterwards, when they have acquired conſiderable ſize and ſtrength, they may be placed in the open air for a month or two in the heat of ſummer, but the reſt of the year be kept in the hot-houſe; managing them as other woody exotic ſtove plants.

It may be noticed that the laſt ſort is not common in the gardens.

In regard to the firſt ſort, it is proper for ſhrubberies and other parts in warm ſituations, as well as for the green-houſe, and the others for ſtove collections, in mixture with the more tender plants.

Melia *Terra*, in *Natural Hiſtory*, a name given by ſome authors to the *melinum*, or white earth of the iſland of Melos, uſed among the ancients in painting; but in the works of Dioſcorides and Galen ſignifying a ſubſtance of a very different kind; the melinum of the painters having been a marle, and the melia terra of the phyſicians a tripela.

The terra melia of Dioſcorides, and the ancient phyſicians, is a dry looſe, and harſh earth, found in maſſes of different ſize, and lodged among the looſer ſtrata of other matter, never making a ſtratum of itſelf. It is very firm and hard, of a pale greyiſh-white or light aſh-colour, very heavy, of a looſe, open, and ſpungy texture, and of a rough uneven, and duſty ſurface. It adheres ſlightly to the tongue, and does not ſtain the hand, and leaves a duſt after the handling, which is ſo harſh as to make a grating noiſe, when the fingers are afterwards rubbed together. It makes no efferveſcence with acids. It is found in all the iſlands of the Archipelago, and was uſed by the ancients for the ſame purpoſes with the pumices.

MELIÆ, in *Botany*, one of Juſſieu's Natural Orders of plants, the 71ſt in his ſyſtem, or eleventh of his thirteenth claſs, derives its name from the moſt familiar genus among them; ſee Melia. For the characters of the thirteenth claſs ſee Gerania and Guttiferæ. The following are the characters of *Meliæ*.

Calyx of one leaf, divided either down to the baſe, or only at the apex. *Petals* four or five, with broad claws, for the moſt part cohering at the bottom. *Stamens* of a definite number, either as many as the petals, or more generally double that number, their filaments united into a tube or cup, toothed at its ſummit, the teeth either bearing the anthers, or overtopping them when attached to their lower part, at the inſide. *Germen* ſingle; with a ſingle ſtyle; the ſtigma ſimple, or, more rarely, divided. *Fruit* either pulpy, or more generally capſular, of many cells, each containing one or two ſeeds, the valves equal in number to the cells, with partitions from the middle of each valve. The *ſtem* is ſhrubby or arboreſcent, with alternate branches. *Leaves* alternate, without ſtipulas, ſimple or compound.

The firſt ſection, with ſimple leaves, conſiſts of *Canella* of Browne, Swartz and Schreber (*Winterania* of Linnæus and Juſſieu), *Symphonia*, *Tinus*, *Geruma* of Forſkall (ſee that article), *Aitonia*, *Quiviſia* of Commerſon, and *Turræa*.

The ſecond, with compound leaves, compriſes *Ozophyllum* of Schreber (*Ticorea* of Aublet), *Sandoricum* of Rumphius, Schreber and Juſſieu, *Porteſia* of Juſſieu, *Trichilia*, *Elcaja* of Forſkall, *Guarea*, *Ekebergia*, *Melia* and *Leea*, which laſt is alſo *Aquilicia* of Linnæus. See Leea.

A third ſection is ſubjoined by Juſſieu, of genera akin to *Meliæ*. Theſe are *Swietenia* and *Cedrela*. They differ widely from the proper genera of the order in their fruit, which is in both of them a woody capſule of five valves, ſplitting from the baſe, and containing numerous, imbricated, compreſſed, winged ſeeds.

The order in queſtion is by no means one of the moſt natural in its learned author's ſyſtem; at leaſt with reſpect to the affinities of ſome of the genera which he has referred to it.

MELIANTHUS, from μελι, *honey*, and ανθος, *a flower*, ſo named from the abundance of honey which flows from *M. major* in particular, for, as Linnæus remarks, if that ſpecies be ſhaken whilſt in flower, it diſtils a ſhower of nectar. Juſſieu tells us that *Melianthus* is allied to *Tropæolum* in the hood of the calyx, and ſituation of the petals and ſtamens; but that it is more like *Dictamnus* in habit, fruit, and albumen of the ſeed. He well remarks however that it is very diſtinct from either of thoſe genera, on which ſubject there cannot be the leaſt queſtion. We are told that the Linnæan botaniſts at Paris uſed ſarcaſtically to remark that *Melianthus* was not admitted into the public garden there, becauſe no plauſible place could be found for it in the ſyſtem of the Juſſieus.—Linn. Gen. 328. Schreb. 430. Willd. Sp. Pl. v. 3. 402. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 2. 367. Tournef. t. 245. Juſſ. 297. Lamarck Illuſtr. t. 552.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Corydales*, Linn. *Rutaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, large, coloured, cloven into five, unequal ſegments, the two upper ones oblong, erect, the loweſt one very ſhort, bag-ſhaped, ſwelling downwards, the intermediate two oppoſite, interior, lanceolate. *Cor.* Petals four, linear-lanceolate, reflexed at their tips, ſpreading in a parallel manner, turned outwards, forming a lower lip (as the calyx does an upper one) connected in the centre by their ſides. Nectary of one leaf, ſituated within the loweſt ſegment of the calyx, and adhering with it to the receptacle, very ſhort, compreſſed at the ſides, cut at the margin, and turned downwards at the back. *Stam.* Filaments four, awl-ſhaped, erect, the length of the calyx, the two lower ones a little ſhorter; anthers oblong, heart-ſhaped, four-celled in front. *Piſt.* Germen ſuperior, quadrangular, gibbous, four-toothed; ſtyle erect, awl-ſhaped, in length and poſition like the ſtamens, ſtigma cloven into four ſegments, of which the upper one is the largeſt. *Peric.* Capſule quadrangular, four-lobed, with acute, diſtant angles; the cells inflated, their partitions open in the centre to admit the receptacle of the ſeeds, the valves burſting between the angles. *Seeds* four, ſomewhat globoſe, adhering to the centre of the capſule.

Eſſ. Ch. Calyx of five leaves; the lower one gibbous. Petals four. Nectary beneath the loweſt petal. Capſule four-celled.

1. M. *major*. Greater Honey-flower. Linn. Sp. Pl. 892. (M. africanus; Herm. Lugd. t. 415.)—Stipulas ſolitary, adhering to the leaf-ſtalk.—Diſcovered by Hermann at the Cape in the year 1672. It flowers in greenhouſes from May to July.—*Root* perennial, woody, ſpreading. *Stems* numerous, four or five feet high, herbaceous towards the top. *Leaves* pinnate, embracing the ſtem, greyiſh, compoſed of about three or four pairs of ovate, deeply-toothed leaflets, three or four inches long, with an odd one; a leafy, jagged border or wing running along the mid-rib connects them at their baſe. *Flowers* in a longiſh ſpike; ſpringing from between the leaves towards the top of the ſtalks, of a brown or chocolate colour.

2. M. *minor*. Leſſer Honey-flower. Linn. Sp. Pl. 892. Curt. Mag. t. 301.—Stipulas in pairs, but ſeparate. Cluſters axillary, elongated. Bracteas linear, tapering.—Native of the Cape, and cultivated in 1708 by the ducheſs of Beaufort.—*Stems* four or five feet high, branched, ſoft, round, woody. *Leaves* about half as large as in the preceding, green on the upper ſide, whitiſh beneath. *Flowers* ſix or eight in a cluſter, very ornamental, variegated with green, yellow and red or pink.—Mr. Curtis obſerves that the foliage when bruiſed has an unpleaſant ſmell; that the ſecreted honey or nectar does not flow ſo copiouſly from this as from the laſt which is more common, but that it exhibits rather an unuſual phenomenon, being retained in the lower part of the bloſſom, and of a dark brown colour.

3. M. *comoſus*. Tufted Honey-flower. Willd. n. 3. (M. africanus minor fœtidus; Comm. Rar. t. 4.) – Stipulas diſtinct. Cluſters below the leaves. Flowers alternate. Bracteas heart-ſhaped. Leaves hairy above.—A native alſo of the Cape. *Stem* upright, branched, four feet high, round. *Leaves* pinnate, conſiſting of about five pairs of linear, deeply toothed, ſoft leaflets with an odd one, hoary underneath. *Flowers* in pendent cluſters, on ſhort ſtalks, of a yellow colour.

MELIANTHUS, in *Gardening*, comprehends plants of the perennial exotic kind, of which the ſpecies cultivated are, the great honey-flower (M. major); and the ſmall honey-flower, (M. minor.)

Method of Culture.—Theſe two ſpecies of plants may be increaſed by ſuckers from the roots and cuttings of the young ſtalks or branches. The firſt ſort is, however, beſt raiſed by planting the ſuckers, or ſide-ſhoots, any time in the ſpring or ſummer ſeaſons, chooſing ſuch as are furniſhed with root fibres, in pots, or the places where they are to remain, which, after they are planted and have taken root, require little further care, but to keep them clean from weeds. The cuttings may be planted during any of the ſummer months, due water and ſhade being given. When they have taken root they ſhould be planted out where they are to remain, or in ſeparate pots, to be managed as green-houſe plants.

But the ſecond ſort is raiſed with more difficulty, and chiefly from cuttings, which ſhould be planted upon an old hot-bed, the heat of which is over, and covered cloſe with bell or hand-glaſſes to exclude the air. When they have taken root they may be planted out in pots, and ſheltered in the winter under a frame for a year or two, till they are become ſtrong, after which they may be ſet out in a warm border, and be managed in the ſame manner as the firſt ſort. And they ſucceed beſt in a dry ſoil and warm ſituation; but ſome plants ſhould always be kept in pots and treated as greenhouſe plants, leſt thoſe in the open ground be deſtroyed by ſevere froſts.

All of them afford ornament and variety in the borders and clumps, as well as among other plants in greenhouſe collections.

MELIBŒA, in *Ancient Geography*, a town of Greece, in the part of Theſſaly called Magneſia, about the preciſe ſituation of which authors differ. Strabo places it in a gulf, on the eaſtern coaſt, between mount Oſſa to the N. and mount Pelion, ſomewhat farther from the coaſt, lying from N.W. to S.E.

MELIBŒUS MONS, a mountain of Germany, which, according to Cæſar (Bell. Gall. l. vi. c. 1.) formed a ſeparation between the Cheruſci and Suevi. It was part of thoſe mountains which covered the foreſt Bacenis.—Alſo, a mountain of Italy.

MELICA, in *Botany*, a name ſuppoſed by Ambroſinus to be corrupted, either from *Miliaca*, which might expreſs the likeneſs of the graſs ſo called, to *Milium*; or from *Meline*, the name of ſome ſort of *Panicum*, which it alſo reſembles in the aſpect and diſtribution of the bloſſoms.—Linn. Gen. 34. Schreb. 48. Willd. Sp. Pl. v. 1. 381. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 91. Ait. Hort. Kew. ed. 2. v. 1. 152. Juſſ. 31. Lamarck Illuſtr. t. 44. Gærtn. t. 80.—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Gen. Ch. *Cal.* A glume of two ovate, concave, nearly equal valves, containing two flowers. *Cor.* of two ovate awnleſs valves, one of which is concave, the other flat and ſmaller. A turbinate ſtalked body, conſiſting of two abortive florets, ſtands between the two perfect ones. Nectary of one fleſhy horizontal leaf, ſurrounding the germen. *Stam.* Filaments three, capillary, thickened and united at their baſe, as long as the flower; anthers oblong, forked at each extremity. *Piſt.* Germen ſuperior, obovate, turbinate; ſtyles two, briſtle-ſhaped, ſpreading, naked at their baſe; ſtigmas oblong, feathery. *Peric.* none, except the corolla, which is not united to the ſeed. *Seed* one, ovate, with a longitudinal furrow at the upper ſide.

Obſ. The ſtalked body between the florets is conſidered by Linnæus as affording an eſſential character. This conſiſts of the abrupt rudiments of two other florets, placed in an alternate order, their glumes convolute and pellucid. To this Schrader adds that the ſtamens of the real florets are dilated and combined at their baſe, and that the nectary is of a ſingle leaf.

Eſſ. Ch. Calyx of two valves, containing uſually two florets, with the rudiment of more between them. Corolla of two valves, unconnected with the ſeed.

An elegant genus of graſſes, of which Willdenow has thirteen ſpecies, three of them Britiſh. To theſe we add two gathered by Dr. Sibthorp in Greece, a third from America, and a fourth from the Eaſt Indies. The habit of the whole genus, well marked in ſome ſpecies, is not ſo uniform throughout the whole as could be wiſhed. Neither is the number of perfect or of abortive florets conſtant in all.

1. M. *ciliata*. Fringed Melic-graſs. Linn. Sp. Pl. 97. Sm. Fl. Græc. Sibth. v. 1. 54. t. 70. (Gramen montanum, avenæ ſemine; Cluſ. Hiſt. v. 2. 219.)—The outer petal of the lower floret fringed.—Native of dry ſtony ground in the ſouth of Europe. With us it is ſometimes kept in gardens for the ſake of its long white plumpy ſpiked *panicles*. The *root* is perennial, tufted and knotty. *Stems* two or three feet high, erect, round, ſmooth, ſtiff, bearing ſeveral narrow rigid *leaves*. *Panicle* terminal, ſolitary, erect, cloſe and cylindrical, from two to ſix inches long. *Calyx* containing only one perfect, and one abortive, floret. The *glumes* are membranous and whitiſh. *Stamens* long. *Fringe* of the corolla long, denſe, and very remarkable.

2. M. *gigantea*. Gigantic Melic-graſs. Thunb. Prod. 21. (Aira villoſa; Linn. Suppl. 109.)—"Corolla hairy, awned. Panicle whorled. Stem erect."—Found by Thunberg at the Cape of Good Hope. The *root* is crowned with ovate-oblong hairy ſcales. *Stem* ſmooth. *Leaves* flat, tapering, with frequently ſhaggy ſheaths. *Panicle* terminal, a foot long. *Florets* two, large, ruſty; one of them ſmaller, and rather imperfect. *Corolla* hairy, with a ſhort, ſtraight, terminal awn.

3. M. *geniculata*. Bent-ſtalked Melic-graſs. Thunb. Prod. 21.—"Corolla hairy. Panicle compact. Stem decumbent."—Native of the Cape.

4. M. *decumbens*. Decumbent Melic-graſs. Thunb. Prod. 21.—"Corolla hairy. Flowers racemoſe, drooping. Stem decumbent."—From the ſame country. This muſt not be confounded with *M. decumbens* of Weber, which is *Feſtuca decumbens* of Linnæus, *Poa* of Fl. Brit. 107.

5. M. *racemoſa* Racemoſe Melic-graſs. Thunb. Prod. 21.—"Corolla hairy. Cluſters drooping. Stem erect."—From the Cape. We have ſeen no ſpecimens of the laſt four ſpecies.

6. M. *minuta*. Slender Melic-graſs. Linn. Mant. 32. Willd. n. 10. (M. pyramidalis; Desfont. Atlant. v. 1. 73. M. nutans; Cavan. Ic. v. 2. 58. t. 175. f. 2?) – Stem branched. Leaves ſetaceous. Petals beardleſs. Panicle ſimple, drooping.—Native of Italy, Spain, Greece and Cyprus. – This is an extremely ſlender ſmooth graſs, ſcarcely a foot high. The *ſtems* are in our ſpecimens, as Linnæus deſcribes them, very much branched. Cavanilles

ſays they are always ſimple. *Leaves* extremely narrow, perfectly ſetaceous when dry, from the inflexion of the edges; the long ſheath crowned by a membranous *ſtipula*. *Panicle*, or rather *cluſter*, ſimple, of a very few drooping flowers. The *calyx* contains two perfect florets, and the ſtalked rudiments of one or two others. All the *glumes* are obtuſe and ribbed; the *corolla* minutely downy, but not fringed or bearded.

7. M. *ſaxatilis*. Rock Melic-graſs. Sm. in Prod. Fl. Græc. Sibth. v. 1. 51. Fl. Græc. t. 71. (M. aſpera; Desfont. Atlant. v. 1. 71? Gramen avenaceum ſaxatile, paniculâ ſparſâ, locuſtis latioribus candicantibus et nitidis; Tourn. Inſt. 524?)—Stem ſimple. Petals beardleſs. Panicle cloſe, directed one way. Flowers drooping. Stipula elongated.—Frequent on riſing ground in the iſlands of the Archipelago. It has the habit of the laſt, but is much larger in every part, and the *ſtems* are ſimple, *panicle* of a much greater number of *flowers*, with ſharper glumes. The *panicle* agrees with that of the Britiſh *M. nutans*, hereafter mentioned, but the *foliage* is narrower, and the *ſtipula* more elongated than in that ſpecies. There is ſome reaſon to ſuſpect the ſynonym of Cavanilles, which we have cited for the foregoing, may belong to this; but no ſtreſs can be laid on his delineations of the minuter parts.

8. M. *nutans*. Mountain Melic-graſs. Linn. Sp. Pl. 98. Curt. Lond. faſc. 6. t. 4. Engl. Bot. t. 1059. Knapp. t. 42. Mart. Ruſt. t. 65. (M. montana; Hudſ. 37.)—Petals beardleſs. Panicle compact, leaning one way, nearly ſimple. Flowers drooping. Calyx two-flowered. Leaves flat.—Found in mountainous woods, chiefly in the north of Europe. With us it is confined to Weſtmoreland and the north-weſt part of Yorkſhire, where it flowers in the early part of ſummer. The *root* is fibrous and perennial. *Stems* ſeveral, above a foot high, leafy, ſlender and naked above, with rough angles. *Leaves* lanceolate, flat, rough-edged, with a long rough ſheath, and a very ſhort jagged *ſtipula*. *Panicle* long, erect or ſlightly incurved, almoſt always ſimple, of many elegant purpliſh pendulous *flowers*, leaning one way. *Florets* two, with the unequal rudiments of two more. *Glumes* bluntiſh, with a white membranous termination. The *nectary* in this ſpecies anſwers to Schreber's deſcription, but ſcarcely, we fear, in all.

9. M. *uniflora*. Wood Melic-graſs. Retz. Obſ. faſc. 1. 10. Curt. Lond. faſc. 5. t. 10. Engl. Bot. t. 1058. Knapp. t. 41. Mart. Ruſt. t. 64. (M. Lobelii; Villars Dauph. v. 1. 89. t. 3. M. nutans; Hudſ. 37.)—Petals beardleſs. Panicle branched, leaning one way. Flowers erect. Calyx ſingle-flowered. Leaves flat.—Common in groves and buſhy places in England and moſt parts of Europe, flowering in May and June, when its little red tumid flowers, trembling upon the divaricated wiry ſtalks of the panicle, make a very pretty appearance. The *root* is fibrous and perennial. *Stems* ſimple, a foot and half high, ſlender. *Leaves* flat and broadiſh, thin, bright green, rough at the back and edges, with a downy ſheath and ſhort variouſly-ſhaped *ſtipula*. *Panicle* of not many flowers; its lower branches two together. The ſingle fertile *floret* is oval, tumid, with ribbed green glumes; the barren one likewiſe ſolitary, on a thick inflexed ſtalk.

10. M. *major*. Greater Melic-graſs. Sm. Prod. Fl. Græc. Sibth. v. 1. 51. (M. n. 31; Gmel. Sib. v. 1. 99. t. 19. f. 1.)—Petals beardleſs. Panicle ſpreading; with branches in pairs. Flowers drooping. Stem ſimple. Leaves involute and pungent.—Native of Greece, France, and Siberia, in mountainous places. There is ſome reaſon to ſuſpect this ſpecies to be what Dr. Sibthorp took for *M. nutans*, and put down as ſuch in his liſts of Greek plants, the latter not being found in his herbarium, nor this noticed by any other appellation. The plants however are very diſtinct. The *major* has a branched panicle, more like the *uniflora*, but the *calyx* contains from two to four florets, beſides an abortive one, their *corolla* moſtly briſtly at the back. The *leaves* are flat when growing, but rolled in when dry, with a ſharp rigid point. We believe this has been called *M. amethyſtina* by the abbè Pourret.

11. M. *ramoſa*. Branched Cape Melic-graſs. Thunb. Prod. 21.—"Petals ſmooth, beardleſs. Panicle compact. Stem branched."—Gathered by Thunberg, at the Cape of Good Hope.

12. M. *capenſis*. Spreading Cape Melic-graſs. Thunb. Prod. 21.—"Petals ſmooth, beardleſs. Panicle widely ſpreading. Leaves nearly thread-ſhaped."—From the ſame country. We have ſeen neither of theſe laſt, but their characters mark them as very diſtinct.

13 M. *papilionacea*. Fly Melic-graſs. Linn. Mant. 31. Willd. n. 12. (M. braſiliana; Arduin. Spec. 2. 17. t. 6. f. 1, 2.)—Panicle cloſe. Outer valve of the calyx very large, obovate, coloured. Outer petals with toothed ribs, ſomewhat hairy.—The ſeeds of this curious graſs were ſent from Braſil to Arduino, who raiſed them at Padua in 1756, and thinking it might form a new genus, as appears by his ſpecimen, ſent it to Linnæus, who juſtly referred it to *Melica*. Commerſon gathered the ſame at Monte Video. The *ſtems* are eighteen inches high, ſimple, erect. *Leaves* broadiſh, ſomewhat involute in drying, their ſheaths crowned by a long cloven *ſtipula*. *Panicle* branched, but compact. *Flowers* erect, remarkable for the large purple outer glume of their *calyx*, which embraces the whole of the ſpikelet, the inner glume being elevated on the ſtalk within, much narrower and more rigid, like the *corolla*, whoſe outer glumes have very ſtrong, tuberculated, and ſomewhat hairy, ribs. The *florets* are two with one or two abortive ones.

14. M. *altiſſima*. Tall Melic-graſs. Linn. Sp. Pl. 98. Hoſt. Gram. Auſtr. v. 2. 8. t. 9 Ehrh. Calam. 71. (M. n. 30. Gmel. Sib. v. 1. 98. t. 20.)—Panicle cloſe, many-flowered. Calyx-glumes obovate, nearly equal, rather ſhorter than the florets. Outer petals roughiſh, beardleſs. Leaves lanceolate, broad.—Native of Siberia. A tall and very handſome graſs, with flat *leaves* half an inch in breadth, and a very long, upright, cloſe, branched *panicle*, compound of innumerable crowded purple *flowers*, turned to one ſide. The above ſpecific character diſtinguiſhes it from the laſt, which it much reſembles at firſt ſight.

15. M. *glabra*. Smooth American Melic-graſs. Michaux Boreal-Amer. v. 1. 62. (M. altiſſima et mutica; Walt. Carol. 78? *Michaux*. Gramen avenaceum, locuſtis rarioribus muticis, virginianum majus; Moriſ. v. 3. 216. ſect 8. t. 7. f. 51.)—Panicle widely ſpreading, with branches in pairs. Flowers erect. Calyx-glumes elliptical, nearly equal, rather ſhorter than the florets. Petals ſmooth, beardleſs. Leaves linear.—Native of North America, from Virginia to Florida. *Michaux*. Linnæus referred the ſynonym of Moriſon to his *altiſſima*, having probably never ſeen the preſent ſpecies, which differs from that in its narrower *leaves*, ſpreading *panicle*, and ſmooth *flowers*. The *ſtem* is two or three feet high. Willdenow, who cites this as a variety of the laſt, ſtill expreſſes his opinion of its being undoubtedly a different ſpecies.

16. M. *cærulea*. Purple Melic-graſs. Linn. Mant. 2. 325. Ehrh. Calam. 91. Curt. Lond. faſc. 5. t. 11. Engl. Bot. t. 750. Knapp. t. 40. (Aira cærulea; Linn. Sp. Pl. 95. Hudſ. 33. Fl. Dan. t. 239.)—Panicle cloſe, much branched. Flowers erect, cylindrical. Calyx-glumes much ſhorter than the florets. Petals acute, angular, ſmooth and

beardleſs.—Native of various parts of Europe, generally on the moſt barren ſandy moors, or inundated heaths, flowering in Auguſt. This is a very coarſe rigid uſeleſs graſs, varying greatly in height and luxuriance according to the ſoil. Its habit is reed-like. *Leaves* taper-pointed and pungent, involute in drying, of a glaucous aſpect, broad and ſheathing at the baſe, with hairs in the place of a *ſtipula*. *Panicle* erect, cloſe, repeatedly branched, conſiſting of numerous, ſmall, upright *flowers*, of a blueiſh-purple hue, pale when growing in the ſhade. *Calyx* of two unequal ovate, acute valves. *Florets* four, elongated, much exceeding the calyx, acute, angular rather than ribbed, ſmooth and beardleſs, the two lower ones only complete and fertile. *Anthers* violet, almoſt black. The habit of this is very diſſimilar to all the foregoing, and its flowers in particular more reſemble the next.

17. M. *diandra*. Broad-leaved Diandrous Melic-graſs. Roxb. MSS.—Panicle corymboſe, of numerous, ſlender, many-flowered branches. Flowers erect, ovate. Glumes all ſharp-pointed, keeled, ſmooth. Leaves ovato-lanceolate, reticulated.—Native of Calcutta. This has the habit of *Arundo Phragmites*. The *ſtem* is clothed with ſeveral alternate, broad, lanceolate, acute *leaves*, ſomewhat ovate at their baſe, with long, fringed, cloſe *ſheaths*. They have rough edges, and many ribs, connected by tranſverſe reticulations. The *panicle* is level-topped, compoſed of numerous, ſlender, cloſe, racemoſe branches. *Flowers* purpliſh, ſhining, ſmooth, rather ſmaller, as well as more compreſſed, than in the laſt, all their glumes very ſharp-pointed. By the name we preſume there are but two *ſtamens*. The inner *petal* ſeems to be coarſely fringed, at leaſt in the upper and imperfect floret.

M. *Falx*, Linn. Suppl. 109, is referred by Thunberg to *Cynoſurus*, ſee *C. Falcatus*, ſp. 4. He is followed by Willdenow, and the habit as well as characters of this very curious graſs ſtrongly juſtify the meaſure.

Melica is alſo a word uſed by the ancients as the name of a food of a refrigerating and moiſtening quality. It ſeems to have been a kind of *oxygala;* for Galen, when he directs perſons of a hot habit to uſe a refrigerating diet, among other aliments of that kind, directs the eating of melica, which, he ſays, is prepared of milk. Conſtantine, in his book of agriculture, mentions melica, and ſays it was made by pouring milk into an earthen veſſel, firſt well impregnated with boiling hot vinegar, by means of which there was a ſeparation of the milk into whey and curd.

MELICERIA, or Melicériola, in *Surgery*, a ſmall encyſted tumour, the contents of which are of the conſiſtence of honey.

MELICERIS, (from μελι, *honey*, and κηρος, *wax*), an encyſted tumour, filled with matter, that has the appearance and conſiſtence of honey. See Tumour.

MELICHRUS, in *Botany*, from μελιχρος, *honey-coloured*, alluding, we preſume, to the colour of the flowers; eſpecially as the maſculine gender is adopted in the ſpecific names. Otherwiſe the latter would have been, as uſual, feminine, ποα, or *herba*, being underſtood.—Brown. Prod. Nov. Holl. v. 1. 539.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of many leaves, erect, permanent; the five innermoſt longeſt, equal, lanceolate, concave. *Cor.* of one petal, wheel-ſhaped, or pitcher-ſhaped, in five equal ſegments, bearded half way, and with five cluſters of glands near its baſe. Nectary a glandular, nearly entire, cup, ſurrounding the baſe of the germen. *Stam.* Filaments five, thread-ſhaped, equal, inſerted into the baſe of the corolla; anthers incumbent, oblong, burſting lengthwiſe, ſlightly projecting. *Piſt.* Germen ſuperior, roundiſh; ſtyle columnar; ſtigma capitate. *Peric.* Drupa nearly dry, with a hard ſhell. *Nut* of five cells. *Seeds* ſolitary?

Eſſ. Ch. Outer calyx of many leaves. Corolla five-cleft, wheel or pitcher-ſhaped, bearded half way, with five cluſters of glands near the baſe. Drupa dry, of five cells.

This genus conſiſts of two ſpecies of ſmall *ſhrubs*, which are procumbent, or nearly ſo, with lanceolate *leaves*. The *flowers* are axillary, ſolitary, erect.

1. M. *rotatus*. Br. (Vintenatia procumbens; Cavan. Ic. v. 4. 28. t. 349. f. 1.)—Corolla wheel-ſhaped. Calyx hairy. Leaves nearly linear, hairy on both ſides and at the edges.—Native of New South Wales, as well as of the tropical part of New Holland. The *ſtem* is much branched, procumbent. *Branches* clothed with ſeveral rows of imbricated, linear-lanceolate, acute, entire *leaves*, about an inch long, ſomewhat glaucous, clothed and fringed with ſoft hairs, and ſtriated with numerous ribs. *Flowers* numerous, axillary, ſolitary, ſeſſile. *Calyx* looſely covered with long, ſoft, white hairs. Segments of the *corolla* acute, broad at the baſe; Cavanilles repreſents them much too narrow; each is bearded with long hairs from beyond the middle to the point. There appears to be more of a tube than properly belongs to a wheel-ſhaped *corolla*, but our ſpecimens are not ſufficient to determine that point.

2. M. *urceolatus*. Br.—Corolla pitcher-ſhaped. Calyx ſmooth. Leaves lanceolate, taper-pointed, minutely toothed.—Gathered near Port Jackſon by Mr. Ferdinand Bauer.

The other ſpecies of *Vintenatia*, *humifuſa*, Cavan. Ic. v. 4. 28. t. 348, is referred by Mr. Brown to a diſtinct genus, *Aſtroloma*, Prod. Nov. Holl. v. 1. 538, in which the tube of the *corolla* is inflated, and twice the length of the *calyx;* its limb ſhort, ſpreading, bearded. Theſe differences are by no means ſtrikingly indicated in Cavanilles' figures, nor do they there appear to us ſufficient to divide plants in other reſpects ſo nearly alike. We can indeed judge but imperfectly from dried ſpecimens, or from ſuch delineations. Neither can we account for the ſpelling of the name, which was intended to commemorate the late M. Ventenat.

MELICOCCA, from μελι, *honey*, and κοκκος, *a berry*, ſo named by Dr. Patrick Browne from the ſweetneſs or mellowneſs of its fruit.—The Genip Tree.—Browne Jam. 210. Jacq. Amer. 108. Linn. Gen. 188. Schreb. 254. Willd. Sp. Pl. v. 2. 330. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 350. Swartz Obſ. 144. Juſſ. 248. Lamarck Illuſtr. t. 306. Gærtn. t. 42.—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Trihilatæ*, Linn. *Sapindi*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of four, ovate, concave, obtuſe, ſpreading leaves. *Cor.* Petals four, oblong, equal, reflexed between the calyx-leaves. *Stam.* Filaments eight, awl-ſhaped, erect, ſhort; anthers oblong, erect. *Piſt.* Germen ſuperior, ovate, nearly the length of the corolla; ſtyle very ſhort; ſtigma large, rather peltate, extended at each ſide, oblique. *Peric.* Drupa covered with a tough ſkin, roundiſh, obtuſely pointed. *Seed* a leathery, roundiſh, ſmooth nut.

Obſ. In Gærtner's deſcription of *Melicocca* the *Pericarp* is ſaid to be an ovate, pointed, leathery, thickiſh *Berry*, of one cell. The *ſeeds* ſolitary (rarely two or three), ovate, furrowed on one ſide, coated with a glutinous pulp.

Eſſ. Ch. Calyx deeply four-cleft. Petals four, reflexed between the calyx-leaves. Stigma ſhield-like. Drupa with a tough coat.

1. M. *bijuga*. Genip Tree, or Honey-berry. Linn. Sp. Pl. 495. Jacq. Amer. t. 72. (Nux americana, foliis alatis bifidis; Comm. Hort. v. 1. 183. t. 94.)—A native of South America and cultivated in the Eaſt Indies. Introduced into

this country in 1778 by Dr. Thomas Clarke. We learn from Browne's Hiſtory of Jamaica that this tree was brought to that iſland from Surinam. He calls it Genip tree from the Dutch *Knippen*. The Spaniards term it *Monos*. Jacquin mentions it as growing wild about Carthagena, and commonly cultivated at Curaçao. The *ſtem* of this tree riſes to nearly twenty feet in height, and has numerous ſpreading branches. *Leaves* abruptly pinnate, on round, elongated, or rather compreſſed ſtalks, conſiſting of two pair of nearly ſeſſile, ovate leaflets, acuminate at both ends, entire, nerved, ſmooth, bright green. *Flowers* in terminal, compound cluſters of a yellow colour. *Fruit* about twice as large as a nutmeg, containing a ſweet, acid, gelatinous ſubſtance like the yolk of an egg.

"Jacquin was informed at Curaçao that this genus was *diœcious*, but Swartz aſcertained it to be *polygamous*, one tree bearing perfect flowers, another only male ones; the latter is moſt common and bears the fineſt flowers: they expand in April and the fruit ripens about Midſummer."

MELICOPE, a name conſtructed by Forſter, from μελι, *honey*, and κοπη, *an inciſion*, the nectary being compoſed of a ſeries of notched glands. Forſt. Gen. t. 28. Schreb. 257. Willd. Sp. Pl. v. 2. 346. Mart. Mill. Dict. v. 3. Juſſ. 429. append. 453 Lamarck Dict. v. 4. 60. Illuſtr. t. 294. (Entoganum; Banks and Soland. MSS. Gærtn. t. 68.)—Claſs and order, *Octandria Monogynia.*—Nat. Ord. *Rutaceæ?*

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in four deep, equal, roundiſh ſegments, permanent. *Cor.* Petals four, equal, ovate-oblong, with a little blunt point, keeled, broad at the baſe, ſlightly ſpreading. Nectary of four large cloven glands, encompaſſing the baſe of the germen. *Stam.* Filaments eight, awl-ſhaped, equal, ſimple, ſmooth, ſhorter than the petals, inſerted into the receptacle on the outſide of the nectary; anthers terminal, erect, oblong, ſomewhat heart-ſhaped, ſimple, of two cells. *Piſt.* Germen ſuperior, ovate, four-lobed; ſtyle quadrangular, ſhort; ſtigma dilated, quadrangular, umbilicated. *Peric.* Capſules four, elliptical, compreſſed, ſpreading, of one cell, opening at the upper margin. *Seeds* ſolitary, compreſſed, ſmooth, ſtalked.

Eſſ. Ch. Calyx in four deep ſegments. Petals four. Nectary of four cloven glands round the germen. Stamens ſimple. Stigma dilated. Capſules four, ſingle-ſeeded.

1. M. *ternata.* Forſt. Prod. 28. (Entoganum lævigatum; Gærtn. v. 1. 331.)—Gathered by Forſter in New Zeeland. The only known ſpecies. A *ſhrub*, with ſmooth, round, leafy *branches*; the young ones ſomewhat quadrangular. *Leaves* oppoſite, ſtalked, ternate; *leaflets* an inch or inch and a half long, obovate, bluntly pointed, very obſcurely and irregularly crenate, rather thickened or bordered at the margin, tapering at the baſe, ſingle-ribbed, with a few oblique forked veins, quite ſmooth, of a pale green when dry, full of ſmall, pellucid, reſinous dots; the terminal leaflet larger than the reſt. Common *footſtalk* about an inch long, linear, channelled, ſmooth. The lower *leaves* on each branch are ſimple, and ſmaller. *Stipulas* none. *Flower-ſtalks* axillary, ſolitary, ſhorter than the leaves, forked, or perhaps ſomewhat corymboſe, ſmooth, ſlightly angular, with a pair of minute, concave *bracteas* at each ſubdiviſion. Whenever any of the ſtalks fall off, a broad pale peltate ſcar is left behind on the branch. *Flowers* about a quarter of an inch in diameter, white or yellowiſh, each on a quadrangular partial ſtalk, a quarter of an inch long, dilated upwards under the calyx. *Capſules* ſpreading in four directions, ſomewhat leathery, ſmooth, each a quarter of an inch long.

Of this very little-known ſhrub we have ſeen but one mutilated ſpecimen, given by Forſter to Linnæus. Nothing is ſaid by the author of the genus, any more than by Solander or Gærtner, to indicate its affinity to any other, nor could Juſſieu form even a conjecture on the ſubject. The ſhape, and reſinous dots, of the leaves, as well as the pallid hue which they, like the other parts, aſſume in drying, and even the aſpect of the flowers, whoſe petals are full of reſinous dots, all ſeem to indicate the natural order of *Aurantia*. But theſe characters, except perhaps the pale colour, equally belong to the *Rutaceæ*, at leaſt to thoſe genera which are ſubjoined by Juſſieu to that natural order, and of which *Dioſma* is the type; and the fruit ſtrongly confirms the propriety of referring *Melicope* to them. With theſe Juſſieu was but ſlightly acquainted. There are numerous genera of this tribe in New Holland (ſee CORRÆA, CROWEA, ERIOSTEMON); as well as *Boronia*, Sm. Tracts 287. t. 4—7, and *Tetratheca*, Sm. Exot. Bot. t. 20—22. The infloreſcence of the genus before us, as far as can be diſcovered from our bad ſpecimen, ſeems very nearly that of *Boronia pinnata*, Andr. Repoſ. t. 58. Its ſimple filaments and anthers, and, according to Gærtner's deſcription, the want of an *arillus* to the ſeeds, are circumſtances in which it differs from *Boronia* and moſt of its allies. The flavour of the dried leaves is a little bitter, ſcarcely aromatic. S.

MELICUCCA, in *Geography*, a town of Naples, in Calabria Ultra; 10 miles W.S.W. of Oppido.

MELICYTUS, in *Botany*, ſo named by Forſter, from μελι, *honey*, and κυτος, *a cavity* or *cell*, alluding to the five oblong bodies, hollowed out at their ſummits, which he conceived to be nectaries bearing the anthers. Forſt. Gen. t. 62. Schreb. 685. Mart. Mill. Dict. v. 3. Juſſ. 428. Lamarck Dict. v. 4. 59. Illuſtr. t. 812. Gærtn. t. 44. Claſs and order, *Dioecia Pentandria.* Nat. Ord. *Euphorbiæ?*

Gen. Ch. Male, *Cal.* Perianth very ſhort, with five teeth. *Cor.* Petals five, equal, ovate, acute, widely ſpreading, longer than the calyx. Nectary of five club-ſhaped bodies, hollowed out at the top, erect, bearing the ſtamens at their inſide. *Stam.* Filaments none, except the nectaries be ſo conſidered; anthers five, roundiſh-ovate, with four furrows in front, attached lengthwiſe to the inner ſide of the nectaries, and extending ſlightly beyond them.

Female, *Cal.* and *Cor.* as in the male. Nectary of five triangular acute ſcales, ſhorter than the calyx, ſurrounding the germen cloſely at its baſe. *Piſt.* Germen ovate; ſtyle none; ſtigma of four or five ſmall, flat, rounded lobes. *Peric.* Capſule pulpy, globoſe, ſmooth, coriaceous, of one cell, with four or five valves. *Seeds* about five, convex on one ſide, angular on the other, lodged in pulp.

Eſſ. Ch. Male, Calyx with five teeth. Petals five. Nectary of five hollow-tipped bodies, bearing the ſtamens.

Female, Cal. and Cor. as in the male. Nectary of five ſcales round the germen. Stigma ſeſſile, four or five-lobed. Capſule pulpy, of one cell and five valves. Seeds five.

1. M. *ramiflorus.* Forſt. Prod. 70.—Native of the neighbourhood of Queen Charlotte's Sound, New Zeeland, flowering there in November. A *ſhrub*, or *tree*, with round, ſmooth, leafy *branches*. *Leaves* deciduous, ſcattered, on ſhort ſmooth footſtalks, elliptic-lanceolate or obovate, obtuſe, bluntly ſerrated, ſmooth on both ſides, with one rib and numerous interbranching reticulated veins, each leaf an inch and a half or two inches long, and nearly one broad. *Flower-ſtalks* ſeveral together, from ſcattered lateral or axillary buds, each about a quarter of an inch long, ſwelling upwards, ſimple, ſmooth, bearing about the middle a minute fringed concave *bractea*, ſingle-flowered. *Flowers* very minute, whitiſh.

Juſſieu knew not where to place this genus in his natural orders, but was led by its artificial characters, as it ſeems, to ſuppoſe it akin to *Aſtronium* of Jacquin and Linnæus. Gærtner having the fruit, which Forſter knew nothing of, more happily perceived its relationſhip to Kiggelaria. (See that article, and Astronium.) This relationſhip has induced us to refer *Melicytus* to the *Euphorbiæ* of the great French botaniſt, notwithſtanding the preſence of petals, which that natural order, it ſeems, ought to be without. We cannot however be ſo far led by hypotheſis as to deny real petals to *Kiggelaria*.

MELIDES, in *Geography*, a town of Portugal, in the province of Eſtramadura; 21 miles S. of Setuval.

MELILITE. This ſcarce mineral ſubſtance has hitherto been found only in minute but very regular cubic or parallelepipedic cryſtals: they are of the ſize of a millet ſeed, of a yellow colour, and externally covered by a browniſh or gold yellow cruſt of iron ochre. Their hardneſs is ſufficient to ſcratch ſteel.

The melilite melts before the blowpipe, without effervescence, into a tranſparent ſolid glaſs of a greeniſh colour. Its powder forms a tranſparent jelly with nitric acid. It is not pyro-electric.

By theſe characters this microſcopic mineral is ſufficiently diſtinguiſhable from meſotype, ſtilbite, chabaſie, and analcime, to which it bears ſome diſtant reſemblance.

The cubic cryſtals of the melilite paſs into the cuneiform octahedron.

Theſe ſmall cryſtals were diſcovered by M. Fleurieu de Bellevue in the fiſſures of a black, pretty compact lava, known under the name of *ſelce romano*, found at Capo di Bove, near Rome. They are accompanied by ſmall, white, tranſparent, acicular cryſtals, which appear to belong to ſommite or nepheline. Brongn

MELILLA, or Melela, in *Geography*, a town of Africa, in the kingdom of Fez, ſituated on the coaſt of the Mediterranean, and belonging to the Spaniards. It was probably founded by the Carthaginians, and ſeems to have derived its name from the honey produced in its environs. The town is ſtrongly fortified and ſurrounded by the ſea. The only communication with the main land, inhabited by the Moors, is by a draw-bridge. It was abandoned by the Goths when the Arabs invaded the country, and being deſerted by the Moors, was ſeized on by the Spaniards about the beginning of the 15th century. This town has large magazines and ciſterns for preſerving the water. The number of inhabitants is eſtimated at 2000; 140 miles E. of Tetuan. N. lat. 35° 24′. W. long. 2° 54′.

MELILLI, a town of Sicily, ſituated on mount Hybla, famous for its excellent honey, to which it owes its name; as well as alſo to the fertility of the adjacent territory, or the ſugar-canes once cultivated there, but now abandoned.

MELILOBUS, in *Botany*, (from μελι, *honey*, and λοβος, *a pod*, or *legume*, alluding to the ſweet pulp in which the ſeeds are lodged,) the original name given by Mitchell to the *Gleditſia* of Clayton and Linnæus, and undoubtedly a very expreſſive one. It is much to be wiſhed that ſuch ſhould always have a preference; and that no genus ſhould ever be conſecrated to any botaniſt, till an expreſſive name, of Greek or Latin derivation, had firſt been ſought in vain. But alas! this is like wiſhing for honeſty and diſintereſtedneſs in thoſe who elect, and thoſe who are elected.

MELILOT, a ſpecies of trefoil, or *trifolium;* which ſee. (See Melilotus.) This plant grows wild in moſt parts of Europe, in corn-fields, paſtures, and by way-ſides. Among bread-corn it is a troubleſome weed; and ripening about the ſame time with the corn, is often ground with it, being difficult to ſeparate from it: in ſuch a caſe it ſpoils the bread, or whatever the flour is uſed for, by giving it a ſtrong taſte, like the plaſter made from it.

Melilot is ſcarcely ever given internally; but uſed externally, it was formerly eſteemed emollient and digeſtive, and was employed as an ingredient in cataplaſms, fomentations, and bliſter-plaſters; but it is now laid aſide as being rather acrid and irritating than emollient. The flowers have been recommended by ſome in infuſion, in the manner of thoſe of chamomile, as a remedy for the fluor albus. It formerly gave the name to one of the officinal plaſters, which received from the melilot a green colour and an unpleaſant ſmell, without any addition to its efficacy.

MELILOTUS, μελιλωτος of Dioſcorides, appears to be the *Trifolium Melilotus-officinalis* of Linnæus, which Dr. Sibthorp found growing wild, in low moiſt ſituations, in Attica and different parts of Greece. This ingenious and learned traveller ſuſpected the other kind, which is mentioned by the above Greek writer as of a yellower colour and weaker ſcent, and growing about Nola in Campania, might be *T. Melilotus-italica*, which is found on the dry ground of Mount Hymettus, near Athens. Dr. Sibthorp obſerved the figure in the famous ancient manuſcript at Vienna, to be evidently intended for one of theſe ſpecies.

MELIN, in *Geography*, a town of Croatia; 12 miles S.S.W. of Varaſdin.

MELINDA, a kingdom of Africa, ſituated near the coaſt of the Indian ſea. This country is for the moſt part fertile, producing almoſt all the neceſſaries of life, except wheat and rice, for want of which, thoſe who cannot purchaſe them are ſupplied with potatoes, which are here large and plentiful. They abound with other roots and fruits, and with melons of excellent quality. Citrons here are abundant, and agreeably perfume the air during the greateſt part of the year. They have alſo plenty of veniſon, game, oxen, ſheep, geeſe, and other poultry; and a breed of ſheep, whoſe tails weigh in general between twenty and thirty pounds. The men are black, ſwarthy, tawny, and white, and the women chiefly of an olive colour; their dreſs is elegant, conſiſting of fine ſilks, girt with rich gold or ſilver girdles, collars, and bracelets, and their heads are covered with veils. The men wear a kind of turban; and in other reſpects their dreſs conſiſts of a piece of cotton wrapped round the middle, and reaching below the knees, the other parts of the body being naked. Thoſe of the meaner claſs, and ſuch as live in the interior of the country, wear little elſe beſides a piece of cloth about their middle, except their ſhield and military weapons, which are the bow and arrows, the ſcymetar, and the javelin. Their religion is chiefly Mahometan; with a mixture of idolaters; and their government is monarchical, the king being treated with great reſpect and veneration by his ſubjects: and accompanied with attendants, who preſent him with incenſe and perfumes, whenever he goes abroad, and ladies who pay their homage to him with ſongs and ſeveral kinds of muſical inſtruments. The prince of this country was formerly tributary to the Portugueſe; but they are now obliged to purchaſe, by annual preſents, permiſſion to trade, and to ſearch for gold. Adjoining to Melinda are five other kingdoms, to which the connection and influence of the Portugueſe extend. The natives, beſides their commerce with the Portugueſe, carry on ſome trade with their own veſſels, in which they frequent the Red ſea, and Arabian ports; and they ſometimes traverſe the Indian ſeas, as far as Cambaya, in the territories of the great Mogul. On the other hand, the Arabians and Indians bring goods to Melinda: but the whole trade, which is little inferior to that of Mozambique, is ultimately tranſacted with the Portugueſe.

tugueſe. The articles brought to Melinda are gold from Sofala; as well as ivory, copper, quickſilver, all ſorts of ſilks and cottons from Europe and the Eaſt Indies, together with ſpices, rice, and other grain.

Melinda, the capital of the above-deſcribed kingdom, pleaſantly ſituated on a beautiful plain near the coaſt of the Indian ſea, and ſurrounded by fine gardens and orchards, producing all ſorts of fruit-trees, eſpecially citrons and oranges. The houſes are built of ſquare ſtone; many of them being conſtructed in a magnificent ſtyle, and all richly furniſhed, for the ſtated reſidence of rich merchants, and the occaſional reſort of foreigners, who carry on an extenſive commerce in gold, copper, quickſilver, ivory, wax, and drugs, in exchange for ſilk, cottons, linen cloths, corn, and other commodities. The harbour is difficult of acceſs, on account of rocks and ſhelves that intercept the approach to it, and oblige veſſels to come to anchorage at ſome diſtance from it. The warehouſes at Melinda ſupply the country with European goods to a great diſtance within land, where they procure vaſt quantities of ivory. This city was wholly built by the Portugueſe, and is ſaid to contain 30,000 Portugueſe, beſides natives; and includes ſeventeen Chriſtian churches, together with other religious houſes. S. lat. 3° 5′. E long. 42° 40′.

Melinda, one of the Querimba iſlands, in the Indian ſea. S. lat. 10° 30′.

MELINGEN, a town of Switzerland, on the Ruſs; 43 miles N.E. of Berne. N. lat. 47° 10′. E. long. 8° 15′.

MELINUM, in *Natural Hiſtory*, the name of an earth, famous in the earlieſt ages of painting, being the only white of the great painters of antiquity; and, according to Pliny's account, one of the colours with which alone they performed all their works.

It is a fine white marly earth, of a very compact texture, yet remarkably light; a ſort of texture which muſt render any earth fit for the painter's uſe, that is of a proper colour. It is frequently found forming a ſtratum in the earth, lying immediately under the vegetable mould. It is of a very ſmooth, but not gloſſy ſurface; is very ſoft to the touch, adheres firmly to the tongue, is eaſily broken between the fingers, and ſtains the ſkin in handling. It melts readily in the mouth, and is perfectly fine, leaving not the leaſt grittineſs between the teeth. Thrown into water, it makes a great bubbling and loud hiſſing noiſe, and moulders away into a fine powder. It does not ferment with acids, and ſuffers no change in the fire. Theſe are the characters by which the melinum of the ancients is diſtinguiſhed from all the other white earths. It is ſtill found in the ſame place from whence the painters of old had it, which is that from whence it has its name, the iſland of Milo, called Melos by the Greeks, and is common in moſt of the adjacent iſlands. It has been of late tried here as a paint, and is found not to make ſo bright a white as the other ſubſtances now in uſe among the painters, but ſeems not liable, like them, to turn yellow; and if ſo, would be worth the conſideration of perſons in the colour-trade, eſpecially as it may be had in any quantities for carriage.

MELINUS Color, Μηλινον χρωμα, in *Antiquity*, a colour often mentioned in ſpeaking of the habits of players. It was a reddiſh-yellow, of the colour of ripe apples, in Greek called μηλα, and their colour μηλοειδες χρωμα.

MELIPILLA, in *Geography*, a town of South America, and capital of a juriſdiction in the kingdom of Chili; 42 miles S.E. of Valparaiſo. S. lat. 33° 28′. W. long. 70° 7′.

MELIPU, a river of Ceylon, which runs into the ſea near Matara.

MELIS, a town of Germany, in the principality of Gotha; 16 miles S. of Gotha.

MELISANA, a town of Italy, in the country of Friuli; 6 miles S. of Palma Nuova.

MELISEY, a town of France, in the department of the Upper Saone, and chief place of a canton, in the diſtrict of Lure. The place contains 1499, and the canton 10,130 inhabitants, on a territory of 187½ kiliometres, in 12 communes.

MELISMATICO Stylo. See Style.

MELISSA, in *Botany*, from μελισσα, the Greek name of a bee; or rather, as that name itſelf, like the ancient proper names *Meliſſa* and *Meliſſus*, alſo originated from μελι, *honey*, becauſe of the abundant and excellent honey of the flowers of this herb, for which bees are ſaid greatly to frequent them.—Balm.—Linn. Gen. 298. Schreb. 394. Willd. Sp. Pl. v. 3. 146. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 416. Juſſ. 115. Tourn. t. 92. Lamarck Dict. v. 4. 76. Illuſtr. t. 512. (Horminum; Linn. Gen. 299. Juſſ. 116. Lamarck Dict. v. 3. 136. Illuſtr. t. 515.)—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, nearly bell-ſhaped, rather dry and ſcarioſe, ſomewhat gaping, angular, ſtriated, permanent, its mouth two-lipped; *upper lip* three-toothed, bent backwards, flat; *lower* ſhorter, ſharpiſh, deeply cloven. *Cor.* of one petal, ringent; *tube* cylindrical; mouth gaping; *upper lip* ſhorteſt, erect, vaulted, roundiſh, cloven; *lower* three-cleft, the middle ſegment largeſt and heart-ſhaped. *Stam.* Filaments four, awl-ſhaped, two of them the length of the corolla, two but half ſo long; anthers ſmall, cohering in pairs. *Piſt.* Germen four-cleft; ſtyle thread-ſhaped, the length of the corolla, curved with the ſtamens under the upper lip of the corolla; ſtigma ſlender, cloven, reflexed. *Peric.* none, except the enlarged, but otherwiſe unaltered calyx. *Seeds* in the bottom of the calyx, four, ovate.

Eſſ. Ch. Calyx ſcarioſe, flattiſh on the upper ſide; its upper lip with three nearly level-pointed teeth. Upper lip of the corolla ſomewhat vaulted, cloven; middle lobe of the lower lip heart-ſhaped.

1. M. *officinalis*. Common Garden Balm. Linn. Sp. Pl. 827. Sm. Prod. Fl. Græc. Sibth. v. 1. 423. Stokes Mat. Med. v. 2. 365. Woodv. Med. Bot. t. 147. (Meliſſa; Ger. em. 689. Apiaſtrum ſive Meliſſa; Matth. Valgr. v. 2. 181.)—Whorls halved. Bracteas oblong, ſtalked. Leaves ovate, acute, ſerrated.—Native of the mountains of Geneva, Savoy, and Italy. Dr. Sibthorp found it in ſhady woods upon Mount Parnaſſus, where it is ſtill called μελισσόχορτον, or Balm-plant, which confirms the general opinion of its being the μελισσοφυλλον of Dioſcorides, who mentions the lemon-like ſcent for which this herb is ſo remarkable, and on account of which it is ſo generally uſed to make a grateful cooling infuſion for perſons in fevers. In this ſcent it much agrees with the more powerful *Verbena triphylla*, brought from Peru by the unfortunate Dombey, ſee his life in its proper place. The *root* of this *Meliſſa* is fibrous and perennial. *Stems* ſeveral, two or three feet high, leafy, ſomewhat branched, acutely quadrangular, hairy and harſh to the touch. *Leaves* oppoſite, ſtalked, ovate, or very ſlightly heart-ſhaped, ſerrated, ſomewhat hairy, ſtrongly veined, an inch and half long. *Flowers* axillary, in halved whorls, leaning toward one ſide; their ſtalks downy, accompanied by ſmall, oval, generally ſeſſile *bracteas*. *Calyx* hairy. *Corolla* twice as long, white or pale-purpliſh.

2. M. *altiſſima*. Tall Greek Balm. Sibth. in Prodr. Fl. Græc. v. 1. 423.—Whorls halved, ſtalked. Bracteas

ſtalked. Leaves heart-ſhaped, ſharply crenate.—Common in ſhady ſituations in Greece, eſpecially under hedges, as well as in Crete. *Sibthorp.* This was ſuſpected by Dr. Sibthorp to be the third καλαμινθη of Dioſcorides, but that point is ſcarcely to be ſettled with any probability. Neither are we fully ſatisfied of our preſent plant being ſpecifically diſtinct from the firſt. By the ſpecimens and figure, which laſt is deſtined for *t.* 579 of the *Flora Græca*, it appears to be a taller and larger herb, with rather more heart-ſhaped *leaves*, and the *whorls* as well as *bracteas* are elevated on more evident ſtalks. The *flower* is repreſented white, with a pale pink upper lip; the lower lip hairy on the upper ſide near its baſe, its middle lobe broadeſt, but by no means heart-ſhaped.

3. M. *grandiflora.* Great-flowered Balm. Linn. Sp. Pl. 827. Curt. Mag. t. 208. (Calamentha flore magno; Riv. Monop. Irr. t. 46. f. 1. C. montana præſtantior; Ger. em. 687.)—Flower-ſtalks axillary, forked, longer than the footſtalks. Bracteas lanceolate, ſeſſile. Leaves ovate, ſerrated.—Native of hilly ground in Greece, Italy, and Germany. Gerard cultivated this ſpecies here in 1596, and it may ſtill be frequently ſeen in gardens, being, as Curtis obſerves, ſuitable for the decoration of rock-work. It thrives beſt in dry gravelly ground, and is perennial, flowering throughout the ſummer. *Root* fibrous. *Stems* about a foot high, weak and ſpreading. *Leaves* ovate, hairy. *Flowers* from three to ſeven on each long axillary ſtalk, with ſeveral ſmall ſeſſile *bracteas.* *Corolla* large, light crimſon, with a white ſtreak, and ſpots on the lower lip. The whole plant has a much more powerful ſcent than *M. officinalis*, without any of the lemon flavour.

4. M. *pyrenaica.* Pyrenean Balm. Jacq. Hort. Vind. v. 2. 86. t. 183. (M. pyrenaica, caule brevi, plantaginis folio; Tourn. Inſt. 193. Magn. Hort. 133. t. 17. Horminum pyrenaicum; Linn. Sp. Pl. 831.)—Stem leafleſs. Flowers whorled, turned to one ſide. Leaves oblong, bluntly toothed.—Native of the higheſt mountains among the Pyrenees, in the Tyrol and Carniola. We have ſeen it in no garden, but Jacquin cultivated this plant at Vienna. He was led by Scopoli to refer it to *Meliſſa*, inſtead of making it a diſtinct genus, as Linnæus had done. The *root* is long, woody, black, and perennial, flowering about the third year from the ſowing of the ſeed, in June. *Leaves* ſeveral, all radical, oblong or ſomewhat ovate, veiny, ſmooth, ſtrongly and bluntly toothed, decurrent at the baſe, on long ſtalks. *Flower-ſtalks* ſolitary, about a foot high, bearing ſeveral pairs of oppoſite, ovate, entire *bracteas*, and in the upper part numerous bracteated *whorls* of ſimply-ſtalked *flowers* leaning to one ſide. The *Corolla* is dark blue, about an inch long, handſome, more bell-ſhaped than in the foregoing, with ſhorter lips in rounded ſegments.

Such are all the genuine *Meliſſæ* known to us. The *M. Calamintha*, *Nepeta*, *cretica* and *fruticoſa* of Linnæus appear to us by their habit, as well as by the hairs which cloſe the mouth of the calyx, to belong to *Thymus*, to which genus the two firſt are referred in the *Flora Britannica*. It happened however that Willdenow did not receive this laſt-mentioned work, till he had written his *Sp. Pl.* as far as *Tetradynamia*, and as the *Hort. Kew.* generally follows him, theſe ſpecies continue there as they were. Indeed the ſubject is not without difficulty, as *M. officinalis* has ſome diſtant hairs in the mouth of the calyx; but its reflexed upper lip, with three teeth of equal height, is unlike that of the four ſpecies above named, though, we confeſs, too ſimilar in that reſpect to ſome kinds of *Thymus*. The middle ſegment of the lower lip of the corolla, ſuppoſed to be heart-ſhaped in *Meliſſa* and entire in *Thymus*, we find as little to be depended on as any of the above marks.

Melissa, in *Gardening*, comprehends plants of the hardy herbaceous, fibrous-rooted perennial kind, of which the ſpecies cultivated are, the officinal, or common garden baum or balm (M. officinalis); the great-flowered baum (M. grandiflora); the Cretan baum (M. cretica); and the ſhrubby baum (M. fruticoſa): as to theſe two laſt ſuppoſed ſpecies, ſee the laſt article.

The firſt ſort varies occaſionally with variegated leaves, and with the ſtalks ſlender, the leaves much ſhorter, the whole plant hairy, and of a ſtrong diſagreeable odour, the flowers in whorls, ſitting pretty cloſe to the branches, and ſmaller than thoſe of the common ſort; and has the name of Roman baum.

In the ſecond ſpecies there are varieties with white flowers, with red flowers, and with variegated leaves; but they are all inferior to the purple.

Method of Culture.—The two firſt ſorts may be readily increaſed by parting the roots, and planting them out in the early autumn, as October, time enough for the offsets to be eſtabliſhed before the winter froſts come on. They ſhould be divided into ſmall pieces, with three or four buds to each, and the firſt ſort planted two feet a-part, in beds of common garden earth, and the ſecond ſort in the borders or other parts ſingly, in larger offset ſlips. The only culture they afterwards require is to keep them clean from weeds, and to cut off the decayed ſtalks annually in autumn, digging or ſtirring the ground between the plants in the common kind very well.

The third ſpecies may be raiſed by ſowing the ſeeds in the autumn or ſpring, but where the ſeeds are permitted to ſcatter, there will be a ſufficient ſupply of young plants without any further trouble.

And the fourth ſpecies may alſo be increaſed by ſeeds ſown in the ſpring on beds or in pots, or by cuttings planted in the ſame manner, in any of the ſummer months, and ſhaded from the ſun. They frequently live through the winter in warm borders; but it is always proper to keep a plant or two in pots, ſheltered under a frame during that ſeaſon, to prevent accidents.

In reſpect to the firſt ſort, it is uſeful for various domeſtic purpoſes, and the others ornamental, in the borders, clumps, and other parts, as well as affording variety among potted plants in many caſes.

Melissa *Officinalis*, *Common Balm*, in the *Materia Medica.* The herb, in its recent ſtate, has a weak, roughiſh, aromatic taſte, and a pleaſant ſmell, ſomewhat of the lemon kind: and hence this ſpecies has been denominated "Meliſſa odore citri." On diſtilling the freſh herb with water, it impregnates the firſt runnings pretty ſtrongly with its grateful flavour: and when large quantities are employed in this way, there ſeparates and riſes to the ſurface of the aqueous fluid a ſmall portion of eſſential oil, in colour yellowiſh, and of a very fragrant ſmell. Balm was formerly eſteemed of great uſe, in all complaints ſuppoſed to proceed from a diſordered ſtate of the nervous ſyſtem, and it was very generally recommended in melancholic and hypochondriacal affections, ſo that, in the opinion of Paracelſus, the "primum ens Meliſſæ" promiſed a complete renovation of man. Hoffmann and Boerhaave inclined to the opinion of the Arab phyſicians, and deemed it an efficacious remedy. S. Paulli and others ſpeak of its effects as an emmenagogue: but neither this nor any other medicinal power is now attributed to balm. As tea, however, it makes a grateful diluent drink in fevers, and in this way it is commonly uſed, either by itſelf or acidulated with lemons. The eſſential oil probably poſſeſſes no qualities different from many other aromatics and cordials. Lewis and Woodville.

MELISSA, in *Geography*, a town of Naples, in Calabria Citra ; 4 miles N. of Strongoli.

MELISSOPHYLLUM, in *Botany*. See MELITTIS.

MELISSUS, in *Biography*, a philoſopher of Samos, of the Eleatic ſect, who flouriſhed about the eighty-fourth Olympiad, or the year 440 B.C. He was a diſciple of Parmenides, to whoſe doctrines he cloſely adhered. As a public man, he was converſant with affairs of the ſtate, and acquired great influence among his countrymen, who had a high veneration for his talents and virtues. Being appointed by them to the command of a fleet, he obtained a great naval victory over the Athenians. As a philoſopher, he maintained that the principle of all things is one and immutable, or that whatever exiſts is one being ; that this one being includes all things, and is infinite, without beginning or end ; that there is neither vacuum nor motion in the univerſe, nor any ſuch thing as production or decay, that the changes which it ſeems to ſuffer, are only illuſions of our ſenſes, and mere appearances ; and that we ought not to lay down any thing poſitively concerning the gods, ſince our knowledge of them is ſo uncertain. Themiſtocles is ſaid to have been of the number of his pupils. Enfield's Hiſt. Phil.

MELISTAURUM, in *Botany*, ſo called by Forſter, from μελι, *honey*, and ςαυρος, *a ſtake*, or *a row of ſharp pales*, the nectary bearing a reſemblance to a circular fence of that kind. This author declares the genus to belong to *Polygamia Dioecia*, and profeſſes to deſcribe a male flower only, having never ſeen the hermaphrodite ones. How he aſcertained the exiſtence of ſuch, without having ſeen them, in a plant known to himſelf alone, does not appear. In his Prodromus, p. 93, this is ranged among the obſcure plants, of which he had ſeen imperfect ſpecimens only, by the name of *Meliſtaurum diſtichum*, and ſaid to be a native of New Caledonia. The male flower is figured in his *Genera*, t. 72, and thus deſcribed.

“ *Cal.* none, unleſs the corolla be taken for ſuch. *Cor.* minute, in five deep, roundiſh, concave, ſpreading ſegments. Nectary bell-ſhaped, abrupt, inſerted into the corolla, bearing the ſtamens on its margin. *Stam.* Filaments twenty, inſerted into the edge of the nectary, alternately awl-ſhaped, with roundiſh anthers, and of a thicker ſhape, hairy at the top, without anthers. *Piſt.* Germen thickiſh, in the centre of the flower ; ſtyle cylindrical, ſhort ; ſtigma blunt. *Peric.* and *Seeds* unknown, as well as the hermaphrodite flowers.” *Forſter.*

Every reader muſt perceive this to be the deſcription of an hermaphrodite flower ; ſo that we apprehend ſome miſapplication of terms. However this may be, the deſcription and figure are ſufficient to juſtify Juſſieu, who in his *Genera*, p. 438, refers Forſter's plant to his own *Anavinga*, Lamarck Illuſtr. t. 355, which is *Caſearia*, Schreb. Gen. 298, nearly allied to the *Samyda* of Linnæus. See ANAVINGA and CASEARIA.

MELITA, in *Ancient Geography*, an iſland in the Mediterranean, concerning which geographers have entertained different opinions. Ptolemy places it very near to Africa. Silius Italicus gives it the epithet of “ Lanigera” on account of its wool. Cicero ſpeaks of a temple of Juno, which was in this iſland, ſituated near a town of the ſame name. As it was upon an iſland of this name that St. Paul was ſhipwrecked, in his voyage to Rome, after his appeal to Cæſar (ſee Acts, chap. xxvii. and xxviii.), the ſituation of this iſland has been the ſubject of curious and diligent inveſtigation. But no perſon has employed more labour and more learning in the reſearch than Mr. Bryant. In the hiſtory, we find, that having been toſſed for ſome time in the Adria, they were at laſt caſt upon the iſland called Melite. The only queſtion is, which is the ſea, called Adria or Adriatic ; and what iſland can be found in that ſea under this name. The Adriatic ſea is that large gulf which lies between Italy and the ancient Illyria, and retains its name to this day. And as to the iſland we are ſeeking, there was one in that ſea called “ Melite,” which is mentioned under that name by the beſt geographical writers. It appears from ancient authorities, that Melita was an Illyrian iſland in the Adriatic ſea ; and that it lay between Corcyra Nigra and the main land, very near the river Naro and the iſthmus above it. It was called by the ancients Melite, Melitene, and Melitaſſa ; at this day it is denominated Meleda, and by the Sclavonians, Mlect, and is in the juriſdiction of Raguſa. Nevertheleſs it has been the common opinion, that the Melita, now called Malta, was the true place of the apoſtle's ſhipwreck ; and the natives have a tradition of long ſtanding to ſupport this notion. Mr. Bryant, however, undertakes to prove, that this could not be the iſland mentioned by the writer of the book of Acts. But in doing this he contends with a hoſt of learning and criticiſm ; Grotius, Cluver, Beza, Bochart, and Bentley. In order to ſupport this opinion, it is neceſſary for them to prove that Malta is an Adriatic iſland. This Bochart has much laboured to do ; depending upon the authority of the poets, and a few of the later hiſtorians, who have extended the Adriatic to the coaſt of Africa. Polybius, Diodorus, Strabo, and Pliny, give a very different account of this matter. Mr. Bryant, after having fairly and fully ſtated the arguments of Bochart in favour of Malta, in his own words, undertakes to produce inconteſtible proof that Malta was not the place mentioned by the ſacred hiſtorian, and that Melita Illyrica was. It muſt be allowed that, by the aid of the moſt approved geographers and hiſtorians, he has produced very ſtrong, and to us ſatisfactory evidence, that the Adriatic ſea was comprehended within the great Illyrian gulf, and never reached farther. Strabo expreſsly determines its extent by two fixed boundaries, that cannot be miſtaken ; it was included between Italy and the oppoſite continent. “ Where then,” ſays our author, “ was St. Paul ſhipwrecked ? Certainly between Italy and Illyria, that is, the oppoſite continent. Is Malta to be found in this ſituation ? It is far off, in a ſea that has no affinity, no connection with thoſe coaſts. But the other Melita, taken notice of by Scylax, Agathemerus, and Pliny, is ſituated in the Adria, agreeable to the apoſtle's account ; therefore, Melita Illyrica is certainly the iſland there mentioned.” Mr. Bryant ſtrengthens his other arguments by adverting to the character of the natives, who are deſcribed as Βαρβαροι, barbarians. This character could not conſiſtently be applied to the inhabitants of Melita Africana (Malta), which was firſt colonized by Phœnicians, and afterwards inhabited ſucceſſively by Carthaginians, Greeks, and Romans. “ Who will be ſo hardy as to denominate any of theſe nations barbarous ? They were each of them renowned for arts, of great power and wealth, and of particular elegance and refinement. As the anceſtry was good, the poſterity did not fall off. The teſtimony of Diodorus Siculus (Hiſt. Bibl. l. v.) will ſufficiently vindicate them from the charge of being barbarous. We have an account of ſome remains of antiquity in this iſland that will ſerve to guide our judgment concerning this people. The temples of Juno and Hercules appear to have been very magnificent, and of great extent : and the coins that were originally ſtruck there are ſaid to be of no ordinary caſt. Nor can it be ſaid that thoſe even of the lower claſs were rude and ſavage; becauſe from them St. Paul experienced nothing but civility. But if we take a view of Melita Illyrica, the ſcene will be changed, and the appellation will be found to be more applicable. The character of the Illyrians, near whom this iſland was ſituated, is repreſented as barbarous beyond meaſure. Modern travellers report of Malta that it harbours no ſerpents; a bleſſing, we are told, bequeathed to the iſland by St. Paul at his departure. If this be true of Malta, what is allowed as a teſt of the apoſtle's having been upon the iſland, is a proof to me, ſays our author, that he never was there. As there are no ſerpents now, my concluſion is, that there never were any; and conſequently it could not be the place where St. Paul exhibited the miracle. For other particulars we muſt refer to Mr. Bryant himſelf. Bryant's Obſervations and Inquiries, &c. 1767, 4to.

MELITENE, Meledni, a country of Aſia, in Armenia Minor, which extended to the right of the Euphrates, and was traverſed by the river Meles.—Alſo, a town of Cappadocia, to the S.E., upon a ſtream which diſcharged itſelf into the river Meles.—Alſo, a country of Aſia, in Cappadodia, occupying the S.E. part of it.

MELITENSIS Terra, *Earth of Malta*, in the *Materia Medica*, an earth of which there are two very different kinds, the one of the genus of the boles, the other of the marles. The latter is that known by medicinal authors under this name; the former is the Malta earth now in uſe: but both being brought from the ſame place, are confuſedly called by the ſame name.

The Malteſe bole, which is what we uſe now, is a fine earth, of a cloſe compact texture, very heavy; when dug it is of a very pure white, but it is apt to contract a yellowneſs in drying, and become of a cream colour. It is of a very ſmooth and ſhining ſurface, ſcarcely at all ſtains the ſkin in handling, adheres ſtrongly to the tongue, and melts into a butter-like ſubſtance in the mouth. It makes no efferveſcence with aquafortis, or any other acid menſtruum, and ſuffers no change of colour in the fire. Hill. For the character of boles, ſee Boles. The Malteſe marle, which is the terra Melitenſis of medicinal authors, is a looſe, crumbly, and very light earth, of an unequal and irregular texture, and when expoſed to the weather, ſoon falls into fine ſoft powder; but when preſerved and dried, it becomes a looſe light maſs, of a dirty white colour, with a greyiſh caſt: it is rough to the touch, adheres firmly to the tongue, is very eaſily crumbled to powder between the fingers, and ſtains the hands. Thrown into water it ſwells, and afterwards moulders away into a fine powder. It ferments very violently with acid menſtruums.

Both kinds are found in great abundance in the iſland of Malta, and the latter has been much eſteemed as a remedy againſt the bites of venomous animals, but with how much juſtice we cannot ſay. The other has ſupplied its place in the German ſhops, and is uſed there as a cordial, a ſudorific, and aſtringent. For the character of marles, ſee Marle.

MELITIA, in *Geography*, a town of European Turkey, in Theſſaly; 24 miles S. of Lariſſa.

MELITITES, Μελιτιτης, in *Natural Hiſtory*, an indurated clay, of a yellowiſh colour, but in many reſpects approaching to the nature of the morocthus or French chalk: which, when pulverized, yields with water a milky liquor, of a taſte ſomewhat like honey: whence it takes its name.

It is a ſmooth ſubſtance, of a compact texture and great weight, of a fine, even, gloſſy ſurface, ſmooth and ſoft to the touch, does not adhere to the tongue, nor ſtain the fingers; but drawn along a rough ſurface, leaves a fine ſlender white line, and ſhaved into very thin pieces, has ſome degree of tranſparence. It does not ferment with acids, and burns to a pure white.

It is found in mines of metals, and ſeems to partake pretty much of the nature of lead; having a ſweetneſs ſomewhat like that of the ſal ſaturni, but much fainter. It only differs from the galactite, in that it is milder to the taſte. (See Galactites.) The ancients uſed it in inflammations of the eyes, and to dry ulcers.

They alſo applied it externally in ulcers, and gave it inwardly as a ſoporific to people who were to ſuffer pain, ſuppoſing it would make them leſs ſenſible of it. It is at preſent very common in Italy, and probably in many other places, but is not known or regarded.

Melitites *Lapis*, a name given by ſome authors to ſome of the rounder ſpecies of echinitæ, from their reſembling an apple in their ſhape.

MELITO, in *Biography*, an ancient Chriſtian father, who flouriſhed in the ſecond century, was biſhop of Sardis. Some moderns have ſuppoſed him the ſame as the angel of the church of Sardis, to whom the epiſtle in the book of Revelation was directed, but the moſt judicious critics have abandoned this idea. He travelled into Paleſtine for the purpoſe of aſcertaining the number of books of the Old Teſtament, and he is the firſt Chriſtian writer who has given us a catalogue of thoſe books, which agrees with that of the Jews, excepting that it does not contain the book of Eſther. Melito was in the number of thoſe fathers who wrote in defence of the Chriſtian faith, and addreſſed an apology to the emperor Marcus Antoninus in behalf of the perſecuted Chriſtians, of which a fragment is preſerved by Euſebius. In this piece he intreats the emperor to examine the accuſations which were preferred againſt the Chriſtians, and to put an end to their perſecutions and ſufferings, by revoking the edict that he had publiſhed againſt them. He repreſented to him, "that ſo far was the Roman empire from having been injured or weakened by Chriſtianity, that it was the more firmly eſtabliſhed ſince the introduction of that religion into it." He boldly ſtated that the Chriſtian religion had been perſecuted only by wicked emperors, ſuch as Nero and Domitian: and that, therefore, they naturally indulged the hope, that from his known clemency and goodneſs they ſhould receive the ſame protection which they had enjoyed under the reign of Adrian. The date of this apology is fixed by Euſebius to 170, but Lardner and ſome others, from internal evidence, give it the date of 175 or 177. Melito was author of various treatiſes, the titles of which may be ſeen in the works of Euſebius, but of theſe only a few fragments remain. From the title of one of thoſe pieces, "Concerning the Revelation of John," critics have inferred that he eſteemed the book of Revelation of canonical authority, and to have been written by the apoſtle John. We have no account of Melito's death, except what is gathered from a letter of Polycrates to Victor, biſhop of Rome, which proves it took place before the election of that pontiff, in the year 192. Lardner. Gen. Biog.

Melito, in *Geography*, a ſmall town and biſhop's ſee of Naples, in Calabria Ultra, ſeveral miles S. of Monte Leone.

MELITOPOL, a town of Ruſſia, in the province of Tauris, ſituated on a lake about 12 miles from the ſea of Azof. N. lat. 46° 12′. E. long. 35° 10′.

MELITTIS, in *Botany*, from μελιττα, which in the attic dialect is the name of a bee; ſo that this word is, in fact, equivalent to *Meliſſa*, and was adopted by Linnæus therefore for the Baſtard Balm.—Linn. Gen. 299. Schreb. 395. Willd. Sp. Pl. v. 3. 157. Mart. Mill. Dict. v. 3. Sm.

Fl. Brit. 643. Ait. Hort. Kew. ed. 2. v. 3. 421. Juſſ. 116. Lamarck Dict. v. 4. 80. Illuſtr. t. 513.—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-ſhaped, round, ſtraight, its mouth two-lipped; *upper lip* longeſt, acute; *lower* ſhorteſt, cloven, acute, its ſegments gaping. *Cor.* of one petal, ringent; *tube* much narrower than the calyx; mouth not much wider; *upper lip* erect, roundiſh, undivided; *lower* ſpreading, three-cleft, obtuſe, its middle ſegment largeſt, flat, undivided, crenate. *Stam.* Filaments four, awl-ſhaped, ſheltered by the upper lip, the two intermediate ones ſhorter than the outer ones; anthers cohering in pairs, forming a croſs, cloven, obtuſe. *Piſt.* Germen obtuſe, four-cleft, hairy; ſtyle thread-ſhaped, the length and ſituation of the ſtamens; ſtigma cloven, acute. *Peric.* none, except the unchanged calyx. *Seeds* four, in the bottom of the calyx.

Obſ. The ſegments of the calyx differ in number in the different ſpecies.

Eſſ. Ch. Calyx unequal, much wider than the tube of the corolla. Upper lip of the corolla flat; lower three-lobed, crenate. Anthers forming a croſs.

1. M. *Meliſſophyllum*. Reddiſh Baſtard-Balm. Linn. Sp. Pl. 832. Engl. Bot. t. 577. Jacq. Auſtr. t. 26. (Meliſſophyllum; Rivin. Monop. Irr. t. 21. f. 2. Meliſſa Fuchſii; Camer. Hort. t. 30.)—Calyx three-lobed, nearly ſmooth.—Native of rather mountainous woods and thickets in Germany, Switzerland, France, Greece, and the ſouth-weſt extremity of England, flowering in the beginning of ſummer. The *root* is fibrous and perennial. *Stems* herbaceous, erect, ſimple, ſquare, leafy, hairy, about eighteen inches high. *Leaves* oppoſite, ſtalked, ovate, ſerrated, hairy, full two inches long and one broad; paler and rather poliſhed beneath. *Flowers* axillary, about three on each ſide, moſtly turned one way, on ſimple reddiſh round ſtalks. *Calyx* purpliſh, with hairy ribs, ample, three-lobed; the upper lobe or lip longeſt, acute, often notched or toothed at each ſide; lower lip in two vertical, equal, pointed or notched, ſide-lobes. *Corolla* large and handſome, thrice the length of the calyx, externally fleſh-coloured, internally whitiſh, the lip marked with a divided crimſon ſpot, and a few dots on its principal ſegment, and more or leſs of a ſtain on its two lateral lobes. The whole *herb* has, when freſh, rather an offenſive ſmell; when dried it acquires the ſcent of new hay, like woodruff, which is alſo the caſe with the next. Some of the old authors miſtook this *Melittis*, or the following, for they did not always diſtinguiſh the two, for the μελισσοφυλλον of Dioſcorides; but that is evidently rather our *Meliſſa officinalis*, and as far as can be concluded from the ſynonym of *Apiaſtrum*, the *Meliſſophyllum* of Pliny. Haller therefore is to blame in citing the Roman author, to ſupport his own preference of this laſt-mentioned name, to that adopted by Linnæus, for the genus before us.

2. M. *grandiflora*. Purple and White Baſtard-Balm. Engl. Bot. t. 636. (M. Meliſſophyllum; Curt. Lond. faſc. 6. t. 39. Mill. Illuſtr. t. 52. Meliſſophyllum; Rivin. Monop. Irr. t. 21. f. 1. M. adulterinum; Fuchs. Hiſt. 497. fig. 498, verum.)—Calyx in four equal lobes, nearly ſmooth.—Native of woods in Hungary and Switzerland, as well as in Devonſhire and Cornwall, flowering early in the ſummer. Linnæus, Haller, and their pupils for the moſt part, have confounded this with the foregoing, from which it differs eſſentially in the *calyx*, whoſe lobes are four, all lateral, none vertical, for the moſt part entire, though ſometimes notched. The *corolla* is larger than the other ſpecies, white, with a pale tinge of yellow or cream colour in its upper part, the middle ſegment of its lower lip purple with a white margin. The general habit form and ſcent of the two plants agree, but this is rather the moſt ornamental. Cluſius diſtinguiſhed them in his *Hiſt. v.* 2. 37, as did after him Johnſon in Ger. em. 690. The figure in Fuchſius marked *Meliſſophyllum verum*, is evidently intended for our preſent plant, the calyx being very clearly defined; but his account can only belong to the Garden Balm, *Meliſſa officinalis*, as the lemon ſcent is particularly noticed. It ſeems therefore that the cuts of theſe two very diſſimilar plants have been tranſpoſed by his printer, a miſtake hitherto unnoticed. Hence Fuchſius is very erroneouſly quoted by Vaillant, Haller, and others, as making this *Melittis* the true *Meliſſa*, or μελισσοφυλλον.

3. M. *japonica*. Japan Baſtard-Balm. Thunb. Tr. of Linn. Soc. v. 2. 338. Willd. n. 2. (M. Meliſſophyllum, Thunb. Jap. 248.)—Calyx hairy. Leaves alternate, ovate, obtuſe, unequally ſerrated.—Native, as it is preſumed, of Japan, though Thunberg ſaw only one plant, cultivated in a pot, in the iſland of Nipon, in his journey towards Jeddo, flowering in May and June. The Japaneſe called it *Sjuwo*. *Stem* erect, villous, ſimple, a ſpan high. *Leaves* alternate, ſtalked, ovate, obtuſe, unequally and doubly ſerrated, villous, ſpreading, a finger's length. *Footſtalks* the length of the nail. *Flowers* axillary, ſolitary, each on a hairy ſtalk, an inch long. *Calyx* rough with briſtles, drooping. *Thunb.*

The *leaves* being alternate, is ſo improbable in this genus, that we cannot but ſuſpect a miſtake in that particular, or in the generic characters of the plant. We know nothing of this ſpecies but what Thunberg has given above.

MELITTIS, in *Gardening*, comprehends a plant of the flowery perennial kind, of which the ſpecies cultivated is, the baſtard balm (M. meliſſophyllum).

In this plant there is much honey ſecreted, from a gland that encircles the baſe of the germ; it is of courſe a favourite plant with bees.

And there is a variety ſmaller in all reſpects, with the leaves ovate and heart-ſhaped, the flowers not ſo large, and uſually of a pale red, but ſometimes white, which is a native of Switzerland, and other ſimilar ſituations.

Method of Culture.—Plants of this ſort are capable of being increaſed by parting the roots and planting them out early in the autumn, where they are to remain; but the roots ſhould not be parted oftener than every third year. When ſeeds can be procured, they may alſo be raiſed by ſowing them in the early ſpring, where they are to remain. The plants ſucceed beſt in a loamy ſoil and eaſtern aſpect, where they can be had.

They are capable of affording ornament in the borders and other parts of pleaſure-grounds and gardens.

MELIUS INQUIRENDUM, in *Law*, a writ which lieth for a ſecond inquiry to be made of what lands and tenements a man died ſeiſed, where partiality is ſuſpected upon the writ called *diem clauſit extremum*.

A "melius inquirendum" ſhall be awarded out of B.R. where a coroner is guilty of corrupt practices, directed to ſpecial commiſſioners. 1 Vent. 181.

MELIZZANO, in *Geography*, a town of Naples, in Lavora; 15 miles E. of Capua.

MELKOVATE, a town of Bulgaria; 52 miles S. of Viddin.

MELKSHAM, a conſiderable market-town in the hundred of Melkſham and county of Wilts, England; is pleaſantly ſituated on the river Avon, at the diſtance of 23 miles from Bath, and 96 from London. In ancient times it is ſaid to have been a place of conſiderable note by the authors of the Magna Britannia, who aſſert that the Conqueror eſtabliſhed a court of royal juriſdiction here. Edward I., according to the ſame authority, had likewiſe a foreſt in this neighbourhood, which was joined to that of Chippenham, and committed to the cuſtody of Matthew Fitz-John, who was governor of the caſtle of Devizes. But if thus important in early times it ſeems to have greatly decayed before the age of Leland, as neither he, nor his ſucceſſor Camden, ſo much as mention it, though the former was undoubtedly in this part of the county. Of late years, however, it has again riſen to ſome degree of conſequence by the influence of trade. For a conſiderable period Melkſham has been celebrated for its manufacture of ſuperfine cloths and caſſimere. The buildings of this town are in general conſtructed of freeſtone, poſſeſſing, individually, an appearance of much neatneſs, but the ſtreets are irregular and narrow. The church, of which the living is a vicarage in the gift of the dean and chapter of Saliſbury, is a ſpacious edifice, with a handſome tower in the centre. Here are likewiſe meeting-houſes for diſſenters of different denominations, particularly Independents and Baptiſts. Methodiſts are leſs numerous than in moſt other towns of the ſame extent in England, though they have increaſed conſiderably of late years. According to the parliamentary returns of 1801, the number of inhabitants in the whole pariſh was eſtimated at 4030 perſons, 1864 males, and 2166 females, of whom 1299 were engaged in trade, and 370 in agriculture. The proportion of poor is very great, owing to the manufactories which have again begun to decline, and will probably ſoon leave the town entirely, as has already taken place with regard to Corſham. Since the introduction of the new proceſs in the cloth manufacture, Melkſham has loſt the advantages it was formerly ſuppoſed to poſſeſs in reſpect of ſituation on the banks of the Avon. The petty ſeſſions for Melkſham and Tinehead diviſion are held here. The market is on every alternate Monday. A branch of the Wilts and Berkſhire canal comes cloſe up to the town, and communicates with Bath and Briſtol. About two miles weſt of Melkſham is Shaw-hill-houſe, the ſeat of R. Heathcote, eſq. Magna Britannia, Wiltſhire. Britton's Beauties of Wiltſhire.

MELL ISLANDS, a cluſter of ſmall iſlands, near the W. coaſt of Scotland. N. lat. 58° 15'. W. long. 4° 57'.

MELLABA, a town of Africa, in the country of Barca. N. lat. 31° 5'. E. long. 23 44'.

MELLARIA, in *Ancient Geography*, *Fuentes Ovejuna*, a town of Hiſpania, in Bœtica, at the foot of the mountains, and S.W. of Siſapa; which was a conſiderable place, and is mentioned in the Itinerary of Antonine.—Alſo, a town of Hiſpania, in Bœtica (now *Tarifa*), ſituated towards the ſouth on a ſtrait, famous for its ſalt-works and for its commerce in ſalted proviſions. According to the Itinerary of Antonine, it was 12 miles towards the W. from Portus Albus.

MELLATS, in *Chemiſtry*, are combinations of an acid called the mellitic with certain baſes. See MELLITIC *Acid*.

MELLE, in *Geography*, a town of France, and principal place of a diſtrict in the department of the Two Sevres; 13 miles S.E. of Niort. The place contains 1741, and the canton 7782 inhabitants, on a territory of 165 kiliometres, in 13 communes. N. lat. 46 13'. W. long. 0° 4'.—Alſo, a town of Weſtphalia, in the biſhopric of Oſnabruck; 11 miles S.E. of Vorden.

MELLEGETTA, MELEGETTA, or *Milleguetta*, in *Botany*, the African name, if we miſtake not, of the Grains of Paradiſe, *Amomum Grana Paradiſi* of Linnæus; ſee AMOMUM, ſp. 15. See alſo GRAIN-*Coaſt*, where this word is ſpelt *Malaguetta*, and ſuppoſed to be of Portugueſe origin. It is likewiſe the Spaniſh name of the ſame drug, and, wherever it may have originated, is now in common uſe amongſt the black natives of Sierra Leone. From thence we obtained, many years ago, by the kindneſs of Dr. Adam Afzelius, ſpecimens of theſe grains in their native huſk or capſule, a thing heretofore unknown among collectors of *Materia Medica* in England. We received alſo, at the ſame time, ſpecimens of the plant, which is a genuine *Amomum*, according to Mr. Roſcoe's able elucidation of the Linnæan order of *Scitamineæ*, ſee Tr. of Linn. Soc. v. 8. 351. t. 20. f. 11; and is now growing, in many of the Engliſh ſtoves, from ſeeds brought over by Dr. Afzelius; but we have never heard of its flowering. The new edition of Ait. Hort. Kew. does not contain this ſpecies, but it is admitted into the catalogue of the Cambridge garden by Mr. Donn, we believe with perfect propriety. As no authentic characters or deſcriptions of this plant have appeared, and its ſynonyms are altogether confuſed, even in the beſt writers, we ſhall attempt to clear up the whole of its hiſtory.

AMOMUM *Grana Paradiſi*, Grains of Paradiſe. (True Mellegetta Pepper. *Afzelius.*) Linn. Sp. Pl. 2. Berg. Mat. Med. v. 1. 3. (A. n. 3; Linn. Mat. Med. 2, with an erroneous character. Grana Paradiſi officin.; Dale Pharmac. 277; Bauh. Pin. 413; both with many wrong ſynonyms. Melligetta; Cord. Hiſt. 195. Melegueta; Bauh. Prod. 158. Lobel. Adverſ. 445.)—Stalk ſimple. Bracteas numerous, cloſely imbricated. Leaves crowded, ovato-lanceolate, pointed. Capſule oblong, bluntly triangular, minutely hiſpid. Seeds roundiſh.—Native of Guinea, about Sierra Leone, from whence the ſeeds were brought very ſoon after the diſcovery of that country by European navigators. The *root* is perennial, woody, creeping horizontally. *Stems* erect, ſimple, ſlender, three feet high, leafy, but deſtitute of flowers. *Leaves* numerous, crowded, two-ranked, alternate, a ſpan long and an inch broad, lanceolate, or ſlightly ovate, with a long taper point, entire, ſmooth, ſingle-ribbed, ſtriated with innumerable oblique veins. Their flavour is ſlightly aromatic, after having been dried twenty years. *Footſtalks* ſheathing, linear, very long, ſmooth, ſtriated. *Flower-ſtalks* radical, ſolitary, an inch or two in length, aſcending, clothed with numerous, cloſe, ſheathing *bracteas*, all abrupt, ribbed, ſomewhat hairy and fringed; the lower ones very ſhort; the upper gradually much larger. Of the parts of the *flower* nothing can be made out from our ſpecimens. *Capſule* an inch and half long, half an inch in diameter, oblong, bluntly triangular, ſcarcely ovate, beaked, of a dark reddiſh-brown, ribbed, coriaceous, rough with minute deciduous briſtly hairs. When broken it is very powerfully aromatic, even after being kept twenty years, with a peculiar pepper-like flavour, rather too ſtrong to be agreeable. *Seeds* numerous, enveloped in membranes formed of the dried pulp, roundiſh or ſomewhat angular, of a ſhining golden brown, minutely rough or granulated, extremely aromatic, hot, and acrid.

Of this plant or its capſule we have in vain ſought for a figure in any book within our reach. The old authors confounded with it the *Cardamomum majus*, of which a figure may be found in Camerarius's Epitome 11. f. 1. Tabern. Kreuterb. 1319. Matth. Valgr. v. 1. 25. Ger. em. 1542, the largeſt kind. Bauh. Hiſt. v. 2. 204. This is *Amomum anguſtifolium* of Sonnerat's Voyage aux Indes, v. 2. 242. t. 137, found in marſhy ground in Madagaſcar. The habit of this ſpecies is not unlike what we have deſcribed; but the *capſule*, (of which old authors miſtake the baſe for the ſummit, and therefore compare it to a fig,) is very different, being ovate, flattened at one ſide, ſtriated, but ſmooth, nearly twice the ſize of the above. *Seeds* larger than the former, but otherwiſe not very unlike in appearance, though totally different in their flavour, which much reſembles that of the ſmall Eaſt Indian Cardamom, and has none of that vehemently hot acrid taſte, for which the Grains of Paradiſe are remarkable.

Gærtner has miſtaken for the Mellegetta Pepper another very different ſpecies of *Amomum*, for which genus he perverſely retains the name *Zingiber*. This is figured in his t. 12, by the name of *Z. Melegueta*, and is remarkable for the large and copious bracteas, each two inches long, encompaſſing the capſule. The latter is nearly as long, ovate, with a corrugated beak. Seeds ovate or nearly globular, partly angular, ſmooth and poliſhed, lead-coloured, livid, or glaucous, with a ſtrong umbilicated ſcar at their baſe, ſurrounded with a whitiſh rather tumid margin. Profeſſor Afzelius has favoured us with ſome ſeeds which anſwer very well to this deſcription, except in being twice as large as Gærtner repreſents them. But this is not an unfrequent error with him. Of the capſule, or plant producing theſe ſeeds, we have no information.

Another ſpecies, nearly akin to this of Gærtner, (and which we ſhould almoſt have taken for his plant, were it not for the ſeeds juſt mentioned, conſidered as ſuch by our friend Afzelius,) is deſcribed in Cluſius, (*Exot.* 38. *fig.* 14.) of which we have one capſule, with ſeeds. The author deſcribes this as bearing four capſules together at the top of the ſtalk, encompaſſed with *ſhort* bracteas at the baſe, not long ones as in Gærtner. The capſules are two inches in length, ovate with a long beak, ſlightly triangular, cartilaginous rather than leathery, ſtriated, ſmooth, reddiſh-brown. Seeds ovate inclining to cylindrical, dark brown, exquiſitely ſmooth and ſhining, with a light brown corrugated and notched margin ſurrounding the ſcar. They are but ſlightly aromatic. Cluſius ſeems to have received from Madagaſcar the true *Cardamomum majus*, *Amomum anguſtifolium* of Sonnerat mentioned above, which he rightly diſtinguiſhes from the Mellegetta Pepper, and ſeems to imply that it is alſo diſtinct from his fig. 14, of which there can be no doubt.

By the above remarks it appears that the ſpecies of this genus are very imperfectly known. We have, beſides, ſpecimens of ſome that are not at all deſcribed. It is highly deſirable that botanical travellers ſhould pay particular attention to this tribe, the ſeeds of ſeveral of which are important articles of commerce, and not uſeleſs in medicine. The botanical hiſtory of none of the Cardamoms was properly known to Linnæus, and that of the *Cardamomum medium*, *Zingiber Enſal* of Gærtner, is ſtill entirely in the dark. By the infloreſcence we preſume it of Dr. Maton's genus *Elettaria*, Tr. of Linn. Soc. v. 10. 254. S.

MELLI, or LAMLEM, in *Geography*, a country of Africa, bounded on the N. by Caſhna, on the E. by Wangara, on the S. by Guinea, from which it is ſeparated by mountains, and on the W. by Gago; 500 miles in length from E. to W., and from 150 to 200 in breadth. N. lat. 11° 30′ to 15°. E. long. 5° 30′ to 14° 50′.

MELLID, a town of Spain, in Gallicia; 20 miles E. of Compoſtella.

MELLIFAVIUM, (from *mel* and *favus*, a honey-comb,) in *Surgery*. See MELICERIS.

MELLITE; *Honig-ſtein*, Wern.; *Honey-ſtone*, Jameſon; *Mellite*, Haüy, Broch. Brongn.; *Mellilite*, Kirw.

This mineral, which, by moſt mineralogiſts, is claſſed with the inflammable ſubſtances, was miſtaken, by Born and other writers, for a cryſtallized variety of amber, till Werner and Laumont, and principally Klaproth, determined its true nature, which is totally different from that of any other mineral ſubſtance we are acquainted with.

Its colour is honey-yellow, of more or leſs purity and intenſity, paſſing into wax and ſometimes into ſtraw and greyiſh-yellow.

It is ſeldom found maſſive and in detached grains; generally cryſtallized.

The primitive form of the cryſtals is an octohedron with common baſe perfectly ſquare; the inclination of each face of the four-ſided pyramid, on its correſponding face in the other pyramid, is, according to Haüy, = 93° 22′. This primitive cryſtal (Mellite *primitif*, Haüy, pl. 62. f. 12.) occurs more frequently than the following modifications.

1. The primitive octohedron having all the ſolid angles of the baſe replaced by quadrilateral planes, which, when they meet, form a rhomboidal dodecahedron, which is, however, different from the garnet dodecahedron in the meaſurement of its angles. (Mellite *dodécaèdre*, Haüy, ib. fig. 14.)

2. The primitive octohedron, with the ſolid angles of the baſe as well as thoſe of the ſummit of the pyramids, each replaced by a quadrilateral plane, the ſurface of which is ſometimes more or leſs convex or curvilinear. (Mellite *épointé*, Haüy, ib. fig. 13.)

The cryſtals, which are ſmall and very ſmall, are generally ſingly diſperſed, ſometimes grouped together; their ſurfaces are ſmooth and ſhining, ſeldom rough, and, as it were, corroded.

Internally it is ſplendent; luſtre intermediate between vitreous and reſinous.

Fracture perfectly conchoidal; the fragments are indeterminately angular, and pretty ſharp-edged.

It is ſeldom found perfectly tranſparent; oftener tranſlucent and opaque, and poſſeſſes a very diſtinct double refraction.

It is ſoft; more ſo than amber. Brittle. Eaſily frangible, and yields a yellowiſh-grey powder. Specif. gravity 1.550, Klapr., 1.5858, Haüy, 1.666 Abich. The purer cryſtals become ſlightly electric by friction.

Expoſed to the flame of a candle, or on a burning coal, it firſt becomes opaque, and white ſpotted with black, which ſoon gives way to a pure white. No ſmoke, flame, or odour are perceived during this proceſs. Projected on melted nitre no real detonation takes place, but only a ſlight ſcintillation; and the earthy part remains mixed with the nitre.

It is entirely ſoluble in nitric acid without heat, and the fragments remain tranſlucid; in muriatic acid, on the other hand, the fragments become more or leſs opaque.

Abich and Lampadius have given analyſes of mellite, which are completely ſuperſeded by thoſe performed by Klaproth, according to which this ſubſtance is compoſed of

Alumine	16
Mellitic acid	46
Water of cryſtallization	38
	100 Kl. Beitr. ii. p. 134.

This analyſis has been confirmed by Vauquelin in Ann. de Ch. vol. xxxvi. p. 203.

This ſubſtance has been hitherto found only at Artern, in Thuringia, on a bed of bituminous wood and brown coal, accompanied by ſmall cryſtals of native ſulphur, which by the inattentive obſerver might be eaſily miſtaken for the ſtraw-yellow variety of mellite. Langenbogen in the Saal circle has been mentioned as another locality of this mineral, as likewiſe Switzerland, where it is ſaid to have been found with ſlaggy aſphaltum.

MELLITIC ACID, in *Chemiſtry*, is a product obtained

tained from the mineral called mellite, or honey-ſtone. It was diſcovered by Klaproth in the year 1799 (Beiträge, tom. iii. p. 114.); and the exiſtence of it was ſhortly afterwards confirmed by the reſearches of Vauquelin (Annales de Chimie, tom. xxxvi p. 203.) To procure this acid, it is merely neceſſary to boil the mellite, reduced to powder, in about ſeventy times its weight of water. The alumine with which it is combined in its native ſtate, is by this proceſs precipitated, and after filtering the ſolution, and evaporating it to a ſufficient degree, the acid appears in a ſtate of tolerable purity. It may be ſtill contaminated with the preſence of a little earthy matter; but, by expoſing it to the action of alcohol, this will be detached, and it may then be obtained cryſtallized under the form of needles, or ſhort priſms. In Vauquelin's analyſis, the ſubſtance under enquiry was procured by adding the pulverized mellite to a ſolution of carbonat of potaſh; carbonic acid being evolved, and the mellitic acid uniting to the alkali. Nitric acid was afterwards preſented to take up the alkaline baſe, and the mellitic acid ſeparated, in the courſe of a few hours, in ſhort priſmatic cryſtals. Thus cryſtallized, this acid has a browniſh-yellow tinge; its taſte is ſlightly ſour, accompanied with bitterneſs; and it is but ſparingly ſoluble in water. Expoſed to heat, it is eaſily decompoſed, and emits a denſe ſmoke which has no odour. With the alkalies, earths, and metallic oxyds, it enters into combination, and forms a claſs of ſalts, which, in conformity with the principles of the preſent chemical nomenclature, are denominated *mellats*. The properties of theſe, however, have been but very imperfectly examined. Mellat of potaſh cryſtallizes in priſms, which apparently differ from thoſe of the acid in being longer. The form of mellat of ſoda is a cube, or three-ſided table. The union of mellitic acid with ammonia yields fine tranſparent ſix-ſided priſms, which become opaque on expoſure to the air. Barytes, ſtrontian, and lime, form inſoluble compounds; as alſo does alumine. Solutions of ſilver, lead, and mercury afford each a white precipitate; but from iron a yellow compound is depoſited. This acid, in many of its properties, bears a very near reſemblance to the oxalic; but, in others, it exhibits a ſufficient difference to forbid our conſidering them identical. The products it affords when decompoſed by heat, are pretty much like thoſe yielded by the vegetable acids. This ſpecies of analyſis, however, has been, hitherto, ſo rude and unſatisfactory, that no very accurate compariſon can be grounded upon the evidence which it ſupplies. The acute reſearches of M. M. Gay Luſſac and Thenard have, in a very eminent degree, removed this defect; and we may ſhortly hope, aided by the light which their genius has diffuſed over theſe ſubjects, to find vegetable chemiſtry equally demonſtrative and certain in its operations with the moſt accurate branches of experimental ſcience. See Recherches Phyſico-Chimiques par Gay Luſſac et Thenard, tom. ii.

MELLO-MESQUITELA, in *Geography*, a town of Portugal, in the province of Beira; 12 miles W. of Guarda.

MELLOON, or **Melone**, a town of the Birman empire, on the W. ſide of the Ava, rich in temples, but in no other reſpect diſtinguiſhed. N. lat. 20° 10′. E. long. 96 9′.

MELLOOR, a town of Hindooſtan, in Madura; 12 miles N.E. of Madura.

MELLOUNOSH, a town of Africa, on the E. coaſt of Tunis; 20 miles S.E. of Jemme.

MELLYPOUR, a town of Hindooſtan, in Bahar; 38 miles W.S.W. of Boglipour.

MELMOTH, William, in *Biography*, an eminent and learned pleader at the bar, and member of Lincoln's-Inn, was born in 1666. He became a bencher of that honourable ſociety, and, in conjunction with Mr. Peere Williams, publiſhed Vernon's "Reports," under an order of the court of Chancery. It appears that he had an intention of printing his own Reports, and even advertiſed them as actually preparing for the preſs. They have not, however, made their appearance. But the work by which he is beſt known, and for which he will be very long remembered, is entitled "The Great Importance of a Religious Life." This little tract has gone through many editions; more than 40,000 copies were circulated in the courſe of twenty years, independently of other large impreſſions that have been taken off, as well for ſale as for charitable purpoſes: and while this article was writing, ſeveral copies of a new edition of this valuable tract came into the hands of the writer, from a friend who has undertaken the office of editor, with the view of circulating it among perſons into whoſe hands it would, without his exertions, ſcarcely have come: and with the hope, that by omitting certain expreſſions in controverted theology, "the work might recommend itſelf to a numerous and additional body of rational diſciples of our common maſter." It is a ſingular circumſtance, that the author of this treatiſe, ſo much read and highly applauded, ſhould not have been known till the fact was revealed by his ſon. It was commonly attributed to the firſt earl of Egmont, to whom it had been given by Mr. Walpole in his Catalogue. Mr. Melmoth died on the 6th of April 1743, and was buried under the cloiſter of Lincoln's-Inn chapel. His character has been drawn by his ſon, the ſubject of the next article, in the following words: "The author's life was one uniform exemplar of thoſe precepts which, with ſo generous a zeal, and ſuch an elegant and affecting ſimplicity of ſtyle, he endeavours to recommend to general practice. He poſſeſſed by temper every moral virtue; by religion every Chriſtian grace. He had a humanity that melted at every diſtreſs; a charity which not only thought no evil, but ſuſpected none. He exerciſed his profeſſion with a ſkill and integrity which nothing could equal, but the diſintereſted motive that animated his labours, or the amiable modeſty which accompanied all his virtues. He employed his induſtry, not to gratify his own deſires; no man indulged himſelf leſs: not to accumulate uſeleſs wealth, no man more diſdained ſo unworthy a purſuit: it was for the decent advancement of his family, for the generous aſſiſtance of his friends, for the ready relief of the indigent. How often did he exert his diſtinguiſhed abilities, yet refuſed the reward of them, in defence of the widow, the fatherleſs, and him that had none to help him! In a word, few people have ever paſſed a more uſeful, not one a more blameleſs life; and his whole time was employed in doing good, or in meditating it." See preface to "The Great Importance of a Religious Life, &c." 1812. Alſo "Memoirs of a late eminent Advocate, &c." By William Melmoth, eſq. 1796.

Melmoth, William, ſon of the above, was born in 1710, and firſt appeared as a writer about the year 1742, in a volume of "Letters" under the name of Fitzoſborne, which have been much admired for the elegance of their language, and their juſt and liberal remarks on various topics, moral and literary. In 1747 he publiſhed "A Tranſlation of the Letters of Pliny," in 2 vols. 8vo., which was regarded as one of the beſt verſions of a Latin author that had appeared in our language. In 1753, he gave a tranſlation of the "Letters of Cicero to ſeveral of his Friends, with Remarks," in 3 vols. He had previouſly to this, written an anſwer to Mr. Bryant's attack, in his Treatiſe on the Truth of the Chriſtian Religion, on his remarks on Trajan's Perſecution of the Chriſtians in Bithynia, which made a note to his tranſlation of Pliny's Letters. He was the tranſlator likewiſe of Cicero's treatiſes "De Amicitia" and "De Senectute," which were publiſhed in 1773 and 1777. Theſe he enriched with remarks, literary and philoſophical, which added much to their value. In the former he refuted lord Shaftſbury, who had imputed it as a defect to Chriſtianity, that it gave no precepts in favour of friendſhip, and Soame Jenyns, who had repreſented that very omiſſion as a proof of its divine origin. The concluding work of Mr. Melmoth was a tribute of filial affection, in the Memoirs of his father, of which we have already made uſe. After a long and reſpectable life paſſed in literary purſuits, and the practice of private virtue, Mr. Melmoth died at Bath, March 15, 1799, at the age of 89. He had been twice married; firſt to the daughter of the celebrated Dr. King, principal of St. Mary's-hall, Oxford, and ſecondly to Mrs. Ogle. "The author of 'The Purſuits of Literature,' ſays Mr. Melmoth, "is a happy example of the mild influence of learning on a cultivated mind; I mean that learning which is declared to be the aliment of youth, and the delight and conſolation of declining years. Who would not envy this fortunate old man, his moſt finiſhed tranſlation and comment on Tully's Cato? Or rather, who would not rejoice in the refined and mellowed pleaſure of ſo accompliſhed a gentleman, and ſo liberal a ſcholar?" Gent. Mag. Preface to Fitzoſborne's Letters, 1805.

MELNERSENS, in *Geography*, a town of Weſtphalia, in the principality of Luneburg-Zelle; 16 miles S.E. of Zelle.

MELNIK, a town of Bohemia, in the circle of Boleſlaw, at the conflux of the rivers Elbe and Moldau; 18 miles N. of Prague. N. lat. 50° 20′. E. long. 14° 40′.

MELO, in *Botany*, from μηλον, *an apple*, the Melon. See Cucumis.

MELOCACTUS, ſo called from *Melo*, a Melon, and *Cactus*, the Torch-thiſtle, becauſe the whole plant reſembles a large green deeply-furrowed melon. See Cactus.

MELOCHIA, a name adopted by Dillenius from Proſper Alpinus. Sonnini ſays it is the Arabic appellation of *Corchorus olitorius*, a plant agreeing in many particulars of habit and properties with the genus in queſtion. Linn. Gen. 348. Schreb. 454. Willd. Sp. Pl. v. 3. 600. Mart. Mill. Dict. v. 3. Juſſ. 274. Cavan. Diſſ. 318. Lamarck Dict. v. 4. 81. Illuſtr. t. 571. Gærtn. t. 113.—Claſs and order, *Monadelphia Pentandria*. Nat. Ord. *Columniferæ*, Linn. *Malvaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, cut halfway down into five, half-ovate, acute, permanent ſegments, and ſometimes accompanied by an external unilateral calyx of three leaves. *Cor.* Petals five, inverſely heart-ſhaped, large and ſpreading. *Stam.* Filaments five, awl-ſhaped, united at the baſe into a little cup embracing the germen; anthers ſimple. *Piſt.* Germen ſuperior, roundiſh; ſtyles five, awl-ſhaped, erect, the length of the ſtamens, permanent; ſtigmas ſimple. *Peric.* Capſule roundiſh, or five-ſided, of five cells and five acute valves, with double partitions contrary to the valves. *Seeds* either ſolitary or in pairs, roundiſh on one ſide, angular from compreſſion at the other.

Eſſ. Ch. Calyx ſingle or double. Petals five, ſpreading. Filaments awl-ſhaped. Styles five. Capſule of five cells. Seeds one or two in each cell.

A tropical, and principally Weſt Indian genus of plants, for the moſt part ſhrubby, and agreeing with *Sida*, more than with any other of the ſame natural order, in habit and appearance. The 14th edition of Syſt. Veg. enumerates ſeven ſpecies; Willdenow has fourteen. The *leaves* in all are ſtalked, ſimple, ſcarcely lobed, unequally crenate or ſerrated, and of courſe alternate. *Flowers* various in ſize, ſituation, and colour. The following examples may ſuffice.

M. *pyramidata*. Linn. Sp. Pl. 943. Jacq. Hort. Vind. v. 1. 11. t. 30. Cavan. Diſſ. 319. t. 172. f. 1.—Flowers in lateral umbels. Capſule pyramidal, with five ſharp-pointed angles. Leaves naked.—Native of Braſil and the Caribbee iſlands. It has long been known in the ſtoves of this country, but is kept rather as a curioſity than an ornament. The *ſtem* and *branches* are round, ſtraight and wand-like. *Leaves* ovate, pointed, ſerrated, two or three inches long and one broad, ſmooth, with one rib, and many ſtraight, parallel, oblique veins. *Flowers* ſmall, purple, four or five together, in lateral hairy umbels.

M. *concatenata*. Linn. Sp. Pl. 944. Cavan. Diſſ. 322. t. 175. f. 2. (Althæa indica, floſculis parvis, &c.; Pluk. Phyt. t. 9. f. 5.)—Spikes terminal, crowded. Capſules globoſe. Leaves ſerrated, naked.—Native of both Indies. We have not met with it in any garden. The *infloreſcence*, and very ſmall *flowers*, diſtinguiſh this from the foregoing; and the globular capſules, about the ſize of peas, encompaſſed with the long linear ſegments of the *calyx*, and diſpoſed in *ſpikes*, like beads, are peculiar.

M. *odorata*. Linn. Suppl. 302. Forſt. Prod. 47. Cavan. Diſſ. 320. t. 173. f. 2.—Leaves ovate, ſomewhat heart-ſhaped, doubly ſerrated, naked. Corymbs axillary, many-flowered, downy, on long ſtalks.—Gathered by Forſter in the iſlands of Tanna and Amſterdam. A very fine ſpecies, with broad ovate *leaves*, three or four inches long, doubly and coarſely ſerrated, naked but roughiſh to the touch. The very abundant large and handſome *flowers*, which we preſume are fragrant, grow on long, corymboſe, finely downy, axillary *ſtalks*. *Calyx* downy, globoſe, with long ſharp ſegments. *Petals* much longer than the calyx, of what colour we know not.

M. *lupulina*. Swartz. Ind. Occ. v. 2. 1141.—Cluſters compound, crowded, axillary, ſomewhat umbellate, hairy. Leaves ovate or heart-ſhaped, doubly ſerrated, ſoft and hairy beneath.—Native of Jamaica. Communicated to the younger Linnæus by ſir Joſeph Banks. The ſhape of the *leaves* is not unlike the laſt, but their under ſide is clothed with minute hairs, very ſoft to the touch. The permanent ſcarioſe *calyx* has a tawny hue and ſomewhat of the aſpect of hops. *Corolla* ſmall, white.

M. *corchorifolia*. Linn. Sp. Pl. 944. Dill. Elth. t. 176. f. 217.—Flowers in axillary ſeſſile hairy heads. Leaves ovate, obſcurely lobed, crenate, ſmooth.—Native of the Eaſt Indies. The *leaves* are about two inches long, very ſmooth. *Flowers* ſmall, pale fleſh-coloured, in ſmall axillary heads.

MELODIA, Lat. and Ital., *Melodie*, Fr., μελωδια, Gr., from μελος and ωδη, *continuata ſonorum connexio*; *Melody*, Eng.

To deſcribe all the rules and prohibitions in framing melodies, would require a code of laws equal to an art of poetry.

Dr. Pepuſch (Treatiſe on Harmony) gives a very ſhort, but intelligible definition of melody; which, he ſays, "is the progreſſion of ſound proceeding from one note to another ſucceſſively in a ſingle part."

Rouſſeau is eloquent on the ſubject. Melody he defines, "the ſucceſſion of ſounds according to the laws of rhythm and modulation, ſo as to form muſical phraſes agreeable to the ear; vocal melody is called *chant* by the French, inſtrumental is called *ſymphonic*."

The Italians called melody *cantilena*; by the Engliſh it is termed air, tune, principal or treble part.

A ſeries of ſounds only becomes melody by being in ſome ſpecific time, or meaſure, that is, by being arranged in regular proportions of time, called *bars*; which, however divided and ſubdivided into notes of different value, muſt be performed iſochronally, that is, in equal time, and theſe bars have their laws likewiſe, and are governed by *accents*. See Accent and Bar.

Though melody is ſo neceſſary in the treble part of a compoſition, it is not neceſſary in the baſe, at leaſt of the ſame kind. A polyphonic compoſition is admired by maſters when all the parts *ſing*, that is, when each part has a ſeries of notes that may be called melody; unleſs in fugues and imitations, it is not neceſſary that the inferior part ſhould move in the ſame kind of notes as the principal. For as only thirds and ſixths can move together in a regular aſcent or deſcent in the ſame kind of notes diatonically, they ſoon tire, and manifeſt a want of reſources in the compoſer. And though melody is admired and expected in the ſeveral parts, it is beſt when of a different character from the principal part.

It is in the following periods that the eloquence, feeling, refined taſte, and enlarged views of Rouſſeau appear in this article.

"Melody," he ſays, "is founded on two different principles: conſidered in the relations which the ſounds of a key bear to each other, it has its principle in harmony, as it is an harmonical analyſis, which gives the degrees of the gammut, the chords of the key, and the laws of modulation, the only elements of melody. Upon this principle all the force of melody is confined to the flattering the ear with agreeable ſounds, as the eye is flattered by an agreeable change of colours, without their repreſenting by their mixture any particular object or deſign. But conſidered as an art of imitation, by which we can awaken different images in the mind, move the heart with different ſentiments, excite and calm the paſſions, operate, in ſhort, moral effects beyond the immediate empire of the ſenſes, we muſt ſeek another principle; for no ſuch effects as theſe can be derived from harmony.

"What then is the ſecond principle? It is in nature as well as the firſt; but it can only be diſcovered by more ſubtle and penetrating obſervation, to which nature only gives birth, and which cannot be taught. It is inſtinctive, and often unknown to the poſſeſſor. This principle is the ſame as that which varies the tone of voice in ſpeech, according to what we ſay, and what we feel in ſaying it. It is the accent of languages which determines the melody of every country; it is the accent which ſpeaks in ſinging; and we ſpeak with more or leſs energy, as the language has more or leſs accent. The language in which the accent is moſt marked, produces a melody the moſt lively and impaſſioned; and that which has little or no accent, can only ſuggeſt a languid and cold melody, without character and without expreſſion. Theſe are the true principles. When we quit them, and ſpeak of the power of muſic over the human heart, we know not what we talk about. If muſic only paints by the power of melody, and derives from melody all its force, it follows that all muſic which does not *ſing*, however harmonious it may be, is not an imitative muſic; for as it can neither move the affections nor paint with its fine chords, it ſoon tires the ear and leaves the heart cold. It follows, then, that in ſpite of the multiplicity of parts which harmony can furniſh, and which is ſo often abuſed, as ſoon as two melodies are heard at once, they mutually enfeeble and efface each other, however excellent they may be in themſelves."

This is the language which the Chineſe, and every people not accuſtomed to harmony, talk. See Chinese *Muſic*.

Rouſſeau is a champion for melody, and M. Laborde for harmony; but we think now, as we did forty years ago, that melody and harmony are as imperfect when ſeparate, as an animal formed by nature with two legs or two arms, is with one. In muſic, melody and harmony have each diſtinct and peculiar beauties; but after being heard together, nothing can compenſate for their ſeparation. Melody ſhould be poliſhed, and harmony purified; but it was one of the paradoxes of the ingenious Jean Jacques, in aſſerting "that harmony was an imperfection, a Gothic and barbarous invention; only wanted by the groſs and obtuſe organs of northern regions."

Rhythm is as neceſſary to melody, as that the ſounds ſhould follow each other in a manner agreeable to the ear. Sounds of the ſame length can form no intereſting melody; they muſt be broken into notes of different duration, muſt be phraſed, and have ſome ſenſe given them, as well as words in literature and grammar.

MELODIEUX, *Fr.* Melodious. This epithet is ſeldom applied with accuracy. A ſweet-toned voice in ſpeech or ſong may be called *melodious*; but to ſay that an air or tune, or a piece of muſic is melodious, is a pleonaſm that borders on vulgarity: as theſe words themſelves imply melody; therefore to ſay that an air or tune is melodious, is ſaying that melody is melodious.

MELODINUS, in *Botany*, is one of Forſter's genera, derived from μηλον, *an apple*, and δινεω, *to entwine*, becauſe the plant bears globular fruit reſembling apples, and its ſtem is twiſted or ſcandent.—Forſt. Nov. Gen. 19. Linn. Suppl. 23. Schreb. 165. Willd. Sp. Pl. v. 1. 1274. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 74. Juſſ. 148. Lamarck Illuſtr. t. 179.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, permanent, of one leaf, cloven into five, ovate ſegments, folding over each other at the margin. *Cor.* of one petal, ſalver-ſhaped; tube cylindrical, thrice as long as the calyx; limb flat, cloven into five, ſickle-ſhaped, crenulated ſegments, twiſted to the right, ſhorter than the tube. Nectary in the mouth of the tube, ſtellated, compoſed of five, cloven, lacerated ſegments. *Stam.* Filaments five, awl-ſhaped, very ſhort, in the middle of the tube; anthers ovate. *Piſt.* Germen ſuperior, globoſe; ſtyle round, the length of the calyx, diviſible into two parts; ſtigma conical, acute. *Peric.* Berry fleſhy, globoſe, with a fleſhy partition. *Seeds* numerous, ovate, or roundiſh, rather compreſſed, imbedded in pulp.

Eſſ. Ch. Corolla contorted, its mouth crowned with five cloven jagged valves. Berry globoſe, of two cells, with many ſeeds.

1. M. *ſcandens.* Climbing Melodinus. Linn. Suppl. 167. Forſt. Prod. 20.—Gathered in New Caledonia by Forſter, who ſent it to Kew Garden in 1775. It is kept in the ſtove, but does not appear to have flowered. The *ſtem* is ſhrubby, climbing, with round, ſmooth, leafy branches. *Leaves* oppoſite, ovate-oblong, with a blunt point, entire, three or four inches long, thick-edged, ſmooth and ſhining, with one rib, and numerous, fine, reticulated veins; paler beneath. *Footſtalks* very ſhort and thick. *Stipulas* none. *Flowers* terminal, numerous, in a denſe downy panicle, with oppoſite ſtalks, and ſmall, ovate bracteas. The *corolla* is externally downy, about half an inch long. *Fruit*

the ſize of a ſmall orange. The habit of this plant, and form of the flowers, are much like *Rauwolfia*, but the numerous ſeeds afford a ſufficient mark of diſtinction.

MELODORUM, ſo named by Loureiro; from *mel*, *honey*, and *odorum*, *fragrant*, on account of the remarkable ſweetneſs and fragrance of the fruit; as he himſelf informs us.—Loureir. Cochinch. 351.—Claſs and order, *Polyandria Polygynia.* Nat. Ord. *Coadunatæ*, Linn. *Anonæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of three ſhort, acute, ſpreading, permanent leaves. *Cor.* Petals ſix, triangular, nearly equilateral, fleſhy, inflexed and cloſed, in a double row, concealing the organs of impregnation. *Stam.* Filaments none; anthers numerous, oblong, club-ſhaped, affixed to a ſlightly convex receptacle. *Piſt.* Germens ten, oblong, preſſed together by the ſurrounding anthers; ſtyles none; ſtigmas forming a circle, very ſhort. *Peric.* Berries ten, ovate-oblong, rather cylindrical, rough, of one cell, with many ſeeds. *Seeds* compreſſed, imbedded in pulp.

Eſſ. Ch. Calyx of three leaves. Petals ſix, triangular, equilateral, cloſed. Berries numerous, oblong, many-ſeeded.

1. M. *fruticoſum.* Cây Bo gie of the Cochinchineſe.—Leaves lanceolate, ſmooth. Stem ſhrubby.—Native of buſhy places in Cochinchina. *Stem* four feet high, erect, with ſpreading *branches.* *Leaves* alternate, lanceolate, entire, ſmooth, fragrant. *Flowers* ſcattered, ſolitary, yellowiſh-brown. *Berries* of the ſame colour, an inch and a half long, with many ſeeds, and a very ſmall quantity of highly delicious pulp. A decoction of the *leaves* is uſed for removing obſtructions.

2. M. *arboreum.* Cây Nhaoc of the ſame people.—Leaves oblong, downy. Stem arboreous.—Native of woods in Cochinchina. A large *tree*, with aſcending *branches.* *Leaves* alternate, ſtalked, ovate-oblong, pointed, entire; downy beneath. *Flowers* ſcattered, ſolitary, whitiſh-green, fleſhy, downy, on very ſhort ſtalks. *Berries* numerous from each flower, not eatable. The timber is uſed for building.

Theſe plants appear, by the above deſcriptions, to be very nearly allied to the genus *Uvaria*, to which indeed we ſhould, without much heſitation, refer them. Willdenow has omitted them.

MELO-DRAMA, Lat., a drama written for muſic. In 1772, when a few perſons in France began to perceive that it was poſſible for operas to be ſet to better muſic than that of Lulli and Rameau, an anonymous treatiſe was publiſhed at Paris, under the title of "Traité du Melo-drame, ou Reflexion ſur la Muſique dramatique," 8vo.

In 1765, a ſmall tract was publiſhed by the chevalier de Chaſtellux, "On the Union of Poetry and Muſic;" and in 1772, the anonymous "Treatiſe on Muſical Drama." The former had a correſpondence with Metaſtaſio on the ſubject of his book. The poet's anſwers to his letters are preſerved in late editions of his works, and tranſlations inſerted in the memoirs of his life and writings publiſhed in 1796. In the tract of M. de Chaſtellux, he gives in his parallel between muſic and poetry, the *pas* to the former. In the treatiſe on the melo-drama, the preference is decidedly given to poetry; and muſic degraded into his menial ſervant, with no better employment than that of rendering the voice of declamation more audible than that of common ſpeech.

Theſe two writers were the precurſors of the Gluckiſts and Picciniſts at Paris. And the diſpute is reduced to this ſimple queſtion; Which, in an opera or muſical drama, is to be the tyrant, and which the ſlave? Metaſtaſio long ſince with reaſon and good taſte determined in his dramas that no tyranny or ſlavery ſhould ſubſiſt; but that the two ſiſters ſhould mutually aſſiſt each other. He gave all the buſineſs of the fable to *recitative*, or muſical declamation, and the embelliſhing ſentiment to the *airs* in a recapitulation of the dialogue at the end of each ſcene.

Though the poetry of Metaſtaſio's operas has always been admired as the beſt, and almoſt the only poetry truly lyrical in modern languages; yet it muſt be allowed that beautiful air, impaſſioned ſtrains, pictureſque muſic, grateful harmony, fine voices highly cultivated, and great vocal talents, have rendered operas more attractive and captivating than the poetry alone, with all its high poliſh and beautiful ſentiments could have done. Metaſtaſio in his latter days joined in the complaints of French reformers of the Italian operas, againſt fine muſic and fine ſinging. No ſuch jealouſy appears in his letters to Farinelli, or to any other correſpondent, till he had ceaſed writing, when muſical compoſition and vocal talents were much more admired and applauded than at preſent.

MELOE, in *Geography*, a ſmall iſland in the Baltic; 14 miles E.N.E. of cape Lindeſneſs.

Meloe, the Bloſſom-eater, in *Natural Hiſtory*, a genus of inſects of the order Coleoptera; of which the character is antennæ moniliform; thorax roundiſh; head inflected and gibbous; ſhells ſoft and flexile. This genus is ſeparated into two diviſions, *viz.* into thoſe that have wings and thoſe that have none, of which the latter is ſubdivided. There are, in the ſeveral diviſions or ſections, about 36 ſpecies: of theſe only four are common to our own country, the others are diſtributed over the globe.

Section A. The inſects of this diviſion have no wings, and their ſhells are abbreviated.

Species.

* Proscarabæus. This ſpecies is entirely of a blue-black, or dark violet colour. It inhabits Europe, and is deſcribed and figured in Mr. Donovan's Engliſh Inſects. Its trivial name is the "oil-beetle:" thorax narrower than the head; ſhells very ſhort and oval; abdomen long; the female is thrice as large as the male. It is found very frequently in the ſpring of the year in our own fields and paſtures creeping ſlowly, the body appearing to be ſo much diſtended with eggs as to cauſe the inſect to move with great difficulty. When touched it exudes a yellowiſh moiſture like oil from its pores, whence it derives its name, which was formerly celebrated for its ſuppoſed efficacy in the rheumatiſm, applied to the parts in the form of an embrocation. It has been likewiſe recommended as a remedy in hydrophobia.

* Variegatus. This is of a dull green; thorax edged with red; ſhells punctured; inhabits Europe; the antennæ are purple; head and thorax dull green, edged with purpliſh red; the ſhells are ſhort, very minutely punctured; body large, above variegated with red, green, and copper, beneath and legs purple.

Majalis. Dorſal ſegments of the abdomen red. It inhabits divers parts of Europe, and very much reſembles the proſcarabæus, and has been thought to be only a variety of it.

Marginata. Black; thorax and ſhells edged with ferruginous; it inhabits Italy; the ſhells are ſhort, ſmooth, coriaceous; the abdomen and legs are black.

* Punctata. Black; thorax and ſhells with minute punctures: inhabits England.

* Tecta. Blue-black; ſhells nearly as long as the abdomen; antennæ thicker in the middle: it inhabits Europe, is ſmaller than the proſcarabæus, and differs in the ſtructure of the antennæ, having the ſhells nearly as long as the abdomen.

Section B. Winged; ſhells as long as the abdomen; divided into

α, Jaw horny, bifid, containing 26 ſpecies, and conſtituting the tribe *Mylabris* of Fabricius: and

ϐ, Jaw linear, entire; containing four ſpecies, which are comprized in the *Cecroma* of Fabricius.

Species in ſubdivion α, Jaw horny, bifid.

FASCIATA. Black; ſhells with a yellow band in the middle. Is found in India; head black; eyes teſtaceous; thorax black, with a ferruginous ſpot on each ſide; wings hyaline, with ferruginous ribs and veins.

CICHOREI. Black; the elytra yellow, marked with three black bands. It is a native of Aſia and the eaſtern parts of Europe. It is uſed in medicine among the Chineſe. The antennæ are ſometimes yellow at the tips. Found on the cichoreum or ſuccory, and varies much in the colour of the ſhells and diſpoſition of the bands.

PRÆUSTA. Black; tip of the ſhells teſtaceous, with a black ſpot: inhabits Barbary and is found among corn.

MARGINALIS. Black; ſhells with a ferruginous margin; inhabits Barbary, and, like the other, is found among the corn.

ALGIRICA. This alſo is black; ſhells teſtaceous, immaculate: it is found in various parts of India.

CAPENSIS. Black; ſhells with ſix yellow ſpots, the firſt is curved: it inhabits the Cape of Good Hope.

HERMANNIÆ. Villous, black; ſhells with a yellow ſpot at the baſe and two indented yellow bands. It inhabits Guinea; reſembles the cichorei, but is not half ſo large. The antennæ are black, ferruginous at the tip; head and thorax black with a few cinereous hairs.

PUNCTUM. Villous, black; ſhells with two bands, the firſt yellow with a black dot, the hinder one reddiſh. It inhabits Tranquebar.

DECEM-PUNCTATA. Black; ſhells teſtaceous, with five black dots: it is found in Italy.

QUADRI-PUNCTATA. Black; ſhells teſtaceous, with two black dots: inhabits Ruſſia and reſembles the laſt.

TRI-MACULATA. Black; ſhells yellow, with a brown band and common dot. It inhabits the Eaſt. The ſhells have a common brown ſpot in the middle, and a brown band behind which hardly reaches the outer margin.

ARGENTATA. Covered with ſilvery down; the ſhells have yellowiſh ſpots, moſt of them connected at the margin. It inhabits Senegal; the antennæ are ferruginous; the ſhells have a ſmall yellowiſh ſpot at the baſe; three marginal ones and one near the tip all ſurrounded with a black ring; the tip is yellowiſh, having a ſmall black dot in the middle; the legs are ferruginous.

AMERICANA. Black; thorax ſemi-circular; the ſhells have three yellow bands. It inhabits America. The tip of the antennæ is clavate.

INDICA. This ſpecies is black; the ſhells are yellowiſh, fulvous behind, with a black dot and three-lobed ſpot at the baſe, indented band in the middle and ſemi-lunar margin at the tip. It is found in India.

ELONGATA. Gloſſy-black; ſhells yellow varied with blue.

AUREA. Green-gold; ſhells fulvous.

ARCUATA. Black, hairy; ſhells with a curved yellow ſpot on the fore-part, and two waved yellow bands. Antennæ black, clavate at the tip.

BI-FASCIATA. Black, hairy; ſhells with a yellow round ſpot on the fore part and at the outer angle, and two yellow bands. It is found in India. Antennæ yellow; baſe of the ſhells piceous. The yellow ſpot at the angle of the ſhells is ſometimes wanting.

TRI-FASCIATA. Steel-blue, with a greeniſh ſilky gloſs; ſhells grey, with two greeniſh-black bands, one of them common. It inhabits near the Caſpian ſea.

ARATA. Deep gloſſy-black; ſhells with a yellow waved band towards the tip. It inhabits near the Caſpian ſea; the antennæ are clavate at the end; the legs ſecrete a kind of oil.

NECYDALEA. Black; ſhells red, a little ſhorter than the abdomen, diſtinct at the tip. It is found in Ruſſia.

PENNSYLVANICA. This ſpecies is entirely black and opaque: it inhabits Pennſylvania in America.

CHLOROPTERA. Black, ſubvillous; ſhells yellow: it inhabits France. The firſt joint of the antennæ is three times as large as the reſt.

MELANURA. Shells yellow, with four black ſpots, the tip black; antennæ clavate: it inhabits Calabria.

OCHROPTERA. Black; ſhells ſaffron, black at the baſe, on each ſide before and behind the middle is a ſaffron dot, with a black interrupted band and tip.

BICOLOR. Black; ſhells yellow, with a black dot on each ſide at the baſe; the tip and band in the middle, which is broader at the edges, are black.

Species, in ſubdiviſion ϐ, Jaw linear and entire.

SCHÆFFERI. Green; antennæ and legs entire. Inhabits Europe. Shanks and tarſi of the male dilated, appendaged.

VAHLII. Green; antennæ and legs black: an inhabitant of Barbary. Abdomen reddiſh at the baſe.

SCHRÆBERI. Green; antennæ, legs, and three ſegments of the abdomen, yellow.

GOUANI. Black; ſhells with a ſanguineous band and tip.

The larvæ as well as the perfect inſects of this genus feed on leaves.

The officinalis cantharis, or Spaniſh-fly, was till very lately ſuppoſed to be a meloe, and indeed is generally ſo arranged in our pharmacopeias; but more minute and accurate obſervations have ſhewn that it is a ſpecies of the LYTTA genus; which ſee.

MELOLONTHA, the name of a very peculiar ſort of beetle, which is found in all parts of England, and in many other countries among trees and hedges. The French call them *hanneton*, and we *cock-chafers*, *dorrs*, and by many other names. The name melolontha is as old as Ariſtotle, and is given this creature from its feeding on the bloſſoms of the crab or wild apple. We have, of late years, had great damages done by the grubs of theſe beetles working under ground; but in Ireland they have been uſed to come in ſwarms, in certain years, in the beetle ſtate, and have been ſo terrible to that country, that the people have called them locuſts.

The firſt time they are remembered by authors to have appeared in this vaſt abundance, in that country, was in the year 1688. They then appeared in the ſouth-weſt part of the county of Galway; they appeared firſt upon the coaſt, and were brought by a ſouth-weſt wind, a wind ſo common there, that it may almoſt be called the trade wind of Ireland; from the coaſt they ſoon ſpread over the inland parts of the country, and were ſeen every where in ſuch numbers, as were ſcarcely to be conceived. They never ſtirred in the day time, but were ſeen covering the leaves and branches of trees and hedges, and in many places hanging down in prodigious cluſters on one another's backs, in the manner of bees when they ſwarm. As ſoon as the ſun ſet, they uſed to leave the hedges, &c. and take wing, gathering in bodies, and making a humming confuſed noiſe like that of drums at a diſtance. They ſometimes formed bodies together, that darkened the air for three or four miles ſquare. They flew ſo low ſometimes, that it was ſcarcely poſſible for a perſon going along to make his way through them; and by ſtriking againſt the faces and necks of women and children, they did much miſchief, every one leaving a mark behind it; and thoſe of this ſex or age, who had been among them, came home all over bruiſes.

This, however, was little to the miſchief they did the fields; for though the middle of the ſummer was the ſeaſon in which they came, they had in a few days eaten up all the leaves of the trees ſo completely, that they all looked as bare as in the depth of winter. The noiſe they made, while eating in vaſt numbers together, was like that of ſawing timber. The gardens fared no better than the hedges, for they eat up leaves, young ſtalks, and fruit, and every thing that was green and ſoft there, and left only a parcel of naked ſticks behind them. Many of the trees, thus ſtripped, wholly periſhed. Phil. Tranſ. N° 234. See SCARABÆUS *Melolontha.*

MELOMELI, a word uſed by the ancients to expreſs honey impregnated with quinces.

MELON, in *Gardening*, the common name of a well known plant, which is much employed in forcing-frames, &c. See CUCUMIS, and FORCING.

MELON-*ground*, the ſpace or portion of ground in the kitchen-garden, or other place, which is appropriated to the culture of melons and other vegetables that require artificial heat. See GARDEN, and MELONARY.

MELON-*thiſtle*, the common name of a plant of the thiſtle kind. See CACTUS.

MELON, *Water*, or *Citrul*. See CUCURBITA.

MELONS, *Petrified*, a name given by the people who have written books of travels, &c. to certain ſtones found on mount Carmel. The monks who inhabit that mountain at this time, and who pretend to be the followers of Elias the prophet, tell a legendary ſtory about theſe ſtones, which has given occaſion to the name. They ſay that when Elias lived on that mount, a certain gardener paſſing by his cave with melons, the prophet aſked one of them; but the fellow replying, that they were not melons, but ſtones that he carried, the prophet miraculouſly fulfilled the ſaying, and converted them into ſtones. Travellers who are fond of theſe ſtories were uſually glad to pick up one of theſe ſacred ſtones as they went on; and the monks have been careful enough to gather all they could find for the better opportunity of obliging their viſitors; ſo that though they were once very common, they are now only to be had by the favour of theſe people.

Breynius is the only author who has given a good account of them; he ſays, that they are ſpheric or ſpheroidal ſtones, of various ſizes, from that of a hen's egg to that of the largeſt melon, or even more than that. They are generally found bedded in a very hard ſand-ſtone, of a greyiſh or aſh-colour; but they come out whole on breaking the ſtone, and are of a ſmooth ſurface; a greyiſh colour, or ſometimes a browniſh ferruginous hue. When they are broken, there is always a cavity found in them, ſometimes regular and even, ſometimes very irregular, and generally proportioned to the bigneſs of the ſtone. This cavity is lined on both ſides with minute cryſtals, which are very bright and pellucid, and have their points ſtanding toward the centre of the cavity. This ſubſtance of the ſtone itſelf approaches to the nature of marble, of a yellowiſh colour, and capable of a good poliſh; when wrought looking very like the Florentine marble. This is a cruſt of about half an inch or an inch in thickneſs, according to the bigneſs of the ſtone, and ſometimes this is covered with a paler-coloured cruſt, of the thickneſs of a ſtraw, which in ſome degree reſembles the bark or rind of the fruit. Theſe ſtones are truly a ſort of concave natural nodules, of the nature of our hollow flints. They have had no fruit for their matrix, nor have ever had any of the ribs and furrows which the melon has, nor any mark of the ſtalk; and within they have neither the natural diviſions of the melon, nor any thing reſembling the ſeeds. It is not only the want of many parts abſolutely eſſential to the fruit ſuppoſed to be petrified, which ſhews that opinion to be erroneous; but the courſe of nature, in petrifactions in general, argues alſo greatly againſt it.

The things we meet with, in this ſtate, are all of them ſuch as are naturally hard, dry, and permanent, and none of the tender and ſucculent bodies, ſuch as the melon, and the like fleſhy fruits, which muſt neceſſarily rot in the water that conveys the ſtony matter, before it could at all enter their pores. And the ſtones are certainly analogous to thoſe concave nodules of a ferruginous colour, in the cavities of which amethyſts are produced; and to that genus of ſtones which Woodward calls concave cryſtalline balls, common in many parts of the world.

The fallacy of an extravagant opinion in regard to foſſils of any particular form, is not peculiar to theſe ſtones, as witneſs the ſmall ſhells petrified and found in Egypt, which from their flat and roundiſh ſhape, are ſaid to be the lentiles, which the children of Iſrael eat when making the pyramids: the *cornua Ammonis*, which is the remains of a ſea-ſhell, and yet is ſuppoſed to be a petrified ſerpent; the *nummi minerales*, which are the operculums of ſhell-fiſh, but are generally ſuppoſed by the vulgar, about the places where they are found, to be medals and coins petrified with lying in the earth, and many the like follies. Breyn. de Melon. Petr. Mont. Carm.

MELONARY, in *Gardening*, the portion of ground in the kitchen-garden principally allotted for the buſineſs of early and general hot-bed work, in the culture of melons and cucumbers as well as occaſionally in other framing culture.

Theſe compartments are moſtly incloſed by ſome ſort of fence, and are particularly convenient and uſeful, as in the practice of hot-bed culture there is unavoidably a conſiderable littering occaſioned at times, by means of the neceſſary ſupplies of hot-dung, ſtraw, litter, and other materials, both in the making of the beds and after-culture; which by this means being confined to a particular part, the whole is performed more conveniently, and without incommoding the economy of the other parts of the garden.

They are alſo very uſeful when properly choſen in the drieſt and warmeſt ſituations, in the advantage of having the hot-beds on dry ground, and ſheltered from cutting winds, with the full benefit of the whole day's ſun, as well as in being more ſecure. In conſiderable gardens, the places allotted for this uſe are ſometimes of ſuch extent, as to have the hot-houſes, or forcing houſes, and other appurtenances of that kind, where culture by artificial heat is required, near together, by which time and trouble is ſaved, and great advantage in other reſpects gained.

In the choice of a place for this purpoſe, ſome part of the warmeſt, beſt-ſheltered, dry quarter of the garden, which is well defended from the northerly and north-eaſterly winds, not liable to inundation or the ſtagnation of water, and conveniently ſituated for bringing in dung, tan, earth, &c. ſhould be fixed upon. And if, with theſe advantages, it lies rather a little higher or very gently ſloping towards ſome lower part, it will be more proper, eſpecially when towards the full ſun from riſing to ſetting, ſo as to admit of ranging the hot-beds longitudinally eaſt and weſt, or as nearly in that direction as poſſible. See GARDEN.

With reſpect to the extent or dimenſions, they muſt be according to the quantity of hot-bed framing required, as from two or three, to ten, twenty, or thirty frames, or more; and ſometimes alſo for hot-bed ridges for hand-glaſſes in the ſame proportions. They may of courſe be from two or three to five or ten rods ſquare, or to that of a quarter, or half an acre, or more; in which, beſides the part immediately allotted for the hot-beds, it is convenient to have room for the previous preparation of the dung, &c. for earthing the hot-beds. And in reſpect to form the moſt eligible ſhape is that of a ſquare, either an equal or an oblong ſquare.

When incloſed, the fences may be ſix, ſeven, or eight feet high in the northerly or back part and five or ſix in front, the ſides correſponding, though when extenſive they may be nearly of equal height all around. And the internal part, or immediate place for the hot-beds, even when dry, ſhould be a little elevated to throw off the falling wet of heavy rain, &c. and when unavoidably low, or liable to be wet in winter or ſpring, be raiſed, with ſome dry materials, conſiderably above the general level, that the hot-beds may ſtand dry, as well as to afford advantage in performing the buſineſs of cultivation.

The ground for the immediate place of the hot-beds may generally remain even or level; ſome, however, form ſhallow trenches the width and length of the intended hot-beds, as from ſix to twelve inches deep, and make the lower part of the bed in the trench; which, however, is more proper in a dry or ſomewhat elevated ſituation than in low or wet ground, as water is apt to ſettle in the bottom, and chill the beds, occaſioning the heat to decline ſuddenly.

Beſides, by having the hot-beds wholly above ground, there is a better opportunity of applying the occaſional linings quite from the bottom upwards. By proper attention in the conſtruction of the different parts of theſe grounds and in the building of the fences, they may alſo be rendered highly uſeful in raiſing various kinds of fruit, which could not otherwiſe be the caſe.

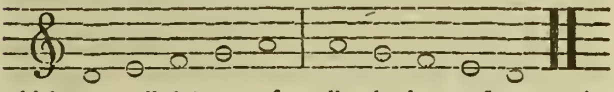
MELONGENA, in *Botany*, a word of Arabian origin, according to Ambroſinus, from whence the Italian *Melanzana* ſeems to have come, rather than from *Mala inſana*, as is commonly ſuppoſed; the Egg Plant. This fruit is ſaid to be much uſed for food among the Arabs. It is alſo, according to Matthiolus, commonly eaten in Italy, being dreſſed in the form of fritters, with flour and oil, or butter, and ſeaſoned with pepper and ſalt. That author gives *Melongena* as the vulgar Lombard name of the fruit, which he ſays is called by the Tuſcans *Petranciani*. We cannot but ſuſpect the Latin name *Mala inſana*, Mad Apples, which this fruit does not appear in any manner to deſerve, to have been a corruption of the Arabic or Italian appellation, rather than the reverſe. See SOLANUM.

MELOPEPO, from *Melo*, a Melon, and *Pepo*, a Pompion, the name of various round kinds of Gourd. See CUCUMIS.

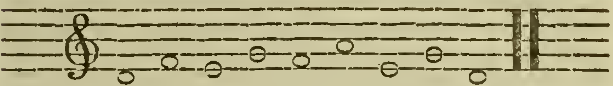
MELOPŒIA, Gr., *Melopée*, Fr., a term in the muſic of the ancients, which implied the ſelection and arrangement of ſuch ſounds as were fit for ſong. The word is derived from μελος, *cantus*, οιεω, *facio*, *fingo*, *fabrico*, *compono*, "to build the lofty rhyme."

Melopœia had its particular rules, ſeveral of which are come down to us, and are ſtill clear and intelligible: ſuch as that an air, or piece of melody, ſhould be compoſed in ſome particular genus, and be chiefly confined to the ſounds of ſome certain mode. As to the ſucceſſion, or order of theſe ſounds in the courſe of the air, that was in general confined to four kinds, which Euclid ſpecifies in his Harmonic Introduction. Theſe we ſhall endeavour to deſcribe with exactneſs, as they may throw ſome light upon ancient melody.

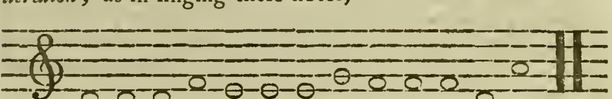
Euclid tells us, firſt, that ſounds may move either aſcending or deſcending regularly; as thus:



which was called ἀγωγη: ſecondly, by leaps of greater intervals than a ſecond; thus,



which was called πλοκη, *interwoven:* thirdly, by repeating the ſame ſound ſeveral times, which was called πεττεια, *iteration;* as in ſinging theſe notes,



and fourthly, that ſounds may be ſuſtained in the ſame tone, which we call a *holding note*, and which the Greeks expreſſed by the word τονη.

There were many rules to be obſerved in moving by leaps, or disjunct degrees, the principal of which was to prefer, in general, conſonant to diſſonant intervals. It was likewiſe enjoined not to divide any two ſemitones into quarter tones, together, or two ſucceſſive tones into ſemitones, nor were two major thirds to follow each other.

But theſe, and a great number of other rules laid down by Ariſtoxenus, with reſpect to the ſucceſſion of intervals, were all derived from the genera, the rules for which were rules for melody. The diatonic genus of the ancients reſembled our natural ſcale in every particular: and it is allowed by Ariſtoxenus even that three tones may ſucceed each other, aſcending or deſcending, which is all that is allowed in our diatonic, except in minor keys, where we aſcend to the octave of the key note by a ſharp ſeventh, which the ancients ſeem never to have admitted.

A further detail or explanation of theſe rules would not make the matter much clearer; however, there are ſome particulars collected together in the firſt book of Ariſtides Quintilianus, that ſeem to merit attention.

He ſets off by dividing Melopœia into three ſpecies, taken from the great and general ſyſtem, which he names after the ſounds called *hypate*, *meſe*, and *nete;* that is, loweſt, middle, and higheſt; and theſe denominations reſembled, with reſpect to melody, our diſtinctions of baſe, tenor, and treble.

With regard to modulation in melody, he has the ſame diſtinctions as Euclid for the ſeveral ſpecies, though he differs a little from him in his manner of defining them: but theſe differences are of ſmall importance to us now; and indeed the authority of Euclid is ſo ſuperior to that of Ariſtides Quintilianus, that nothing which can be cited from him would have weight ſufficient to invalidate the teſtimony of ſo exact and reſpectable a writer.

However, the moral diſtinctions of Melopœia to be found in Ariſtides Quintilianus are ſo curious and fanciful, that we ſhall inſert a few of them here.

He allows of three modes (τροποι) or ſtyles of Melopœia: the *dithyrambic*, or bacchanal; the *nomic*, conſecrated to

Apollo; and the *tragic;* and acquaints us that the firſt of theſe modes employed the ſtrings, or ſounds, in the middle of the great ſyſtem; the ſecond, thoſe at top; and the third, thoſe at the bottom.

Theſe modes had other ſubaltern modes that were dependent on them; ſuch as the *erotic*, or amorous; the *comic;* and the *encomiaſtic*, uſed in panegyrics. All theſe being thought proper to excite or to calm certain paſſions, were, by our author, imagined to have had great influence upon the manners (ηθη); and, with reſpect to this influence, Melopœia was divided into three kinds: firſt, the *ſyſtaltic*, or that which inſpired the ſoft and tender paſſions, as well as the plaintive, or, as the term implies, ſuch as affect and penetrate the heart; ſecondly, the *diaſtaltic*, or that which was capable of exhilarating, by kindling joy, or inſpiring courage, magnanimity, and ſublime ſentiments; thirdly, the *heſuchaſtic*, which held the mean between the other two, that is, which could reſtore the mind to a ſtate of tranquillity and moderation.

The firſt kind of Melopœia ſuited poetical ſubjects of love and gallantry, of complaint and lamentation; the ſecond was reſerved for tragic and heroic ſubjects; the third for hymns, panegyrics, and as a vehicle of exhortation and precept.

All theſe rules concerning the ancient Melopœia afford only general notions, which, to be rendered clear and intelligible, would require particular diſcuſſions, as well as illuſtrations by example; but the Greek writers on muſic have abſolutely denied us that ſatisfaction, reſerving, perhaps, when they publiſhed their works, all ſuch minutiæ for the leſſons which they gave their ſcholars in private; for in no one of the ſeven treatiſes upon ancient muſic, collected and publiſhed by Meibomius, is a ſingle air or paſſage of Greek melody come down to us; which is the more extraordinary, as there are few treatiſes upon modern muſic, without innumerable examples in notes, to illuſtrate the precepts they contain.

But whatever were the rules for arranging different ſounds in ſuch order as would flatter the ear in the moſt agreeable manner, it is eaſy to imagine that this regular diſpoſition, and beautiful order of ſounds, conſtituted nothing more than the mere body of melody, which could only be animated and vivified by the aſſiſtance of rhythm or meaſure. See Music *of the Greeks.*

MELORA, in *Geography*, a ſmall iſland in the Mediterranean, near the coaſt of Etruria; 4 miles W. of Leghorn.

MELOS, in *Ancient Geography*, one of the Grecian iſlands, ſituated about 24 miles from cape Scyllæum, in the Peloponneſus, ſouth-weſt of the iſle of Siphnos, weſt of that of Sicinos, and eaſt of the promontory of Malea, in Laconia. It was eſtimated at about 60 miles in compaſs, and, according to Pliny, it was almoſt round. This iſland, though ſmall, made a very conſiderable figure in the flouriſhing ages of Greece. It enjoyed its liberty, ſays Thucydides, 700 years before the Peloponneſian war. The inhabitants were originally Lacedæmonians, and therefore, in the time of the war juſt mentioned, refuſed to join the Athenians, declaring that they would maintain a ſtrict neutrality. They ſuffered ſeverely for their attachment to Lacedæmon. All who were able to bear arms were put to the ſword; the women and children were carried into Attica, and ſold for ſlaves. The iſland being thus deſolated, a new colony was ſent thither from Athens. But not long after, Lyſander, the Lacedæmonian general, having obliged the Athenians, in their turn, to ſurrender at diſcretion, releaſed the captive Melians, and reſtored them to their native country, after having expelled the Athenian colony. Melos afterwards experienced the common fate of the other iſlands of the Ægean ſea, being reduced, with them, to a Roman province. This iſland abounded with iron mines, and was formerly famous for its wine and honey. The paſtures and mineral waters of this iſland were alſo commended; and the alum of Melos was in great repute among the Romans, and preferred by them to that of any other country, except the Egyptian. See Milo.

Melos and *Melodias*, which Meibomius has rendered by the Latin words, *modulatio* and *cantilena*, had no other ſignification than the change of ſounds in ſinging, or, as we ſhould call it, melody; and this is clear from a paſſage in Bacchius ſenior, where, in his Introduction to the Art of Muſic, by queſtion and anſwer, it is aſked, How many kinds of modulation there are? He anſwers, four; and theſe, he ſays, are *riſing*, *falling*, *repeating* the ſame ſound to different words, and *remaining upon*, or *holding out*, a muſical tone. See Melopœia.

MELOSIS, from μηλη, *a probe*, in *Surgery*, the examination of a diſeaſed part with a probe.

MELOT, John Baptist, in *Biography*, a learned Frenchman, was born at Dijon in 1697, and died at Paris in 1760. He was librarian to the king, and wrote ſome papers in the "Memoirs of the Academy of Inſcriptions," of which he was a member. He was alſo editor of Jourville's Life of St. Louis, with a gloſſary.

MELOTHRIA, in *Botany*, a name borrowed by Linnæus, in his *Hortus Cliffortianus*, from the μηλωθρον of Dioſcorides, one of the ſynonyms of his αμπελος λευκη, or White Vine, which is ſuppoſed to be the *Bryonia*, a plant of the ſame habit and natural order as the preſent. Linn. Gen. 24. Schreb. 32. Willd. Sp. Pl. v. 1. 189. Mart Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 78. Juſſ 395. Lamarck Illuſtr. t. 28.—Claſs and order, *Triandria Monogynia.* Nat. Ord. *Cucurbitaceæ*, Linn. Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, bell-ſhaped, ſwelling, five-toothed, deciduous. *Cor.* of one petal, wheel-ſhaped; tube the length of the calyx, to which it is on every ſide united; limb flat, in five deep very blunt ſegments, dilated outwards. *Stam.* Filaments three, conical, inſerted into the tube of the corolla, and equal to it in length; anthers of two roundiſh lobes, compreſſed. *Piſt.* Germen almoſt entirely inferior, ovate-oblong, pointed; ſtyle cylindrical, the length of the ſtamens; ſtigmas three, thickiſh, oblong. *Peric.* Berry ovate-oblong, internally divided into three parts, without partitions. *Seeds* ſeveral, oblong, compreſſed.

Obſ. Linnæus remarks that he once ſaw two flowers with ſtamens only.

Eſſ. Ch. Calyx bell-ſhaped, five-cleft. Corolla wheel-ſhaped, of one petal. Berry of three cells, with many ſeeds.

1. M. *pendula.* Pendulous Melothria, or American Bryony. Linn. Sp. Pl. 49. (Bryonia olivæ fructu rubro, minor; Plum. Ic. 55. t. 66. f. 2. Cucumis parva repens virginiana, fructu minimo; Pluk. Phyt. t. 85. f. 5.)—Native of North America and the Weſt Indies. *Root* annual. *Stem* ſlender, branched, climbing by means of ſimple tendrils. *Leaves* heart-ſhaped, five-lobed, obſcurely toothed, rough, on thick twiſted ſtalks. *Flower-ſtalks* axillary, ſolitary, ſimple, capillary, about an inch long. *Flowers* ſmall, yellow. *Fruit* red, the ſize and ſhape of a ſmall olive. Juſſieu ſays two of the filaments bear each two anthers, which is the caſe in *Bryonia*, to which genus this plant is certainly very nearly akin. Vahl having omitted the genus in its proper place, had perhaps a deſign of uniting it to *Bryonia.*

MELOTIS, a word uſed by the chirurgical writers to expreſs a ſmall probe, properly one intended to be uſed only to the ear.

MELOZZO, Francesco, in *Biography*, an hiſtorical painter, who flouriſhed about 1471. He is celebrated as being one of the firſt who introduced the fore-ſhortening of figures upon ceilings, ſo as to make them appear aſcending or deſcending; and a picture of his, over the great altar in the church of the Apoſtles at Rome, which repreſents the aſcenſion of our Saviour, is celebrated with the warmeſt praiſes. Vaſari ſays, that the figure of Chriſt ſeems to pierce the roof. This work was painted for cardinal Riario, nephew of Nicholas V. about 1472; and when that chapel was repaired, it was cut out and placed in the Quirinal palace, where it is ſtill ſeen with this epigraphe: "Opus Melotii Forotivienſis, qui ſummos fornices pingendi artem vel primus invenit vel illuſtravit." Some heads of the apoſtles were likewiſe preſerved in the Vatican: they are well turned, almoſt always fore-ſhortened, and wrought with great finiſh, diligence, and grace. It is to be lamented that ſo uncommon a genius has not met with an exact hiſtorian, who would have informed us of his preparatory ſtudies. He is beſt known by the name of Melozzo da Forli.

MELPIGNANO, in *Geography*, a town of Naples, in Otranto; 9 miles W.N.W. of Otranto.

MELPILLY, a town of Hindooſtan, in the Carnatic; 25 miles N. of Nellore.

MELPOMENE, the name of one of the nine Muſes; who is repreſented with a maſk, to denote her preſiding over the ſtage; and diſtinguiſhed from Thalia, the comic Muſe, by greater dignity in her look, ſtature, and dreſs. Melpomene was ſuppoſed to preſide over all melancholy ſubjects, as well as tragedy. See Horace, lib. i. od. 24. v. 4. lib. iii. od. 30. v. ult.

MELRICKSTADT, in *Geography*, a town of the duchy of Wurzburg, on the Streys; 19 miles N. of Schweinfurt. N. lat. 50° 27′. E. long. 10° 27′.

MELROSE, a conſiderable town, and a free borough of barony, ſituated on the banks of the river Tweed, in the ſhire of Roxburgh, Scotland. The river divides the town, which extends about a mile in length, into two parts. It is governed by a magiſtracy, elected annually by the burgeſſes; and, conſidering its inland poſition, may be regarded as a flouriſhing place. The whole pariſh, according to the parliamentary returns of 1801, contains 1355 houſes, occupied by a population of 6947 inhabitants, *viz.* 3300 males and 3647 females. Of this number, 668 were reported as being employed in different branches of trade, but principally in the manufacture of linen and coarſe woollens.

The pariſh of Melroſe and its immediate neighbourhood are diſtinguiſhed by numerous and ſplendid remains of antiquity. The abbey of Melroſe is one of the moſt remarkable monaſtic ſtructures in Scotland. Its original foundation probably took place towards the cloſe of the ſixth century. In the works of the venerable Bede, we have an account of the ſituation of the more ancient edifice, on the bank of the Tweed, as likewiſe of its abbots. This place was a celebrated ſchool for learned and religious men, and ſeems to have continued to flouriſh till the reign of king David, by whom the new abbey was founded, in the year 1136. The former eſtabliſhment was at Old Melroſe, the name of which ſtill ſerves to remind the inhabitants that they tread on ground rendered ſacred by the piety of their anceſtors. The foundation of the wall, which incloſed the ancient monaſtery and its precincts, can ſtill be diſcovered, ſtretching acroſs a ſort of promontory, formed by a curvature of the Tweed; but all veſtiges of the buildings are entirely loſt. It ſeems probable, therefore, that they were of little comparative magnitude, and might perhaps have been conſtructed only of wood, or other periſhable materials, as moſt of the churches of that age undoubtedly were. Of a ſimilar deſcription was the edifice erected by king David, which was rebuilt firſt in the thirteenth century, and again after the acceſſion of Robert Bruce, who granted a revenue for its reſtoration. This laſt appears, from its ruins, to have been a truly magnificent and ſpacious ſtructure. Indeed the ſize and workmanſhip of its columns, its ſymmetrical proportions, and the quality of the ſtone of which it is conſtructed, entitle it to rank among the moſt ſuperb edifices which devotion or ſuperſtition has reared in Great Britain. From the charters granted to this monaſtery by different Scottiſh monarchs, its inmates appear to have been monks of the Ciſtercian order, and to have enjoyed a pre-eminence or ſpecies of juriſdiction over all their brethren in Scotland. Among the more diſtinguiſhed of theſe monks was the celebrated St. Cuthbert, who entered as a monk under Boiſil, about the year 601, and had the honour of founding the biſhopric of Durham.

The church belonging to this abbey conſtitutes the moſt entire part of its ruins. It was built in the form of St. John's croſs, and is dedicated to the Virgin Mary. The preſent extent of this building is 258 feet in length, and 137½ in breadth; its circumference meaſuring 943. That theſe are not the original dimenſions, however, are evident from the ſtate of the weſtern diviſion, the greater part of which has been deſtroyed, and that ſo completely, that it is impoſſible to determine to what diſtance it reached. Both the exterior and the interior of this edifice were formerly adorned with a variety of ſculptured figures of men and animals. Many of the former, in particular, were deſtroyed in the reigns of Henry VIII., Edward VI., and Elizabeth, whoſe ſtateſmen and warriors were no leſs egregious fanatics than the infuriated Scotch reformer John Knox, in whoſe time, likewiſe, this building ſuſtained much additional injury. The niches in which they ſtood diſplay much curious and beautiful workmanſhip. The tower, which roſe from the middle of the croſs or tranſept, was a noble piece of architecture. Part of it ſtill remains, but the ſpire is entirely gone. The eaſt window is moſt magnificent, and conſiſts of four mullions with tracery, variouſly ornamented. On each ſide appear ſeveral elegant niches, and on the top is the figure of an old man, with a globe in his left hand, reſting on his knee; and another of a young man on his right; both in ſitting poſtures, with an open crown over their heads. Underneath this window, in the inſide, ſtood the altar-piece. A great number of piſcinas, niches, &c. excellently ſculptured, are diſperſed throughout the church. Many of the pillars are perfect and beautiful, and the embelliſhments upon them ſtill ſeem as if newly executed; a deciſive evidence of the excellence both of the ſtone and of the workmanſhip. Part of this church continues to be uſed for divine ſervice.

The ruins yet ſtanding, beſides the church, conſiſt chiefly of a part of the walls of the cloiſters; the other buildings, of which there were many, being almoſt entirely levelled with the ground. All of theſe, together with the gardens, and other conveniences, were encloſed within a lofty wall, which extended about a mile in circuit. A large and elegant chapel formerly occupied the ſcite of the preſent manſe; and to the north of this houſe there has been lately diſcovered the foundation of a curious oratory, or private chapel, from which was dug up a large ciſtern, formed from one ſtone, having a leaden pipe appended to it, for the conveyance of water.

At ſome diſtance to the ſouth of this town are the three Eldon-hills, on the northernmoſt of which is a large Roman encampment, and below it are the remains of an extenſive Britiſh fortreſs. Around this were ſeveral ſmaller forts, alſo of Britiſh origin, ſome of which the Romans appear to have converted into more defenſible poſts. Three entrenchments on theſe hills were connected by a very ſingular kind of military road, deſcribed by Mr. Kinghorn, who ſurveyed it in 1803, as being in general about 40 feet broad, but in ſome places 50, where the unevenneſs of the ground required ſuch a breadth. On each ſide of this road is a ditch, from 12 to 28 feet wide, whence the earth is thrown up ſo as to form a mound on the exterior ſide. As this remain differs materially from all other Roman roads in this country, it ſeems probable that it has been the work of the Romanized Britons, during their conteſts with the Picts and Scots, after the departure of their enlightened conquerors, whoſe modes of warfare they would naturally endeavour to imitate. From the Britiſh fort on Eldon-hills to the fortreſs on Caldſheds-hill there likewiſe runs a foſſe and rampart, which ſeems to have been carried through the diſtance between theſe fortreſſes as a defenſible boundary. The great Roman road croſſes the Tweed at the village of Galtonſide, a little above Melroſe. On the declivity of the hill, on which this village ſtands, are the remains of a ſpacious encampment. The ſtone wall around it is ſtill tolerably entire. Half a mile to the eaſt is another entrenchment, called Cheſter-Knows, which was probably the moſt conſiderable ſtation they poſſeſſed in this part of the country, being nearly three-quarters of a mile in circumference. Chalmer's Caledonia, vol. ii. 4to. 1810. Beauties of Scotland, vol. ii. Sinclair's Statiſtical Account of Scotland.

MELSACK, a town of Pruſſia, in the province of Ermeland; 36 miles S.W. of Königſberg. N. lat. 54° 12′. E. long. 20° 7′.

MELSO, a town of Italy, in Friuli; 9 miles N.W. of Udina.

MELT. See MILT.

MELTING-CONE, in *Aſſaying*, is a ſmall veſſel made of copper or braſs, of a conic figure, and of a nicely poliſhed ſurface within. Its uſe is to receive melted metals, and ſerve for their precipitation, which is effected, when two bodies melted together, and yet not mixing perfectly with one another in the fuſion, ſeparate in the cooling into two ſtrata, on account of their different ſpecific gravity. This precipitation might be made in the ſame veſſel in which the fuſion is performed; but then the melting-pot or crucible muſt be broken every time to get it out, whereas the conic ſhape, and poliſhed ſurface of this veſſel, makes it eaſily got out without violence. The ſhape of this veſſel is alſo of another uſe in the operation; for by means of it, the heavy matter ſubſiding to a point, is formed into a perfect and ſeparate regulus, even where the whole quantity, as is very frequently the caſe, has been but very ſmall.

When the quantity of the melted matter is great, it is common to uſe, inſtead of this cone, a large braſs or iron mortar, or any other conveniently ſhaped braſs or iron veſſel. It is neceſſary, when the cone is of braſs, to be cautious that it be not made too hot; for the brittleneſs of that metal, when hot, makes it eaſily break, on the ſtriking with any force on that occaſion, to make the melted maſs fall out.

Theſe, and all other moulds for the receiving melted metals, muſt always be well heated before the maſs is poured into them, leſt they ſhould have contracted a moiſture from the air, or have been wetted by accident; in which caſe the melted metal will be thrown out of them with great violence and danger. They ought alſo to be ſmeared over with tallow on their inſide, that the regulus may be the more eaſily taken out of them, and the ſurface of the mould not corroded by the melted maſs poured in.

If a very large quantity of a metal is, however, to be received into them, and eſpecially if any thing ſulphureous have place among it, this caution of tallowing the moulds does not prove ſufficient; for the large quantity of the maſs makes it continue hot ſo long, that this becomes but a ſlight defence to the ſurface of the mould. In this caſe the aſſayer has recourſe to a lute, reduced to a thin pap with water, which being applied in form of a very thin cruſt, all over the inſide of the cone, or mould, ſoon dries up, indeed, but always preſerves the ſides of the veſſel from the corroſion of the maſs. And this caution is found neceſſary, even when pure copper is melted alone, without any mixture of ſulphur.

MELTING *Fire.* See FIRE.

MELTING, *Surveyor of.* See SURVEYOR.

MELTON-MOWBRAY, in *Geography*, in ancient writings called Medeltune and Meltone, a ſmall market-town, in the hundred of Framland, and county of Leiceſter, England, is ſituated in a vale on the banks of the river Eye, 15 miles from Leiceſter, and 104 from London. Connected with this town are three bridges over the rivers Eye and Sealford. Theſe are repaired, and the ſtreets preſerved in good condition, with lamps, &c. from the rents ariſing out of the town eſtates. The church, which Leland calls "a faire paroche church, ſumtime an hoſpital and cell to Lewis in Suſſex," is a ſpacious ſtructure, conſiſting of a nave, aiſles, tranſepts, and chancel, with a tower in the centre, and a porch at the weſt end. The latter is a peculiar feature to the building, and has an elegant door-way, with an ozec arch. Above this porch is the large weſtern window, compriſing five lights, with four lofty mullions. The whole church is crowned with an embattled parapet, and at each angle is a crocketed pinnacle. The tower conſiſts of two well-proportioned ſtories above the church. The poor of this town derive aſſiſtance from ſeveral charitable benefactions; among which are ſome public ſchools. So early as the reign of Henry III. we find theſe taken under the immediate patronage of that monarch. A free ſchool for girls was eſtabliſhed here in 1795. In the population report of the year 1801, Melton-Mowbray was ſtated to contain 348 houſes and 1766 inhabitants. The market-day is Tueſday; and at every alternate market is generally a large ſhow of cattle. Here are alſo three annual fairs, and a ſtatute for hiring ſervants.

Among the more eminent natives of Melton were John de Kirkby, who was appointed keeper of the great ſeal in 1272, lord high treaſurer in 1283, and biſhop of Ely in 1286; William de Melton, ſucceſſively lord high treaſurer, lord chancellor, and archbiſhop of York, in the reigns of Edward II. and III.; John Henley, better known by the popular appellation of Orator Henley, who diſtinguiſhed himſelf, about the middle of the laſt century, by his eccentric lectures. See HENLEY.

At Burton-Lazars, a hamlet to Melton, about two miles from the town, an hoſpital, for leprous brethren of the order of St. Auguſtine, was founded in the reign of king Stephen, by a general collection throughout England, but chiefly by the aſſiſtance of Roger de Mowbray. In adopting

ing this ſituation, the founders were probably influenced by a bath or ſpring, the waters of which were formerly in high eſtimation for the diſorder called leproſy, and are ſtill ſaid to afford conſiderable benefit to perſons in ſcorbutic complaints. A bathing-room and drinking-room were built here about the year 1760, for the accommodation of the afflicted viſitors. Nichols's Hiſtory of Leiceſterſhire, vol. i. Beauties of England and Wales, vol. ix., by J. Britton.

MELTZ, a town of Bavaria; 10 miles N. of Bamberg.

MELVIL, *Sir* James, in *Biography*, a ſtateſman and hiſtorian, was born at Hall-hill, in Fifeſhire, in 1530. At the age of fourteen he entered the ſervice of the queen-regent, and was appointed page to her daughter Mary, then wife to the dauphin of France. After paſſing ſome time in her ſervice, ſhe permitted him to enter into that of the conſtable Montmorenci, who ſent him over to Scotland in 1559, in order that he might obtain a faithful account of the ſtate of parties in that kingdom. Having remained ſeveral years in the employ of that nobleman, he viſited the court of the elector palatine, who detained him three years in various negociations with the German princes. He then paſſed through Italy and Switzerland, and returned to the elector's court, where he found a ſummons from Mary, who had now returned to take poſſeſſion of the crown of her native country. He followed her to Scotland, in 1561, in the character of gentleman of the bed-chamber, and was employed by her confidentially in various important affairs till her impriſonment in Lochleven caſtle. He had been appointed one of her privy-counſellors, and was ſent more than once to the court of Elizabeth. He maintained a correſpondence in England in favour of Mary's ſucceſſion to the crown of that kingdom, but upon the manifeſtation of her unhappy partiality for Bothwell, after her huſband's murder, he ventured upon the ſtrongeſt remonſtrances with her. She not only diſregarded theſe admonitions, but communicated them to Bothwell, in conſequence of which the faithful Melvil was obliged, for ſome time, to abſent himſelf from court. When Mary was detained a priſoner in England, ſhe recommended her faithful ſervant to her ſon James VI., who conſulted him and made uſe of his ſervices till he acceded to the throne of England. He was ever the adviſer of prudent and moderate meaſures, and retained the eſteem of his royal maſter, who would willingly have taken him to England as one of his miniſters. Melvil, however, thought himſelf too far advanced in years for ſo important a change in his habits, and he retired to his family ſeat, where he died in the year 1606. He left behind him in MS. an hiſtorical work, which came into the poſſeſſion of his grandſon, and was publiſhed in 1683, by Mr. George Scott, under the title of "Memoirs of ſir James Melvil of Hall-hill, containing an impartial account of the moſt remarkable affairs of ſtate during the laſt age, not mentioned by other hiſtorians, more particularly relating to the kingdoms of England and Scotland, under the reigns of queen Elizabeth, Mary queen of Scots, and king James. In all which tranſactions the author was publicly concerned." To this work the reader is referred for more information relating to the author: and alſo to Robertſon's Hiſtory of Scotland. A brother of ſir James was alſo in the ſervice of Mary, and is probably the ſir Andrew Melvil who was preſent at her death.

MELVIN-Lough, in *Geography*, a conſiderable lake of Ireland, between the counties of Fermanagh and Leitrim, from which a ſmall river flows to the bay of Donegal.

MELUING, a town of Norway, in the dioceſe of Drontheim; 32 miles W.N.W. of Romſdal.

MELUN, a city of France, and principal place of the department of the Seine and Marne, of which it is the capital, ſituated on the Seine; before the revolution it contained one collegiate and three pariſh churches, two convents and two abbies. It carries on a trade with Paris in corn, meal, wine, and cheeſe. The place contains 6124, and the two cantons, into which it is divided, 18,922 inhabitants, on a territory conſiſting of 287½ kiliometres, in 31 communes. N. lat. 48° 32′. E. long. 2° 44′.

MELYKUT, a town of Hungary; 16 miles E. of Baja.

MELYRIS, in *Natural Hiſtory*, a genus of inſects of the order Coleoptera; the generic character is, antennæ entirely perfoliate; head inflected under the thorax; thorax margined; lip clavate, emarginate; jaw one-toothed, pointed. There are three

Species.

Viridis. Green; ſhells with three raiſed lines; it inhabits the Cape; antennæ black; thorax reflected at the edge, and grooved on the back, ſcutel ſmall and round; ſhells rough.

Niger. Black; ſhells with three raiſed lines. A ſpecimen of this ſpecies of the melyris is in ſir Joſeph Banks' muſeum. It is only about one-third the ſize of the laſt; thorax a little prominent before; the ſhells rough.

Lineatus; Green; ſhell with three raiſed lines, and one on each ſide the thorax: it is about half the ſize of the viridis; thorax grooved, with a raiſed line on each ſide; lines on the ſhells crenate.

MELZEN, or Meltzen, in *Geography*, a town of Saxony, in Thuringia; ſix miles S. of Weiſſenfels.

MELZO, a town of Italy; 14 miles N.E. of Milan.

MEMAUN, a town of Perſia, in Khoraſan; 18 miles E.S.E. of Velazghard.

MEMBERS, in *Anatomy*, the exterior parts, ariſing from the trunk or body of an animal like the boughs from the trunk of a tree.

In which ſenſe, members, *membra*, amount to much the ſame with limbs, *artus*: though ſome make a difference between the two: reſtraining members more immediately to the fleſhy parts which cover the limbs, and artus to the bones and nerves. Phyſicians divide the body into three regions or venters; the head, the breaſt, and the lower ventricle; and the extremities, which are the members. See Extremities.

Member, in *Architecture*, denotes any part of a building; as a frieze, cornice, or the like.

Member is ſometimes alſo uſed for moulding.

Member, in *Grammar*, is applied to the parts of a period, or ſentence.

Member is alſo uſed to denote ſome particular order or rank in a ſtate or government: thus we ſay, member of a corporation, member of parliament, member of the council, &c.

MEMBERED, or Membred, in *Heraldry*, is when the beak, or legs, or feet of an eagle, griffin, or other bird, are of a different colour from the reſt of the body.

MEMBIG, in *Geography*, a town of Syria, in the pachalic of Aleppo; 30 miles N. of Aleppo.

MEMBRANA, in *Anatomy*. See Membrane.

Membrana *Arachnoidea*, one of the coverings of the brain and medulla ſpinalis. See Brain.

Membrana *Conjunctiva*, the mucous membrane lining the eye-lids, and covering the anterior ſurface of the eye. See Eye.

Membrana *Decidua*, one of the coverings of the ovum. See Embryo.

Membrana *Hyaloidea*, the tranſparent covering of the vitreous humour of the eye. See Eye.

Membrana *Mucoſa*, the ſebaceous ſubſtance covering the membrana tympani in the fœtus. See Ear.

Membrana *Nictitans*, a peculiar fold of the conjunctiva, which can be drawn acroſs the front of the eye by means of two peculiar muſcles connected with it. (See Birds, *Anatomy of.*) In quadrupeds a piece of cartilage is placed in a fold of the ſame kind, and the eye can be rolled behind it. See Mammalia, *Anatomy of.*

Membrana *Pituitaria*, the mucous membrane lining the cavities of the noſe. See Nose.

Membrana *Pupillaris*, an exceedingly thin production filling the aperture of the pupil in the fœtus. See Eye.

Membrana *Ruyſchiana*, the internal ſurface of the choroid membrane of the eye. See Eye.

Membrana *Tympani*, a membrane terminating the meatus auditorius externus, and forming the boundary between it and the cavity of the tympanum. See Ear.

MEMBRANE is a term applied to ſeveral parts of the body, which conſiſt of thin ſheets of animal ſubſtance, in which the thickneſs bears a very ſmall proportion to the ſurface. This diſpoſition is found in ſeveral tiſſues; the term, therefore, denotes a peculiarity of arrangement and form, and not of internal ſtructure, and hence it includes parts differing from each other very widely in organiſation, properties, and functions.

Membranes never have an inſulated exiſtence: they are diſſeminated among the other organs of the body, and concur in their formation; hence their hiſtory has generally been aſſociated to that of the organs on which they are expanded. This is a convenient arrangement for purpoſes of deſcription, but it occaſions us to loſe ſight of the analogies between the particular membranes, and to neglect thoſe general conſiderations, which form a very intereſting part of the ſtudy of anatomy, which exhibit to us nature every where uniform in her proceedings, varying only in their reſults, ſparing of the means which ſhe employs, profuſe in the effects obtained from them, modifying in a thouſand ways ſome general principles, which, differently applied, preſide over the animal economy, and are the ſources of its innumerable phenomena. Haller has ſome general remarks on the membranes, but he eſtabliſhes no demarcations between them. He deſcribes them all as analogous in their texture, and having for their common baſis the cellular organ, to which he ſays that they may all be eaſily reduced, principally by means of maceration. That this view is incorrect in many points, will appear from the ſequel of the preſent article: how, indeed, can we expect the compoſition to be the ſame, when the conformation, the vital properties, and the functions are different?

Bichat is the anatomiſt to whom we are the moſt indebted for an elucidation of this ſubject. His "Traité des Membranes en general, et des diverſes Membranes en particulier," Paris, an 8, contains a diſtribution of theſe organs into certain claſſes, a general account of each of theſe, and a particular deſcription of the individual membrane. "When," ſays he, "we obſerve all the membranes in a general view, it ſeems that their claſſification muſt be very complicated, both on account of their great number, and their apparent variety. The extent of the different membranes, compared to that of the ſkin, cannot be leſs than in the proportion of eight to one: yet, perhaps, no two of them exactly agree in appearance. An examination of their ſtructure and functions quickly ſhews us that ſeveral come near to each other, and are diſtinguiſhed only by their form." Bichat eſtabliſhes two general diviſions, *viz.* the ſimple and compound membranes: the latter are compoſed of two of the former united together, and exhibit a combination of the characters of each. He makes three claſſes of ſimple membranes. 1. The mucous, ſo named from the fluid which moiſtens their ſurface. 2. The ſerous, characteriſed alſo by the particular fluid which covers them, and containing the membranes that line the ſeveral circumſcribed cavities connected with the different viſcera, and the ſmooth coverings of the joints, burſæ mucoſæ, &c. 3. The fibrous, moiſtened by no fluid, and diſtinguiſhed by the fibres that enter into their compoſition.

From the union of theſe proceed the fibro-ſerous, ſero-mucous, and fibro-mucous membranes.

There are moreover ſome, which either exiſt inſulated, or are little known, and conſequently cannot be brought under any claſſification.

The mucous membranes occupy the interior of the cavities, which communicate with the ſkin at the various openings of the latter on the ſurface of the body. Their number appears conſiderable on the firſt view of the ſubject; for the organs which they line are very numerous. The mouth, ſtomach, inteſtines, œſophagus, bladder, urethra, uterus, the ureters, all the excretory tubes, &c. &c. derive a part of their texture from theſe membranes. However, when we conſider that they are every where continuous, that they ariſe by prolongations, one from the other, as we ſee them originally derived from the ſkin, their number muſt be very much reduced. In fact, when we regard them thus in a general view, as expanded over all the organs in which they are continuous, and not as inſulated in each particular organ, they are reduced to two general ſurfaces, which may be named, from the various parts over which they are extended, the gaſtro-pulmonary, and the genito-urinary. The former is found in the head, neck, and abdomen: the latter in the abdomen, and more particularly in the pelvis.

There is one ſmall inſulated mucous ſurface, *viz.* that which enters the openings on the nipple, and lines the lactiferous ducts. As the obſervations on the others are applicable to this, we ſhall not examine it in detail.

The gaſtro-pulmonary ſurface enters the body by the mouth, the noſe, and the front of the eye. 1. It lines the two firſt mentioned cavities, is continued from one of them into the excretory tubes of the parotid and ſubmaxillary glands, and from the other into all the ſinuſes of the noſe; it forms the conjunctiva, enters the puncta lacrymalia, lines the lacrymal ſac and naſal duct, from which it is continued into the noſe. 2. It deſcends into the pharynx, and penetrates through the Euſtachian tube into the ear. 3. It goes into the larynx and trachea, and is expanded over all the air-tubes and veſicles of the lungs. 4. It lines the œſophagus and ſtomach. 5. It enters the duodenum, and furniſhes two prolongations, one to the ductus choledochus, the hepatic duct and its numerous ramifications, the cyſtic duct and gall-bladder, the other to the pancreatic duct and its branches. 6. It is then continued into the ſmall and large inteſtines, and laſtly ends at the anus, where it is identified with the ſkin.

The ſecond general mucous ſurface enters, in the male ſubject, at the urethra, and thence is expanded, on one ſide, over the bladder, ureters, pelviſes, and calyces of the kidnies, the papillæ of the ſame organs and capillary tubes which open on their points; on the other it enters the excretory ducts of the proſtate, the ſeminal or ejaculatory tubes, veſiculæ ſeminales, vaſa deferentia, and the numerous intricate ducts which ariſe from them. In the female this membrane enters at the colon, extends over the urinary organs as in man, penetrates the vagina, and lines that canal as well as the uterus and the Fallopian tubes, at the apertures of which it is continuous with the peritoneum. This is the only example in the animal economy of a communication between mucous and ſerous ſurfaces.

The phraſes of membranes entering cavities, being prolonged or extended from one part to another, &c. are not to be underſtood as indicating the progreſs of nature in the formation of parts, but merely as deſcriptive of the relations exiſting between the organs when fully formed. The membranes belonging to every part are formed independently in it, and not derived from any other.

The diſtinction of the two great diviſions of the mucous ſyſtem, and the connection of all the parts in each ſyſtem are manifeſted, not only by anatomical reſearches, but alſo by pathological phenomena. In epidemic catarrhs one of theſe ſurfaces is often affected throughout, while the other eſcapes entirely; the gaſtro-pulmonary membrane is the ſeat of the diſeaſe in all its diviſions, and the genito-urinary is completely unconcerned in the affection.

Irritation of any point often cauſes pain in ſome other part of the ſame ſurface; thus ſtone in the bladder produces uneaſineſs at the front end of the urethra, worms in the inteſtines cauſe itching of the noſe, &c. But it is very uncommon for partial irritation of one membrane to affect the other: yet there are examples of ſuch an occurrence, as in the bleeding from the lungs, which frequently ſupplies the place of menſtruation, when it is interrupted accidentally.

The two mucous ſurfaces are united by means of the ſkin: the latter organ with the former may be regarded as a general and continuous membrane, covering the exterior ſurface of the body at all points, and prolonged in the interior over moſt of the important organs. Every mucous membrane has two ſurfaces; the one adhering to the neighbouring parts, the other free, in many caſes villous, and always moiſtened with a mucous fluid.

The adhering ſurface correſponds almoſt univerſally to muſcles, either of the animal or the organic life. The mouth, the pharynx, the whole alimentary canal, the bladder, a part of the urethra, &c. preſent a muſcular ſtratum embracing the mucous membrane on the outſide. This diſpoſition agrees entirely with that of the ſkin in animals which have a panniculus carnoſus: there are indeed many points of reſemblance between theſe organs, which we have already obſerved to be continuous. It ſubjects the mucous membranes to habitual motions, which probably favour the ſecretion of their fluid and its ſubſequent excretion, as well as the various other functions of theſe organs. The muſcular ſtratum is inſerted into the cloſe and denſe tiſſue, named by Bichat the tiſſu ſoumuqueux, in which the ſtrength of the organ reſides, and which according to him decides and maintains the form of the part.

The free ſurface of the mucous membranes, habitually moiſtened by the fluid, from which their name is derived, preſents three kinds of folds.

1. The firſt are compoſed by the muſcular as well as the mucous coat; their ſituation is defined by a depreſſion on the exterior ſurface of the organ, and they exiſt conſtantly whatever may be its ſtate in reſpect to contraction or dilatation. The pylorus and valve of the colon are of this kind.

2. Others are formed in the mucous membrane only, are conſtantly ſeen, whether the part be full or empty, but are rather leſs ſenſible in the latter ſtate. They ariſe from the membrane being much more extenſive than the ſurfaces to which it is applied, and being folded, compenſate this difference. The valvulæ conniventes of the ſmall inteſtine exemplify theſe very well. The cut edges of the muſcular and ſerous coverings, as ſeen in a longitudinal ſection of the inteſtine, form ſtraight lines, while that of the mucous ſurface is a very waving line.

3. The laſt kind may be regarded in a manner as accidental, and is ſeen only when the organ is contracted; ſuch are thoſe of the ſtomach and large inteſtines. The cavity of the former, in particular, preſents, in this ſtate, very numerous and large folds, which may be compared, in ſome meaſure, ſo far as their appearance goes, to the cerebral convolutions. Diſtend it fully, and the ſurface becomes completely ſmooth. The exhauſtion of the vital forces in individuals who die after lingering and debilitating diſeaſes, occaſions their ſtomachs to be frequently deſtitute of theſe folds, although they may be empty. But if the full ſtomach be cut longitudinally in a living animal, or in one recently killed, the contraction of the muſcular coat will ſpeedily produce the folds in a very marked degree. It follows from this circumſtance, that the ſurface of the mucous membranes is nearly as extenſive in the contracted as in the dilated ſtate of the organs which they line. But all parts are not alike in this reſpect; the obſervation is true of the œſophagus, ſtomach, and large inteſtine; but it is not equally applicable to the urinary and gall-bladders.

The free ſurface of the mucous membrane is every where in contact with bodies heterogeneous to that of the animal; which are either introduced from without for various purpoſes, as in the alimentary canal and trachea, or derived from within, as in the excretory tubes of glands, all of which open on cavities lined by mucous membranes. Hence theſe membranes may be regarded as a kind of barriers, placed between our organs and extraneous ſubſtances, and protecting them from the noxious impreſſions of the latter, and ſerving the ſame purpoſe in the interior of the body, which the ſkin fulfils on the outſide with regard to the objects that ſurround us, and are inceſſantly acting upon us.

The organiſation and vital properties of the mucous ſyſtem are accommodated to this habitual contact with foreign ſubſtances. Solid matters, as metals, ſtone, wood, &c. introduced into the interior of other parts, inevitably excite inflammation and ſuppuration by their ſimple contact; but they traverſe the mucous ſyſtem with impunity, provided their angles or aſperities do not tear it; various things for example go through the alimentary canal, and are voided per anum, without having excited an uneaſy feeling. Irritating fluids may be ſwallowed, or injected per anum, although they would produce abſceſſes, if conveyed into the cellular ſyſtem.

On the other hand, this ſyſtem may be expoſed with impunity to external agents, where any part of it is protruded either through the natural, or through artificial apertures. This is exemplified in prolapſus of the uterus and rectum, of the inteſtine through an artificial anus, &c. In theſe inſtances the mucous ſurfaces ſeem to ſerve the office of integuments, and ſurrounding bodies hardly affect them more than they do the ſkin. The ſerous ſyſtem, on the contrary, when expoſed, as in the operation of hernia, &c. inevitably inflames. The cellular, muſcular, nervous, and glandular tiſſues exhibit the ſame phenomenon.

Fiſtulous openings are every where ſurrounded by a callous ſubſtance, which defends the cellular and muſcular tiſſues traverſed by the fiſtula: an expoſed mucous ſurface exhibits nothing of this kind, becauſe its organiſation ſufficiently protects it. The urinary and other fluids never eſcape through artificial canals excavated in the ſurrounding organs, without calloſities being formed in the courſe of theſe canals; on the contrary, they traverſe mucous ſurfaces with impunity. Cut an opening in a limb, and leave a tube in it; a callous canal will be formed round that tube. Leave a catheter in the urethra, and no alteration of ſtructure is produced. "Let us conclude," ſays Bichat, "from all theſe conſiderations, that the mucous and cutaneous ſyſtems only are ſo organiſed as to ſupport the contact of foreign bodies without being affected by their preſence, or at leaſt without feeling any further effect than an augmentation of ſecretion, which is not at all dangerous. Theſe two ſyſtems then form two limits, an internal and an external one, between which are placed the organs, whoſe ſtructure, or peculiar ſenſibility, incapacitates them from bearing the contact of extraneous bodies. The influence of the excitation produced by ſuch bodies reaches no farther than theſe boundaries; the other organs feel nothing of it. We may conceive that the acute ſenſibility poſſeſſed by theſe ſyſtems acts as a kind of centinel, placed by nature at the confines of the organic domain of the ſoul, to warn it of the approach of every thing hurtful."

There are two points to be conſidered in the organiſation of the proper tiſſue of the mucous ſyſtem; *viz.* a more or leſs thick ſtratum making up its chief bulk, and which, from its analogy to the corion of the ſkin, may be called the mucous corion; and a number of ſmall prominences ſurmounting the latter, and called villi or papillæ. The epidermis is conſidered with that of the ſkin, under the article INTEGUMENTS. It does not agree in any reſpect with the colouring ſubſtance of the ſkin, which is placed between the papillæ and the epidermis. In fact, we know that in the black, as well as in the white races, this tiſſue is of a bright red, derived from the blood-veſſels.

Mucous Corion.—This important part of the mucous tiſſue, which regulates the thickneſs, form, and very nature of the organ, has a ſoft and ſpongy appearance; it appears at the firſt view like a thick pulp, covering the denſe cellular tiſſue which lies under it. Its ſoftneſs diſtinguiſhes it from the cutaneous corion, which indeed reſembles it but little in its intimate nature. Its thickneſs varies very conſiderably; in the gums and palate it is thickeſt, and decreaſes ſucceſſively in the following organs, *viz.* the noſe and ſtomach, ſmall inteſtine and gall-bladder, large inteſtine, urinary bladder, urethra, and the various excretory tubes. When cautiouſly removed in the latter, it appears tranſparent, like a ſerous membrane. It is thinneſt in the ſinuſes of the head, and the cavity of the ear. The lining of the latter has been generally called perioſteum by anatomiſts; but its continuity with the pituitary membrane through the Euſtachian tube, the mucous fluid that habitually covers it, and every circumſtance that we can obſerve of its appearance and texture, ſhew that it belongs to the mucous ſyſtem; and its diſeaſes agree with thoſe of that ſyſtem. Diſeaſes produce great changes in its thickneſs; and diſtention or contraction of the organs to which it belongs have analogous effects. The degree of ſoftneſs which it exhibits, is very different in different ſituations. In the noſe, ſtomach, and inteſtines, it is like velvet, and the name of villous coat characteriſes it very well. At the origins of the ſyſtem, as the mouth, noſe, glans penis, &c. it is much more denſe, ſo as to approximate in its nature to the cutaneous corion. In the latter ſituations it is the ſeat of variolous puſtules, which are often ſeen on the tongue, palate, and cheeks, but never on the internal mucous ſurfaces. It becomes dry and very thin by expoſure to the air, but preſerves a certain degree of reſiſtance. The muſcular and ſerous coats of an inteſtine are pliable when dried, while the mucous covering is rigid. It is tranſparent after deſiccation, in organs where it is naturally pale, as in the rectum and bladder; it exhibits a darker tint in parts where it is redder, as in the ſtomach, and has even a blackiſh caſt when much blood is accumulated in it by preceding inflammation. It putrifies with great facility, and acquires a very fetid odour: this is one reaſon why the abdomen of a dead body paſſes ſo ſoon into the putrid ſtate. In this change it acquires a greyiſh colour, and as the ſubjacent cellular tiſſue decays much more ſlowly, it may be removed by very ſlight preſſure in the form of a diſorganiſed and fetid pulp. Gangrene attacks it much leſs frequently than the cutaneous tiſſue; yet it occurs ſometimes, as in putrid ſore throat. It yields very ſpeedily to maceration; quicker indeed than any organ, except the brain. It is converted into a reddiſh pulp, very different from that produced by putrefaction in the open air. Ebullition extracts from it a greeniſh froth, very different from that produced by the muſcular and cellular tiſſues. Before the water begins to boil, it curls up, but in a leſs degree than other ſtructures. In fact the tiſſu ſoumuqueux then contracts much more than it, ſo as to throw it into a recurved ſtate. In the ſame way, the contraction of the ſerous and muſcular ſtrata of the ſtomach during life, being much greater than that of the mucous, produces the numerous folds of the latter. A concentrated acid has the ſame effect. After having been dried for a long time, it ſtill is curled up when plunged into boiling water. The valvulæ conniventes of the inteſtine, which diſappear on drying, are then reproduced. Long ebullition brings it to a dark grey colour; it is not rendered ſofter, but may be more eaſily torn. In this reſpect it is contraſted with the ſubjacent cellular ſtratum, which preſerves its power of reſiſtance much longer. It never has the gelatinous appearance, which the cutaneous corion, the fibrous organs, cartilages, and other ſtructures which afford much gelatine, preſent on boiling. The action of acids reduces it into a pulp much more quickly than any other tiſſues. Cauſtics act on it more rapidly than on the ſkin, where the epidermis protects the corion. Nitric acid, taken into the alimentary canal, produces a whitiſh ſcar on the mucous ſurface, which, when death does not follow ſuddenly, is gradually detached in the form of a membrane. All mucous ſurfaces, and particularly thoſe of the ſtomach and inteſtines, have the power of coagulating milk. That of the former ſtill poſſeſſes this power after deſiccation.

Mucous Papillæ.—The peculiar mode of ſenſibility enjoyed by the ſkin is uſually aſcribed to its papillary ſtructure, which is not very readily demonſtrable. The ſenſibility of mucous membranes, analogous, in many reſpects, to that of the ſkin, ariſes probably from the ſame kind of texture, which is here more readily diſcerned. The exiſtence of papillæ cannot be doubted at the origins of the ſyſtem, and at the commencement of the cavities, as on the tongue, the palate, the alæ naſi, glans penis, &c. The villoſities with which the internal ſurfaces are every where covered, muſt be regarded as an analogous organiſation; and the exiſtence of an analogous ſenſibility on theſe ſurfaces ſtrengthens the opinion. A very different function has generally been aſſigned to theſe villi; they have been regarded in the alimentary canal, as deſtined to the exhalation of various fluids, the abſorption of chyle, &c. Bichat conſiders it incorrect to aſcribe to an organ ſo ſimilar in all parts ſuch a diverſity of offices. He conſiders that the microſcopical obſervations, on which is grounded the opinion that the villi abſorb the chyle, do not deſerve much confidence, as different obſervers give ſuch different reports. And he cannot account for the villi of the pituitary membrane, urethra and bladder, unleſs on the ſuppoſition of their being connected with the ſenſibility of the parts. The delicacy of the objects renders their ſtructure ſo obſcure, and their inveſtigation ſo difficult, that the queſtion can hardly be decided by direct obſervation. Analogy and obſervation of the vital properties muſt guide us in forming an opinion.

The papillæ exhibit very numerous varieties; they are remarkably long on the tongue, ſmall inteſtine, ſtomach, and gall-bladder; leſs diſtinct in the œſophagus, large inteſtine, urinary bladder, and the excretory tubes; the latter, in fact, are almoſt completely ſmooth on their mucous ſurfaces.

Beſides blood-veſſels, exhalants, and abſorbents, which enter into the ſtructure of this ſyſtem, as into that of all others, it preſents another common organ of a glandular nature, which is generally inſulated, but here forms part of the ſyſtem. The mucous glands probably exiſt throughout the ſyſtem. Situated under the corion, or in its ſubſtance, they conſtantly pour out a mucilaginous fluid, which lubricates the free ſurface of the membrane, protecting it from the action of the bodies that come in contact with it, and facilitating their paſſage. They are very apparent in the trachea and bronchi, the œſophagus and inteſtines; they cannot be ſhewn in the urinary and gall-bladders, the uterus, the veſiculæ ſeminales, &c.: their exiſtence in theſe organs can therefore only be inferred from the circumſtance of a mucous fluid being produced analogous to what is found where the glands are manifeſt.

If we admit the force of this reaſoning, and allow that identity of the ſecreted fluid proves identity of the ſecreting organ, we ſhall eſtabliſh as a ſtriking difference between the mucous and ſerous membranes, that the fluid of the former is produced by ſecretion, that of the latter by exhalation. Their ſize varies in different organs; they are largeſt in the lips, cheeks and palate. They generally have a rounded form, are denſe in their texture, and ſurrounded by cellular ſubſtance, but contain very little of that ſubſtance in their interior. Little or nothing is known of their diſeaſes. For further particulars, ſee GLAND.

A difficulty occurs in aſcertaining the compoſition of mucous fluids, becauſe they are formed in very ſmall quantity in health, and are probably changed in their compoſition when increaſed in quantity in diſeaſe. They are generally inſipid, colourleſs, and tenacious; but their colour, viſcidity, and odour, differ in different organs. For a further chemical account of them, ſee MUCUS.

Their uſe in the animal economy is obvious: they protect the mucous ſurfaces from the impreſſions of thoſe heterogeneous ſubſtances, with which they are all in contact, by forming a ſtratum, which compenſates for the extreme thinneſs or even the entire abſence of epidermis. Hence they are more abundant where foreign matters lodge for ſome time, as in the alimentary canal, than where they only paſs occaſionally, as in the excretory tubes. For the ſame reaſon, they are poured out more abundantly where any foreign body of an unuſual kind is left permanently in contact with a mucous ſurface, as a catheter in the urethra, a tube in the trachea, &c. In all theſe caſes the effect muſt be referred to an irritation of the excretory orifices; for the body does not come in contact with the glands themſelves.

By the ſecretion continually going on in the mucous membranes, they perform another important part in the animal economy. They are one of the great emunctories, by which the reſidue of nutrition is carried off, and, conſequently, one of the principal agents in that habitual decompoſition, which the ſolids of the living body are conſtantly undergoing. All the mucous fluids are rejected from the body; that of the ureters, bladder, and urethra, with the urine; that of the alimentary canal with the feces, which are often very copious when nothing is taken in by the mouth; &c. If we conſider that the two mucous ſurfaces, taken together, are of equal, if not greater extent than the ſkin, we ſhall deem their functions very important in this point of view. When theſe fluids have remained for ſome time in rather conſiderable quantity on their reſpective ſurfaces, a diſagreeable ſenſation is produced, and leads to their expulſion in various ways. The air-paſſages are cleared by coughing; the ſtomach by vomiting, &c. Mucous membranes poſſeſs a great number of blood-veſſels, and are hence diſtinguiſhed by a remarkable redneſs, which however is not an uniform character. In the ſinuſes of the head, and the internal ear, they are whitiſh, and appear the more ſo, becauſe their extreme thinneſs allows us to diſcern the bone, on which they are applied. In the bladder, the large inteſtine, and the excretory tubes, the colour is deeper, but ſtill pale. In the ſtomach, ſmall inteſtine, vagina, pituitary membrane, and mouth, the redneſs is ſtrongly marked. It ariſes from a vaſcular network, the branches of which, after being ramified in the mucous corion, are expanded in a ſtate of very minute diviſion on the mucous ſurface. Their unſupported poſition makes them liable to rupture on the application of any force, as in the bronchi from coughing, in the ear and noſe from blows on the head, &c. The paſſage of ſtones will produce bleeding from the ureters or bladder, and that of catheters from the urethra.

The ſuperficial ſituation of theſe veſſels enables us to judge by them of the ſtate of the circulation; hence the lividity of the lips, noſe, &c. in aſphyxia.

Whether the quantity of blood in the mucous-membranes be conſtantly the ſame, and particularly whether it varies in thoſe organs, which are ſeen in very different ſtates of contraction and dilatation, as the alimentary canal, are points concerning which we poſſeſs hitherto no means of judging.

The number of blood-veſſels belonging to the mucous ſyſtem, the fact that the blood is changed in reſpiration by expoſure to the air through its containing veſſels, and that it will alſo become red when placed in a bladder immerſed in oxygen, led to an inquiry whether any change is produced by the air in the blood of mucous ſurfaces. Bichat could not diſcern any alteration from encloſing oxygen gas in a portion of inteſtine, or from making it paſs backwards and forwards through a part of the canal.

This author conceives, that the red colour of the mucous is analogous to that of the muſcular ſyſtem, and derived from the colouring matter of the blood combined with the tiſſue of the part; except at the origins of theſe ſurfaces, where the cauſe of colour is principally in the blood contained in the veſſels. Aſphyxia does not affect the deeply-ſeated parts, ſo much as thoſe which are ſuperficial, and communicate with the ſkin; the latter become ſuddenly white in ſyncope, where the heart ſends no more blood into the arteries. Repeated waſhings take away the red colour; and ſudden whiteneſs is produced by immerſion in boiling water or in acids. It is, on the contrary, increaſed to a remarkable degree of intenſity in inflammations, on account of the increaſed quantity of blood accumulated in the capillary ſyſtem.

It is a queſtion, whether exhalation takes place on mucous ſurfaces: the analogy of the ſkin ſeems to indicate that it does. The pulmonary vapour, which is beſt ſeen when condenſed by cold air, has been generally referred to the exhalants of the air-paſſages ; the gaſtric fluid, and fluid of the inteſtines, has been aſcribed to the ſame ſource. It ſeems difficult to arrive at any certainty on ſuch a point.

There is a great tendency in the exhalant veſſels of the mucous organs to allow the paſſage of blood ; hemorrhages without rupture are very frequent in them.

That abſorption is carried on from mucous ſurfaces is proved by numerous familiar phenomena ; *viz.* by the chyle and fluids taken up from the ſtomach and inteſtines ; by the vapour of turpentine from the lungs ; by the removal of the aqueous portions of the bile and urine, &c. This abſorption is by no means conſtant and uninterrupted, as in the ſerous membranes ; it exhibits numerous varieties according to the ſtate of the vital powers of the part.

The origins of the mucous ſyſtem, where the animal ſenſibility is clearly marked, and ſerves, as in the ſkin, to eſtabliſh our relations with external bodies, poſſeſs cerebral nerves. In the pituitary and palatine membranes, the conjunctiva, the rectum, glans, prepuce, &c. this fact is evident ; hardly any nervous twigs from the ganglia are ſeen in theſe ſituations. The latter, on the contrary, predominate in the inteſtines, the excretory tubes, the reſervoirs of ſecreted fluids, &c. where the organic ſenſibility is more marked.

Properties of the Mucous Syſtem.—The extenſibility and contractility of tiſſue are much leſs extenſive in this ſyſtem than they would appear to be on the firſt view, on account of the numerous folds which it preſents in the hollow organs, when they are contracted. Yet theſe properties are very apparent under certain circumſtances ; the excretory tubes are often diſtended much beyond their natural ſize ; the ureters ſometimes are almoſt as large as an inteſtine, and the ductus choledochus and the pancreatic duct exhibit ſimilar enlargements. The urethra and ſalivary ducts, on the contrary, do not readily yield to diſtention.

Theſe properties are called into action very rapidly in the mucous ſyſtem ; the ſtomach, inteſtines, bladder, &c. paſs in a moment from a dilated to a contracted ſtate.

When mucous canals are no longer traverſed by the fluids which are habitual to them, they remain permanently contracted, but are not obliterated on account of the preſence of their mucous ſecretions. This fact may be obſerved in the inteſtinal canal in the caſe of artificial anus, in the urethra when the urine has run for a long time through the wound made in lithotomy, &c. Neither do they contract adheſions under inflammation, as is the caſe in ſerous cavities, and in the cellular tiſſue. The importance of this circumſtance to the great functions of life is very obvious : the mucous cavities would be rendered uſeleſs if they were ſubject to the frequent adheſions which we obſerve in pleuriſy, peritonitis, &c.

Vital Properties. 1. *Properties of the Animal Life.*—Like the integuments, mucous ſurfaces are conſtantly in contact with external bodies, and therefore require a ſenſibility, which may enable the mind to perceive the relations between us and thoſe bodies, particularly at the origin of the ſurfaces. Hence the animal ſenſibility exiſts there in a very marked degree. In many places it is even ſuperior to that of the ſkin, which poſſeſſes no feeling ſo lively as thoſe produced by odours on the pituitary membrane, by ſavours on that of the mouth, on the vagina, urethra, and glans, at the moment of coition, &c. This ſenſibility, like that of the ſkin, is ſubject to the powerful influence of habit, which conſtantly tends to render our ſenſations leſs lively, and brings to a ſtate of indifference the pleaſure and pain which they produce. A catheter left in the urethra, produces at firſt great pain ; it becomes leſs and leſs troubleſome, and is at laſt hardly felt. Peſſaries in the vagina, tents in the rectum and other ſituations, &c. are further proofs of this fact. On this obſervation is grounded the poſſibility of keeping tubes in the trachea and œſophagus, for carrying on the functions of reſpiration and deglutition. This remarkable influenec of habit is exerted only with reſpect to ſenſations produced by ſimple contact, and not ſuch as are cauſed by actual injury, as cutting, tearing, &c. ; hence it does not make the bladder leſs ſenſible to the excruciating pain of the ſtone, the noſe to a polypus, or the trachea to a foreign body accidentally introduced. To this effect of habit we may probably refer in part the gradual diminution of the functions of the mucous ſyſtem in old age. The active ſenſibility of the alimentary, biliary, urinary ſurfaces, &c. in the young ſubject, is the chief cauſe why the digeſtive and ſecretory phenomena ſucceed each other ſo rapidly : the ſame phenomena take place more ſlowly in an old perſon, from the ſenſibility being rendered more obtuſe by the habit of contact.

The animal ſenſibility, which is acute at the origins of the mucous ſurfaces, as in the mouth, noſe, glans penis, opening of the rectum, &c. is leſs marked in the more deeply-ſeated organs. In the former parts we always perceive the bodies that come in contact, but there is no ſuch perception in the latter. Does this ariſe from the uniformity of the impreſſion in the latter caſe affording no term of compariſon ? For each of theſe organs is brought into contact with one kind of ſubſtance only, while the others are expoſed to a variety of excitations. In fact we perceive impreſſions made on the deeply-ſeated organs, when they are brought into contact with extraneous bodies ; as when a catheter is introduced into the bladder, &c.

The ſenſibility of the mucous ſyſtem is much increaſed in diſeaſe ; acute catarrhs are very painful. We not only perceive the contact of bodies then, but find it very diſtreſſing. Yet the ſenſibility in theſe caſes never riſes to the point which it reaches in inflammations of the cellular, ſerous, fibrous, and other tiſſues.

The mucous ſyſtem exhibits no animal contractility.

Properties of the Organic Life.—The organic ſenſibility and the inſenſible contractility are ſtrongly marked in the mucous ſyſtem. They are called into action by four different cauſes : 1, by the nutrition of the ſyſtem ; 2, by the abſorption, which either takes place naturally, or accidentally ; 3, by the exhalation ; 4, by the continual ſecretion of the glands. Theſe two properties are the primary cauſes of all theſe functions, the augmentation or diminution of which indicate their degree of activity. As numerous cauſes are conſtantly acting on the mucous ſurfaces, particularly at their origins, this degree is very frequently changing, as well as the functions which reſult from it.

The mucous ſyſtem then differs from moſt others, in having its organic properties habitually more active, on account of the more numerous functions, over which they preſide ; and in having them change ſo frequently from variations in the excitation applied to them. In the bony, fibrous, cartilaginous, muſcular, nervous, and other ſyſtems, theſe properties are only called into exerciſe by nutrition ; and, on the other hand, no excitation can be applied to them ; ſo that the properties remain permanently at the ſame degree.

From the preceding view, we cannot be ſurpriſed that the diſeaſes, which particularly put in action the organic ſenſibility, and the inſenſible contractility, ſhould be ſo frequent in the mucous organs. All the catarrhal affections, whether acute or chronic, the hæmorrhages, the various tumours, polypi, funguſes, &c. all kinds of excoriation, ulcers, &c., which are ſeen in theſe organs, ariſe from the various alterations of which the organic properties are ſuſceptible.

The mucous ſyſtem does not ſeem to poſſeſs the ſenſible organic contractility; yet it ſometimes exhibits phenomena, which ſeem to indicate ſomething more than the inſenſible oſcillations which compoſe the inſenſible organic contractility. The parotid duct ſometimes throws out its contents to ſome diſtance from the mouth, although it ſeems entirely of a mucous ſtructure, and has no muſcular agent of impulſion at its origin. Perhaps the excretory ducts of the glands, which open on the deeply-ſeated mucous ſurfaces, exhibit the ſame phenomenon, which has been obſerved in ſome degree in the lactiferous tubes. Theſe motions, analogous to thoſe of the dartos, the cellular tiſſue, &c. ſeem to hold a middle place between thoſe of tonicity and irritability.

The ſympathies of the mucous ſyſtem are very numerous.

Active Sympathies.—When any part of this ſyſtem is inflamed or irritated in any manner, all the vital powers may be ſeparately called into action in other ſyſtems. Sometimes the animal contractility is exerted; thus the muſcles of reſpiration produce ſneezing or cough, when the pituitary or bronchial membrane is irritated; or even when the ſurface of the ſtomach is affected. A general ſpaſm is obſerved, when a foreign body lodges about the glottis. Stone in the bladder cauſes contraction of the cremaſter. In other caſes the animal ſenſibility is excited by affections of the mucous ſurfaces. Stone in the bladder produces itching of the glans penis. And a ſimilar effect is produced in the noſe by worms in the inteſtines.

The ſenſible organic contractility may be ſympathetically excited by affections of the mucous ſyſtem. The organic muſcles generally contract from the excitation of a contiguous mucous ſurface. A ſtone in the pelvis of the kidney, or irritation of the uvula, produces vomiting. The action of the heart is accelerated when the ſeminal fluid is paſſing over the urethra.

Sympathy of the organic ſenſibility is exemplified in the furred tongue, connected with the affections of the ſtomach, in the hæmorrhages which ſupply the place of ſuppreſſed menſtruation, in the diminution of the cutaneous tranſpiration obſerved by Sanctorius at the time of digeſtion, &c.

Paſſive Sympathies.—In various diſeaſes, a ſenſation of burning heat is felt in the mouth, ſtomach, and inteſtines, although theſe parts do not ſeem to be actually hotter than is natural.

Cold bodies applied to the neighbouring ſkin ſtop bleeding from the noſe and uterus. Moſt catarrhs ſeem to be produced by the action of cold on the ſkin. A cold atmoſphere confines the functions of the ſkin, and occaſions thoſe of the mucous ſyſtem to be proportionally extended. The pulmonary exhalation is more ſtrongly marked, the internal ſecretions more abundant, digeſtion more rapid, and the appetite conſequently more eaſily excited. In warm ſeaſons and weather, on the contrary, the ſkin acts more powerfully, the ſecretions, particularly of the urine, are diminiſhed, the digeſtive phenomena proceed ſlowly, and the appetite is recovered more difficultly. In ſcarlet fever the throat is remarkably affected. In the laſt ſtages of organic diſeaſes of the viſcera, as of the lungs, heart, liver, in cancers of the uterus, &c. the mucous membranes are uſually affected: hence the colliquative diarrhœas ſo common in theſe caſes.

Character of the Vital Properties.—In this ſyſtem, as in the ſkin, the vital properties are almoſt permanently in action, as it is conſtantly in contact with ſubſtances that affect it in ſome way or other. But they are not the ſame in all parts: they undergo, in each, particular modifications, ariſing probably from the differences of ſtructure already pointed out, in the nature of the corion, the diſpoſition of the papillæ, the diſtribution of the veſſels and nerves, of the glands, &c. We ſee how widely the animal ſenſibility of the pituitary membrane differs from that of the mouth, how the urethra and glans are affected by the paſſage of the ſeminal fluid, which would make no impreſſion on any other mucous ſurface. Each part bears a certain relation to the fluid which habitually covers it, and could not bear the contact of others without pain. The urine would excite the ſtomach, and the gaſtric juice the bladder; the bile, which remains quietly in the gall-bladder, would irritate the pituitary membrane, or veſiculæ ſeminales.

From theſe varieties in the vital powers of the different diviſions of the mucous ſyſtem, we naturally derive the differences obſerved in the diſeaſes affecting this ſyſtem. To the ſame cauſe we muſt alſo refer the differences of the ſympathies. Each part has a peculiar ſympathetic action on other organs. Irritation of the pituitary membrane alone cauſes ſneezing: that of the fauces, vomiting, &c.

Developement of the Mucous Syſtem.—It is proportional, in general, to that of the organs to which it belongs, and is, therefore, earlier in the gaſtric apparatus, later in the pulmonary organs, and ſtill more ſo in thoſe of generation. The tiſſue is very delicate, and the papillæ hardly ſenſible in the fœtus. Its redneſs is not ſo clearly marked: leſs blood penetrates it, becauſe the functions, of which it will at a future time be the ſeat, are either exerted feebly, or have not yet commenced. At this time the cutaneous ſyſtem is in the oppoſite ſtate with reſpect to the quantity of its blood. The mucous ſurfaces are often livid from the nature of the blood contained in their arteries. Its adheſions to the ſurrounding parts are weaker: hence it may be drawn out of the inteſtines in an entire piece.

At the time of birth reſpiration and digeſtion begin ſuddenly, and the ſecretions are increaſed: hence the mucous ſyſtem exhibits a remarkable degree of activity. New ſubſtances come in contact with it, and ſtimulate it: red blood enters its veſſels, augments its energy and ſenſibility, and renders it more fit to receive impreſſions. When the internal functions are once eſtabliſhed in a ſtate of activity, the mucous ſurfaces exhibit no further ſudden changes. They act with conſiderable energy during the time of youth. Active hæmorrhages are frequent, as thoſe of the noſe, air-paſſages, and even of the ſtomach: yet, in general, they are not frequent in the organs below the diaphragm. They are much more common in men in the gaſtro-pulmonary, than in the genito-urinary ſurface: in women, on the contrary, who have a natural evacuation of blood from one part of the latter ſurface, they are moſt frequent in it: at the epocha of puberty, the developement of the organs of generation in both ſexes gives an increaſed activity to one part of the genito-urinary ſurface: but this is not accompanied with any debilitation of other parts, all of which, on the contrary, ſeem to acquire at this time a more energetic action. The mucous ſyſtem becomes thicker and firmer in the years ſubſequent to puberty. Its vital energy ſtill predominates for ſome time in the ſuperior ſurfaces; but, as age advances, this predominance, as well as that of other organs, is transferred to the abdomen.

Numerous cauſes change the ſtate of this ſyſtem during life. It will hardly be found to exhibit the ſame colour, denſity, or external appearance in any two ſubjects. This may be ſeen in any particular ſurfaces, as that of the ſtomach for example.

The redneſs of the mucous ſyſtem is clearly marked till the thirtieth year; beyond this time it changes. It receives leſs blood, grows more and more pale, and becomes more denſe in the old ſubject. The remarkable ſoft and villous touch is no longer perceived. The vital powers grow languid; yet the mucous glands often ſeparate their fluids abundantly, and even in increaſed quantity. Abſorption takes place difficultly at this time from mucous ſurfaces, as from all others. The chyle is taken up more ſlowly; ſo that the digeſtion is longer, and contagious diſeaſes are leſs readily taken.

The ſerous membranes conſiſt of two kinds eſſentially diſtinct from each other. The firſt includes the pleura, pericardium, peritoneum, arachnoid, tunica vaginalis, and in general all the membranes of the great cavities. Theſe are the proper *ſerous* membranes. The ſecond comprehends the membranes that line the joints, and thoſe which form the burſæ mucoſæ, which may go by the common name of *ſynovial* membranes. Theſe two kinds are joined in one claſs on account of their both poſſeſſing the external character of forming a bag without openings, of their being compoſed of cellular tiſſue, and being the ſeat of alternate exhalation and abſorption. A ſtrong line of demarcation is eſtabliſhed by the different nature of the fluid that lubricates them, by the ſynovial membranes being exempted from the general dropſical affections of the ſerous, and of the cellular tiſſue, and *vice verſâ*.

The ſerous membranes generally cover the outſide of thoſe organs which are lined by mucous membranes, as the ſtomach, inteſtines, bladders, lungs, &c.; and it ſurrounds all thoſe which are eſſential to life, as the brain, heart, gaſtric viſcera, &c.

It does not form, like the mucous ſyſtem, a ſurface every where continuous over the numerous organs to which it belongs; but its different diviſions are inſulated, and theſe are rather numerous. When taken altogether they ſurpaſs in extent the mucous ſurfaces. The particular membranes vary conſiderably in their extent, from the peritoneum, which is the largeſt, to the tunica vaginalis, which is the ſmalleſt. When taken altogether, they would form a ſurface greater than that of the ſkin.

Every ſerous membrane repreſents a bag without an opening, extended over the various organs which it includes, which may be either very numerous, as in the peritoneum, or ſingle, as in the pericardium. It covers the organs in ſuch a manner that they are not contained in its cavity, and that, if it were poſſible to diſſect it completely off from them, it would form a perfect bag. In this reſpect it may be compared to the double night-cap, of which the part immediately covering the head is analogous to the ſerous membrane inveſting an organ, and the portion in which this is included repreſents the lining of the cavity in which the organ is contained. From this deſcription, it will be readily underſtood, that the ſerous membranes do not open to allow a paſſage to the veſſels or nerves which arrive at, or depart from, their reſpective organs, but that they are always reflected over them, accompanying them to the organ, and forming a ſheath round them. This arrangement prevents the ſerum, which lubricates the ſerous cavities, from gaining admiſſion into the neighbouring cellular ſubſtance, which it would do with great facility, particularly in dropſies, if the ſerous membranes, like the fibrous, were perforated for the paſſage of veſſels and nerves.

From the general idea which we have given of theſe membranes, it will be eaſily underſtood that each of them is compoſed of two parts, diſtinct although continuous; the one lining the internal ſurface of the cavity in which it is found, the other covering the organs belonging to the cavity. Thus, there is a pleura coſtalis and pulmonalis, a portion of peritoneum lining the abdominal parietes, and another covering the abdomial viſcera, &c.

The fimbriated end of the Fallopian tube offers the only example of a continuity between a ſerous and a mucous ſurface.

In every ſerous membrane there is a free ſurface, contiguous with itſelf at all points, and another adhering to the ſurrounding parts. The former is remarkable for its perfect ſmoothneſs and poliſh, which diſtinguiſhes this ſyſtem and the following from all other membranes. All the organs, which have this poliſhed ſurface, owe it to a ſerous covering: many have ſuch a covering only on ſome part of their ſurface, and are rough elſewhere, as the bladder and liver.

The free ſurfaces of the ſerous membranes completely inſulate the parts, over which they are expanded, from the ſurrounding organs, ſo as to form a kind of boundaries or barriers, if that term may be employed. Hence the great viſcera, confined by their ſerous coverings, and ſuſpended in the bags which they form, communicate with the adjacent parts only at the points where their veſſels enter: in all other ſituations there is contiguity, but not continuity with the ſurrounding organs. This inſulation of poſition coincides with the ſeparate vitality of the organs. Each has its peculiar life, reſulting from the particular modification of its vital forces, which eſtabliſhes correſponding peculiarities in its circulation, nutrition, &c. No part feels, moves, or is nouriſhed like another, unleſs it belong to the ſame ſyſtem: every organ diſplays, on a ſmall ſcale, the phenomena which appear on a larger plan in the animal economy: each takes from the circulating fluid the matter which ſuits its nature, prepares this matter, returns to the maſs of the blood what is heterogeneous to it, and appropriates what can furniſh it with the right nouriſhment: this, in fact, is digeſtion. Hence it is an important uſe of the ſerous membranes to contribute to this independence of the vital powers and functions of the organs. In the ſame way the ſerous coverings inſulate the morbid affections of a part.

The ſmoothneſs of the free ſurface of the ſerous ſyſtem facilitates the motions of the organs which it covers: the cellular ſubſtance is the principal means by which the movements of external parts are provided for, while theſe membranes are particularly deſigned for the internal organs.

This ſurface differs eſſentially from the correſponding one of mucous membranes, in the circumſtance of its very frequently contracting adheſions. The pleura is hardly free from them in any ſubject: the peritoneum comes next, then the pericardium, the tunica vaginalis, and, laſtly, the arachnoid, in which they are the moſt uncommon. They are ſeen under various forms. 1. The coſtal and pulmonary pleuræ may be completely united ſo as to form apparently but one membrane. 2. They may be joined ſo looſely that very ſlight force is ſufficient to detach them: the oppoſed ſurfaces, when detached, have loſt their poliſh and ſmooth ſurface. 3. The two pleuræ may be united by longer or ſhorter bands, having the ſame organiſation, and the ſame highly poliſhed ſurface, as the membranes which they join together. 4. The adheſion may be of a flocculent nature, and reſembling cellular ſubſtance. 5. Depoſitions of coagulating lymph may join the two membranes: but theſe are foreign to the ſurfaces.

The external ſurfaces of ſerous membranes adhere in almoſt all caſes to the ſurrounding organs: in a few inſtances theſe membranes are inſulated on both ſides. Yet, although they adhere to their reſpective organs, their organiſation is not connected with that of theſe parts. They ſometimes, by turns, cover and leave uncovered the organ to which they belong: the broad ligaments of the uterus ſerve as a ſerous membrane to that viſcus during pregnancy. The peritoneum lining an enormous hernial ſac, has previouſly lined the abdomen. Since then the organs and the ſerous membranes can exiſt independently of each other, there is no reciprocal connection in their organiſation. The medium of union is cellular tiſſue, and not a vaſcular apparatus. The membrane may be, and generally is, affected independently of the organ, and *vice verſâ*: this is ſeen in the inteſtine in peritonitis and diarrhœa. Hence we may infer, that the organiſation and the life of the ſerous membranes are entirely independent of the organs which they ſurround. Yet, in ſome caſes, they are inſeparably attached to the ſubjacent parts, as the tunica vaginalis to the albuginea, and the arachnoid to the dura mater.

The ſmooth ſurface of every ſerous membrane is moiſtened with a fluid very ſimilar to the ſerum of the blood. It is conſtantly poured out by the exhalants, and removed by the abſorbents. It is a ſimple moiſture in the natural ſtate, and is diſſolved in the air, and riſes in the form of vapour from ſerous ſurfaces expoſed in living or recently killed animals. It is more abundant in the dead ſubject, as it is increaſed by the fluids tranſuding through the blood-veſſels after death; and its augmentation during life cauſes dropſies of the various cavities. In the firſt ſtage of inflammation the ſerous exhalants produce no fluid: as they remain thus preternaturally dry, and are very ſenſible, motion is highly painful. At this time adheſions are formed. If the affection continue, ſuppuration enſues, but the membranes are never ulcerated. Their tiſſue is thickened, and pus is poured out by their exhalants. This fluid varies in conſiſtence from a milky ſerum to a complete and thick ſtratum of coagulating lymph, which adheres to the ſurface from which it has been exhaled.

The fluids of the ſerous ſyſtem are plainly of an albuminous nature. One of theſe membranes plunged into boiling water is covered with a whitiſh ſtratum of concreted albumen. This ſubſtance predominates in the fluid of dropſies. The flocculent matters, which often float in ſuch fluids, the new membranes, and the white ſubſtance, which ſometimes gives them a milky appearance, are merely albumen in various ſtates of conſiſtence.

Organiſation of the Serous Syſtem.—It is characteriſed by a whitiſh ſhining colour, and a remarkable tranſparency: the thickneſs varies, but is never conſiderable in the natural ſtate. It conſiſts of a ſingle layer, from the ſurface of which cellular ſtrata may be removed, but which can never be divided into two or more portions. No pellicle is raiſed from it by the action of a bliſter.

The organic ſyſtems are formed, 1ſt, of common parts, as cellular membranes, blood-veſſels, exhalants, abſorbents, and nerves, which form the ground-work, or as it were the ſkeleton of the part; 2dly, of a peculiar ſubſtance depoſited in this, as, for example, gelatine and phoſpat of lime in the bones, fibrine in the muſcles, &c. The organs, therefore, reſemble each other in their common parts, and are diſtinguiſhed by their peculiar tiſſues. The ſerous ſyſtem ſeems to poſſeſs no peculiar tiſſue; it contains only the common parts. Cellular in its nature it differs from that ſyſtem only in its form: the cells, inſtead of being ſeparate and diſtinct, are here approximated and condenſed. The continual exhalation and abſorption of lymph belong to both theſe tiſſues, and the phenomena of dropſy are common to them both: this identity of functions and diſeaſes leads us to infer an identity of nature. Maceration in water reſolves theſe membranes into cellular tiſſue; and forcible inflation under them produces a ſomewhat analogous effect. Cyſts, hydatids, &c. are formed in both. Nothing of a fibrous nature is obſerved in ſerous membranes, nor in the cellular tiſſue; although fibres of ſome kind characteriſe the other organs.

Theſe proofs of analogy, or even of identity of ſtructure between the cellular tiſſue and ſerous membranes, are corroborated by the effects of various reagents, which are exactly ſimilar in both caſes. A ſerous membrane dried becomes tranſparent, does not turn yellow like the fibrous membranes, ſtill remains flexible, and gradually returns to its former ſtate when immerſed in water. It putrifies much more ſlowly than the parts which it covers, and reſiſts maceration for a very long time, as may be ſeen in the delicate membrane of the omentum. It is curled up by boiling water like the fibrous ſyſtem, but furniſhes much leſs gelatine, and does not turn yellow. The ordinary chemical agents operate in the ſame way on both parts.

When it putrifies in the open air, it does not turn green like the ſkin, but becomes dull and of a deep grey. When it ſloughs during life, it is black; in the latter caſe it contains much blood, and hence the ſource of its dark colour. The peritoneum is almoſt the only inſtance in which this gangrene occurs.

Yet there are circumſtances of difference that diſtinguiſh the ſerous and cellular ſyſtems. Their external appearance is not the ſame. In the cellular tiſſue there is nothing analogous to the ſlow inflammation, accompanied with the production of ſmall tubercles, which particularly characteriſes ſerous membranes, as miliary eruptions characteriſe the ſkin, and aphthæ the mucous ſurfaces. The pus formed by the cellular organ is not the ſame as the fluid produced by ſerous ſurfaces.

The exhaling veſſels which produce the fluid juſt deſcribed are eaſily demonſtrated. Withdraw an inteſtine from the abdomen of a living animal; you ſee no veſſels in the ſerous ſurface, but it has a roſe-coloured tint from thoſe which lie under it. If you irritate it, return it into the abdomen, and draw it out again after ſome hours, it exhibits a number of reddiſh ſtreaks, which are the exhalant veſſels; theſe could not be ſeen in the natural ſtate from the tranſparency of their contents. Minute injections have a ſimilar effect on the ſerous membranes, and the injected fluid is often thrown out on the ſurface, probably from the exhaling orifices.

A large portion of abſorbents enters into the compoſition of ſerous membranes, which may probably be regarded as an intertexture of theſe veſſels and exhalants, united by cellular tiſſue. The mouths of theſe abſorbents can no more be directly demonſtrated than thoſe of the exhaling veſſels; but phenomena very clearly prove their exiſtence. They are ſeen in the dead ſubject loaded with fluids taken up from the cavities to which they belong, as in the different dropſies, or in effuſions of blood. Coloured fluids thrown into the ſerous cavities are ſaid to be abſorbed; but Bichat ſays that the colouring matter is not taken up. During life they often carry off very large watery effuſions in a ſhort time.

Serous membranes contain very few blood-veſſels in their natural ſtate; ſo few, indeed, that Bichat almoſt doubts their exiſtence. Numerous trunks run in the cellular tiſſue of their external ſurfaces, but theſe may be removed by diſſection, without injuring the membranes. In the omentum the exiſtence of blood-veſſels cannot be queſtioned; and in all caſes they muſt be connected to the membranes through the medium of the exhalants.

Although the ſerous ſyſtem is diſtinguiſhed by certain general characters, the particular membranes differ conſiderably: each has its peculiar ſtructure, ſuited to its ſituation and offices. The tranſparent arachnoid, yielding to the ſmalleſt force, is ſtrongly contraſted with the denſe and ſtrong peritoneum. Different parts of the ſame membrane are differently organiſed. The omentum is not like the reſt of the peritoneum; and the two portions of the tunica vaginalis are very different. Hence we ſhall not be ſurpriſed at finding great varieties in the diſeaſes of theſe membranes. Nothing is more common than inflammation of the pleura; that of the arachnoid is rare. The ſymptoms are different in inflammation of the pericardium, tunica vaginalis, and peritoneum; the dropſies are very different, &c. Yet there is a common character in the affections, ariſing from analogy of organiſation. The large ſerous collections, and the ſlow tubercular inflammation, belong eſpecially to theſe membranes: the mode of adheſion is peculiar to them.

Properties of the Serous Syſtem.

1. *Properties ariſing from Organiſation.*—The extenſibility and contractility of tiſſue are leſs extenſive in the ſerous membranes, than we might have ſuppoſed on the firſt view of the enormous dilatations which the organs covered by them occaſionally exhibit, and of the facility with which they recover their original ſize. The folds of the membranes, which are particularly marked near organs ſuſceptible of conſiderable variety in ſize, as in the abdomen, are ſeparated as the organs enlarge, and contribute to their covering. Yet a conſiderable extenſion takes place in many caſes, in the peritoneum in aſcites, in the tunica vaginalis in hydrocele. The contractility is proportional: thoſe membranes are reſtored to their original ſtate when the diſtending fluids are removed. After very long extenſion they do not recover completely: the tunica vaginalis is flaccid when emptied, and the peritoneum in old dropſies.

2. *Vital Properties.*—Removed by their ſituation from the action of external bodies, the ſerous membranes do not enjoy, in their natural ſtate, thoſe properties which eſtabliſh relations between ſuch bodies and the living organs; they have no animal ſenſibility nor contractility. Hence they would not ſerve the office of integuments to the body, nor the purpoſe of lining the organs in the place of mucous membranes: they would give us in ſhort no other ſenſation than that of an obſcure and indiſtinct feeling. Living animals exhibit no ſigns of pain when theſe membranes are irritated. External bodies brought in contact with ſerous membranes excite inflammation in them: and this method is employed in ſurgery for producing artificial adheſions of their ſides. When inflamed, animal ſenſibility is developed in them to a very high degree; theſe are among the moſt painful affections to which the body is ſubject.

This ſyſtem does not poſſeſs the ſenſible organic contractility; but the inſenſible organic contractility, and the correſponding ſenſibility, are kept in permanent exerciſe by the exhalation and abſorption habitual to this ſyſtem, and by nutrition. The two latter properties predominate, and the morbid affections conſiſt in alterations of them. Hence are derived acute and chronic inflammation, adheſions, effuſions of various fluids, &c. It is theſe, alſo, which are called into action in ſympathies; ſo that whether they are diſeaſed idiopathically or ſympathetically, ſerous membranes exhibit always a ſeries of phenomena ariſing from an increaſed interior motion, or from a loſs of power in the exhaling and abſorbing veſſels, and in the proper tiſſue; while in the animal and organic muſcular ſyſtems, the prevailing affections, marked in the one by convulſions and paralyſis, in the other by irregular motions of irritability, do not indicate any ſuch alteration of the tiſſue of the organ. Hence the latter ſyſtems, although frequently affected during life, preſent very few morbid changes after death, while the ſerous affords a vaſt field of obſervation to the morbid anatomiſt.

Sympathies.—The ſerous ſurfaces are often influenced by the affections of other organs. This is obvious in the organic diſeaſes of the heart, lungs, liver, &c. which, although theſe parts are entirely unconnected in functions with the ſerous organs, are almoſt always accompanied, in their latter ſtages, with collections of fluid in the large cavities.

Developement of the Serous Syſtem.—All the ſerous membranes are extremely thin in the fœtus; and the fluid which lubricates them is more unctuous, ſo that it ſeems to approach in its qualities to the ſynovia. Their growth correſponds to that of the organs which they cover. We cannot obſerve any marked change in their functions at the time of birth. For a conſiderable time they are extremely thin and tranſparent, but they afterwards grow thicker, and aſſume a dull colour.

This ſyſtem remains unchanged for a long time in the adult. The different membranes in their affections follow the ſame laws as the organs which they ſurround: thus the ſerous ſurfaces of the cheſt are moſt frequently affected in young, and thoſe of the abdomen in older ſubjects.

The membranes become more denſe and firm, and adhere more ſtrongly in old perſons. Their powers become weakened, abſorption is performed more languidly, and dropſies occur.

The *ſynovial* ſyſtem preſents two principal diviſions; one belonging to the articulations, the other to the tendinous ſheaths.

Synovial Syſtem of the Articulations.—The formation of the ſynovia has been very commonly aſcribed to the maſſes of fat found in the neighbourhood of the articulations, and has been regarded as a ſpecies of ſecretion. Theſe maſſes, which have been called ſynovial glands, conſiſt apparently of a merely adipous texture, covered by the ſynovial membranes, and ſo placed as not to be ſubject to any conſiderable preſſure in the motions of the joint. It was ſaid, that the ſynovia was poured out by fringed proceſſes projecting from their ſurfaces into the cavities of the joints. The following conſiderations will convince us that the ſynovia cannot be formed from this ſource. The bodies called ſynovial glands are not found in all the joints, and they do not exiſt in the ſheaths of tendons. We can diſcover nothing in them but maſſes of fat: inflation or maceration demonſtrates the cellular tiſſue belonging to them, and ebullition removes the fat, leaving nothing but collapſed cells like common cellular ſubſtance. They contain no trace of any glandular ſtructure, nothing of that peculiar parenchyma, unknown in its nature, but remarkable in its ſtructure, which diſtinguiſhes all glandular bodies. No excretory duct can be ſhewn in any of them. They do not exhibit in any caſe ſuch diſeaſed alterations as other glands diſplay, but participate only in the general affections of the ſurrounding cellular tiſſue.

Another ſource has been aſſigned to this fluid in the tranſudation of the medullary ſubſtance of the bones through their extremities: this explanation is ſo mechanical, ſo unlike any vital proceſs, and ſo inconſiſtent with all our views of the functions of the animal economy, that it is unneceſſary to refute it formally.

We muſt then conſider the ſynovia as produced by exhalation from the veſſels of the membranes. In this point of view it may be compared to the ſerum of ſerous ſurfaces, to which it is analogous in its albuminous compoſition, in its function of lubricating the ſurface, on which it is depoſited, in its increaſed depoſition under certain circumſtances, and in its being taken up from the cavities by abſorption.

The ſynovia is a tranſparent and viſcid fluid: it is tenacious, ſo as to be drawn out into ſtrings when touched with the finger, and has a ſlippery unctuous feel, which renders it very fit for the purpoſe of lubricating the articular ſurfaces, and making them glide eaſily againſt each other in the motions of the joint. Its quantity is not uniform in all joints; in the ankle, hip, ſhoulder, elbow, &c. it is abundant; while its exiſtence can hardly be obſerved in the ſterno-clavicular, ſterno-coſtal and coſto-vertebral articulations. This difference does not ariſe from the ſmallneſs of the ſurfaces; for ſome ſmall joints contain much ſynovia. The quantity is always the ſame in the ſame joint; it cannot be increaſed, like the ſerous fluids, by tranſudation after death, nor is it, like them, influenced ſympathetically by affections of other organs. It never exhibits thoſe changes in appearance, which are ſo frequent in the fluid of ſerous cavities, as the milky turbid ſtate, the white flocculi, the falſe membrane of coagulating lymph.

The ſynovial membranes, which conſtantly depoſit and abſorb ſynovia, belong to the joints of the body in the ſame manner as the ſerous membranes do to the great cavities. Each of theſe organs is therefore to be regarded as an entire bag expanded over the parts which form the joint; that is, over the ſurfaces of the articular cartilages of the ligaments, and the maſſes of fat called ſynovial glands, and including the inter-articular ligaments, when ſuch exiſt, in complete ſheaths. The various organs compoſing joints owe to it their ſmooth, poliſhed, and ſhining ſurface. We can conceive the poſſibility of removing it from them by diſſection, in which caſe it would form a bag without any opening. All the organs, over which it is expanded, are on its external ſurface, as the different viſcera are on the outſide of their reſpective ſerous membranes.

A ſynovial membrane is found in all moveable articulations; indeed, its office is ſo eſſentially connected with the motion of the part, that it may be deemed a neceſſary conſtituent of theſe joints. A fibrous capſule belongs to very few joints: the hip and ſhoulder offer examples of it. Theſe joints poſſeſs two very diſtinct coverings. The external is fibrous, and repreſents a bag open above and below: it embraces, by its two openings, the ſurfaces of the two bones, and is continued into their perioſteum, the fibres of the two organs being interlaced. The other is the ſynovial membrane, lining the former, and ſeparating from it at its attachment to the bones, to be reflected over the articular cartilages. To the former, if to any part, the term capſular ligament ſhould be applied; it muſt lead to very incorrect notions to give this name to the ſynovial membrane, the ſtructure and functions of which are ſo foreign to thoſe of ligaments.

Other joints have no fibrous capſule: the ligamentous fibres, inſtead of aſſuming the membranous form, are collected into faſciculi. The internal layer, or that compoſed of the ſynovial membrane, exiſts here, as in the former joints, and has exactly the ſame diſpoſition with reſpect to the capſule, which it forms round the joint, and its reflexion over the articular heads. In theſe joints, too, anatomiſts often call it the capſular ligament. It has the ſame function in both kinds of articulation; that of ſecreting the ſynovia and confining it to the ſurface of the joint.

Simple inſpection is ſufficient to prove the exiſtence of the ſynovial membrane in joints, where it exiſts alone, that is, not covered by a fibrous capſule. It can be very eaſily demonſtrated in certain parts of other joints, as on the ligamentum teres, the ſynovial gland, and the neck of the femur in the hip, as well as where it is reflected from the fibrous capſule to the cartilaginous ſurfaces. On the ſurface of the fibrous capſule, and on the articular cartilages in all joints, its adheſion is ſo ſtrong, that doubts may be entertained of its exiſtence. It ſometimes appears uncovered at ſome interval between the fibres of a capſule; and careful diſſection, with maceration, enables us to detach it. The ſmooth ſurfaces of ligaments and cartilages can be owing only to a covering of this membrane, for thoſe parts cannot derive that property from their own ſtructure; articulations, which have no ſynovial membrane, have not this ſmooth ſurface, as the ſymphyſes of the pelvis.

When a part paſſes through a joint, as the tendon of the biceps at the ſhoulder, the ſynovial membrane is reflected over it, ſo that there is no opening for the ſynovia to eſcape through.

As the form and office of the ſynovial ſtrongly reſemble thoſe of the ſerous membranes, the organiſation is alſo analogous. It is chiefly cellular, as we may prove by diſſection, inflation, and maceration. Its external ſurface is every where covered by cellular tiſſue, which we find gradually more and more condenſed as we approach the membrane. No kind of fibre can be diſtinguiſhed in it. It has a degree of tranſparency when diſſected out of a joint. In all points of its texture, in its exhalants and abſorbents, it reſembles the ſerous membranes.

Properties.—The extenſibility and contractility of tiſſue are ſeen in the diſtention of joints in the hydrops articuli, and their ſubſequent return to their original ſize. The membranes admit, however, only of a gradual extenſion, and are torn by the ſudden force applied in luxations.

Organic ſenſibility is the only vital property which they poſſeſs in the ordinary ſtate; no ſign of pain is produced, when they are expoſed and irritated in living animals. Inflammation increaſes this ſenſibility and converts it into the animal kind; moſt excruciating pain is experienced from inflamed joints. The exhalation and abſorption conſtantly carried on by theſe membranes, prove that they poſſeſs the inſenſible contractility.

Theſe membranes are not affected by diſeaſes of other organs. In acute diſeaſes of important viſcera, while the ſkin, the mucous ſurfaces, the cellular tiſſues, the nerves, &c. exhibit a greater or leſs ſympathetic diſturbance, the ſynovial membranes are completely quiet. In this reſpect they reſemble the bony, cartilaginous, and fibrous ſyſtems.

Developement of the Synovial Syſtem.—The membranes are proportionally large in the fœtus and child, becauſe the articular ſurfaces are large; they are alſo very thin. There is nothing peculiar in the ſynovia. The membranes grow more denſe, and leſs tranſparent, in the old ſubject, and produce leſs ſynovia: they acquire a rigidity, which is unfavourable to motion. But they do not become oſſified.

Synovial membranes are ſometimes accidentally developed. When the head of a bone is diſlocated and not replaced, a ſmooth moiſt cyſt is formed round it, by condenſation of the ſurrounding cellular membrane, having very much of the appearance of a ſynovial membrane, and performing its office in facilitating the motions of the part.

Synovial Syſtem connected with the Tendons.—This entirely reſembles the preceding ſyſtem in its nature, and differs from it only in ſituation: often indeed they are confounded together: thus thoſe, which belong to the heads of the gaſtrocnemius, to the extenſors of the knee and to the popliteus, are continuous with the joint of the knee, the ſame membrane belonging both to the articulation and to the tendon. Very few of theſe tendinous ſynovial membranes are found in the trunk, almoſt all of them occupy the limbs, in which they favour the motions of the tendons. They are found, 1, where a tendon turns over a bone at an angle, as at the paſſage of the peronei behind the outer ankle, and of the obturator internus over the iſchium; 2, where a tendon glides againſt a bony ſurface without making any turn, as the tendo Achillis at the os calcis, the gluteus maximus at the great trochanter, &c.; 3, where a tendon plays in a fibrous ſheath, as the flexors of the toes and fingers on the phalanges.

The ſynovial membranes of tendons, like thoſe of the joints, form bags without any opening, expanded on one ſide over the tendons, and on the other over the organs with which the organs are in contact. From this diſpoſition, and from the nature of the fluid with which they are lubricated, they have been called burſæ mucoſæ, under which name they are generally deſcribed. It follows, that every tendinous ſynovial membrane muſt poſſeſs two ſurfaces, a ſmooth one, forming the interior of the bag, which is every where free and contiguous to itſelf, and an adherent one attached to the ſurrounding parts. The ſmooth ſurface is conſtantly moiſtened with a fluid of the ſame nature as the ſynovia of the joints, formed like it by exhalation, and not, as ſome have repreſented, by reddiſh fatty bodies placed on the outſide of the membrane, which do not exiſt in general, and have no glandular texture when they do exiſt. This fluid in general is leſs abundant than in the joints; but the quantity varies in the different burſæ. It is ſometimes increaſed in quantity, forming a ſpecies of dropſy, which is called a ganglion: this kind of tumour never exiſts in the fingers, becauſe the fibrous ſheaths which include the ſynovial membranes of their flexor tendons are unyielding. Often theſe ganglia are completely new formations, cyſts developed in the cellular tiſſue.

The adherent ſurfaces of the membranes are fixed on one ſide to the tendons, to which they are cloſely attached, but not with equal firmneſs in all caſes; it may be detached from the obturator internus, the pſoas, &c., but in general it cannot be ſeparated. On the other ſide it is fixed to the perioſteum, which generally aſſumes the ſtructure of fibro-cartilage. To this the membrane adheres as the articular ſynovial membranes do to the cartilages of their reſpective joints; that is, we cannot detach it, and ſhew it ſeparately, but infer its exiſtence from the poliſhed ſurface of the part. Sometimes it is expanded over a fibrous capſule, inſtead of a bone. After covering the tendon, it is continued in ſome caſes over a portion of the muſcular fibres, as in the obturator internus. Where the membranes are reflected from the tendons to the ſurrounding organs, they are covered in general by a conſiderable quantity of cellular tiſſue: but in the caſe of tendons running in fibrous ſheaths, they line thoſe ſheaths.

Theſe membranes muſt obviouſly participate in the motions executed by the tendons, to which they belong: they will be drawn backwards and forwards as the tendon itſelf is moved.

The very various forms, which the bags of the tendinous ſynovial membranes preſent, may be reduced to two general modifications. The one kind are rounded bags, covering only one ſide of the reſpective tendons, having no internal folds, and never ſurrounded by fibrous ſheaths. The others, belonging particularly to the flexors of the toes and fingers, and to other tendons about the wriſt and ankle, conſiſt in the firſt place of a cylindrical ſac lining the canal, in which the tendon runs: it is then reflected over the tendon, which it covers on all ſides, compoſing for it a complete ſheath. This kind of membrane thus repreſents two cylindrical canals, one lining the bone and fibrous ſheath, and the other covering the tendon, continuous with each other at the two ends, where the reflexion produces two cul-de-ſacs. Folds are often ſeen in theſe, paſſing from one part of the membrane to the other: the ſynovial membranes of the digital flexors exhibit them.

Their organiſation is exactly analogous to that of the articular membranes. The ſtructure is principally cellular, and diſtinguiſhed by its ſoftneſs: very few blood-veſſels are ſeen, but the exhalants and abſorbents prevail. The former become diſtended with blood under inflammation, and give to the membrane a more or leſs deep red tint. In this ſtate ſynovia is not produced; and ſometimes adheſions take place.

The vital properties, and thoſe reſulting from organiſation, ſeem not to differ from thoſe of the preceding ſyſtem. Like it, this is never affected ſympathetically: all its diſeaſes are local.

The obvious effect of theſe membranes is to facilitate the motions of the tendons over the bones and other parts in contact with them, by giving to the oppoſed ſurfaces a perfect poliſh, and lubricating them with a ſlippery fluid.

They are thin and delicate in the fœtus and child, more denſe and firm in the adult, and become rigid in old age: at the latter time they produce but little fluid, and are conſequently dry. This ſtate probably concurs with other cauſes in impairing the power of motion in the old ſubject.

Several of the burſæ mucoſæ vary in different bodies. Sometimes this is only a maſs of cellular tiſſue, in the place of that belonging to the gluteus maximus. Theſe burſæ are always very dry when they exiſt, ſo that ſynovia can hardly be ſeen in them. They reſemble, in that reſpect, the articular ſynovial membranes of the ribs, clavicles, &c.

Fibrous Membranes.—Theſe comprehend the faſciæ of the limbs, &c., the perioſteum and perichondrium, the dura mater, ſclerotica, albuginea, the proper coverings of the kidnies, ſpleen, &c., the covering of the corpus cavernoſum, &c.; all forming exterior inveſtments of the organs to which they belong. Theſe parts are not, like the ſtomach, inteſtines, lungs, bladder, &c., which are covered by ſerous membranes, ſubject to alternate enlargement and diminution: that would not ſuit the properties of fibrous organs. The membranes are moulded exactly to the form of the parts, and, with the exception of the dura mater, do not preſent the numerous folds ſeen in the ſerous membranes. Both their ſurfaces are adherent, in which they differ from the ſerous, mucous, and ſynovial membranes.

One of theſe ſurfaces, intimately connected to the organ, ſeems to ſend numerous proceſſes into it. In the teſtes, corpus cavernoſum penis, ſpleen, &c. are ſeen numerous fibres croſſing in various directions, and attached to the fibrous membranes of theſe organs. On theſe, together with the membrane, the form of the part ſeems greatly to depend. Bony matter is thrown out in a rough and irregular form, when the perioſteum no longer covers it: the figure of the teſtis is altered, when the albuginea is injured, &c. Theſe fibres in the interior of the organs are not, however, of the ſame nature with the fibrous membranes: they cannot be deemed proceſſes of thoſe membranes. By boiling the corpus cavernoſum penis, or ſubjecting it to any other proceſs, the interior ſpongy tiſſue and the outer fibrous covering always remain diſtinct in their appearance: there is no continuation of the one into the other.

The oppoſite ſurfaces of fibrous membranes are joined to the ſurrounding organs with various degrees of firmneſs, from the looſe attachment of the corpus cavernoſum to the cloſe adheſion of the dura mater. In general, the fibrous membranes and other fibrous organs have a great tendency to adhere cloſely to the ſerous and mucous organs. The connection between the dura mater and arachnoid, the tunica albuginea and vaginalis, the fibrous capſules and the ſynovial membranes, ſhews this in the ſerous membranes. So intimate is the connection in theſe caſes, that it is not poſſible to ſeparate the parts by diſſection in the adult. When fibrous and mucous ſurfaces meet together in an organ, they become completely confounded: this is ſeen in the pituitary membrane, in the membrane of the ſinuſes of the noſe, in the ear, &c. In all theſe parts, the perioſteum is not ſeparable from the mucous ſurface. The vas deferens, the Fallopian tube, the ureter, ſeem to be fibro-mucous organs.

Theſe membranes have, in general, a very cloſe texture, and a remarkable thickneſs: they conſiſt of a ſingle layer. The dura mater ſeems to form an exception to this rule, by the folds which form the falx and the tentorium cerebelli; but we cannot point out two diſtinct layers in the membrane, except at the ſinuſes. They poſſeſs more veſſels than all the other diviſions of the fibrous ſyſtem, and are perforated by numerous apertures for the paſſage of theſe veſſels, which in general paſs through them, in order to arrive at the organs which they cover. Theſe openings, each of which is larger than the branch perforating it, diſtinguiſh the fibres from the ſerous membranes, which are always reflected, inſtead of being opened, for the purpoſe of admitting the vaſcular ſyſtem into their reſpective organs. The deſcription of the particular membranes will come under that of the organs to which they belong. We ſhall except the perioſteum, which ought to be conſidered in a general way, both becauſe it is a covering common to the whole bony ſyſtem, and becauſe it is a kind of connecting centre to all the organs of the fibrous ſyſtem.

The perioſteum ſurrounds all the bones in every part, except where they are covered by cartilage. It is hard, ſtrong, of a greyiſh colour, remarkably thick in the early years of life, and proportionally thinner in the adult. The old anatomiſts conceived that it was prolonged from one bone to another, over the articulation, ſo as to conſtitute a continued bag for the whole ſkeleton. This is an incorrect notion. The perioſteum is interlaced at the joints with the ligaments, which may thus be regarded as a medium of communication between the coverings of the different bones. It is in this way only that we can regard it as continuous over the whole ſkeleton. It does not exiſt in the crowns of the teeth, nor on the bony productions riſing from the head in certain animals. It is feebly united to the bone in infancy, particularly at the middle of the long bones: the adheſion becomes ſtrong in the adult; and is extremely firm in the old ſubject, in which the membrane is very thin. Numerous proceſſes extend from this membrane into the bone: the number of theſe is much greater at the extremities of the long bones, and on the ſhort bones, than at the middle of long, and over the ſurface of broad bones; all which we ſhould have inferred, from obſerving the proportion of apertures in theſe ſituations. Theſe prolongations accompany blood-veſſels, and line the canals which penetrate the bones: they do not reach the medullary cavity, but are confined to the bony tiſſue, eſtabliſhing relations between it and the membrane from which they proceed. In conſequence of this connection, the deſtruction of the perioſteum is accompanied by the death of the correſponding part of the bone.

The relations of the perioſteum to the ſurrounding organs are very various: in moſt caſes the muſcles lie on it, and are connected, according as they are capable of executing more or leſs conſiderable motions, by looſer or cloſer cellular texture.

The direction of the fibres in this membrane is nearly analogous to that of the bones, particularly in the long and ſhort ones; but it has not a radiated arrangement in the broad bones. They vary in length, and the ſuperficial ones are the moſt extenſive. Its veſſels are derived from thoſe of the neighbouring parts. Their ramifications form in the membrane a net-work, which injections ſhew very clearly, particularly in children: they are either loſt in the membrane, or penetrate the tiſſue of the bone, or return into the neighbouring parts to form various anaſtomoſes.

The perioſteum receives the inſertion of the tendons, ligaments, and aponeuroſes. This attachment appears foreign to the bone in the child. If we detach the membrane, all theſe organs are brought away at the ſame time; but, as oſſification extends to the internal plates of the perioſteum, the fibrous organs ſeem identified with the bone in the adult.

In the fœtus it is ſoft, ſpongy, and containing much gelatinous fluid: it diſſolves in water readily. Its fibres at this time are indiſtinct: they become more viſible as age advances; the ſoftneſs of the tiſſue is diminiſhed, and its ſtrength increaſed. The perioſteum is extremely firm in the old ſubject: it reſiſts ebullition almoſt as much as the ligaments. When the bones are boiled, it cracks in various parts, becauſe its fibres are ſhortened and detached from the bone; but that which remains adherent is very difficultly converted into gelatine.

The functions of this membrane do not ſeem to be very ſatisfactorily aſcertained. An opinion has been entertained that it ſerves to protect the bone from the preſſure of the ſurrounding moveable organs, as the muſcles and arteries. It has been ſuppoſed to be very much concerned in the formation of bone; but we cannot accede to this view of the matter. (See BONE.) It may form a kind of barrier, confining the progreſs of oſſification within certain bounds. Bichat regards it as connected eſſentially with the functions of the fibrous organs attached to it. He conſiders that it is placed on the bony ſyſtem, as a ſolid point of ſupport, which enables it to bear the efforts of the various fibrous organs.

The *perichondrium* is a membrane ſurrounding the cartilages, except thoſe belonging to the articulations, analogous in its ſtructure and offices to the perioſteum. It is thin and fibrous; leſs cloſely united to the organs, which it covers, than the perioſteum, becauſe they have fewer pores, and therefore receive fewer proceſſes from the membrane: hence there is a leſs intimate connection between its life and that of the cartilage, than between that of the bone and the perioſteum. Its blood-veſſels are few. Bichat removed it from the thyroid cartilage of a dog, and no exfoliation followed.

For the vital properties of the fibrous membranes, the reader is referred to the article FIBROUS *Syſtem*, where the ſubject is conſidered in a general point of view.

The compound Membranes.—The ſerous and fibrous membranes have a great tendency to adhere together, and exhibit this character wherever they are brought into oppoſition, as in the caſe of the arachnoid and dura mater, the tunica albuginea and vaginalis, the ſynovial membranes and fibrous capſules of joints, &c. The two component parts of ſuch membranes are ſo cloſely united, that it is impoſſible to ſeparate them by diſſection: however, they are clearly diſtinguiſhed by their texture and properties.

The ſerous and mucous membranes are generally ſeparated by a muſcular ſtratum, as in the inteſtinal canal and bladder; and where they are not, as in the gall-bladder, the cellular ſubſtance belonging to the mucous is too copious to admit of the cloſe adheſion neceſſary to form a compound membrane.

The fibrous and mucous membranes are in many caſes conſolidated together, as in the ureter, vas deferens, pituitary membrane, lining of the tympanum, &c. They are connected inſeparably in theſe ſituations. In all, the mucous is the moſt important, as it is the ſeat of the functions of the part: the fibrous is acceſſary, and furniſhes additional ſupport and ſtrength to the mucous.

There are ſeveral membranes, which do not come under the preceding claſſification: ſuch are the fibrous coat of the arterial ſyſtem (ſee HEART); the lining both of the arteries and veins (ſee HEART); that which lines the medullary canal of bones, and contains the marrow (ſee MEDULLARY *Syſtem*); the iris and choroid coat, and retina (ſee EYE); and the pia mater, ſee BRAIN.

MEMBRANE is a term alſo frequently applied in the Engliſh language to the cellular ſubſtance; *cellular membrane* therefore is exactly equivalent to the latter expreſſion. A general account of this very important animal tiſſue is given under the head of CELLULAR *Subſtance:* we propoſe to conſider it in a more extenſive way in the preſent article, and particularly to exhibit the ingenious views of Bichat, as contained in the firſt volume of his "Anatomie Generale."

The cellular ſubſtance, ſurrounding the various organs of the body, forms at the ſame time a connecting medium which joins them together, and an intermediate ſtructure which inſulates them. It extends into the interior of the ſame organs, and is eſſentially concerned in their ſtructure. We ſhould regard it, firſt, in relation to the particular organs; and ſecondly, in a general manner, independently of other parts. In the firſt of theſe diviſions we have to conſider the cellular organ under two points of view: 1ſt, as compoſing a covering for each part; and 2dly, as forming one of the eſſential baſes of its ſtructure.

I. *Of the exterior Cellular Texture of each Organ.*—Some parts are covered on one ſurface only, as the ſkin, mucous and ſerous membranes, arteries, veins, and abſorbents; while others are ſurrounded on all ſides.

The corion of the ſkin contains, as we have ſhewn under the article INTEGUMENTS, a large quantity of cellular tiſſue, and anatomiſts have generally regarded it as formed by a condenſation of this tiſſue. Beſides this, a ſtratum of cellular ſubſtance, varying in quantity and denſity, lies under it in all parts of the body. At the median line the ſubcutaneous tiſſue is rather more denſe than in other ſituations, and adheres more cloſely to the ſkin; this may be ſeen in the face, on the ſternum of the linea alba, and over the ſpine. Bichat regards it as marking in an obſcure way the ſymmetrical diviſion which characteriſes the organs of the animal life; but we cannot inſiſt much on it, as there are no traces in the neck. This author ſtates that the air was confined to one ſide in ſome of his experiments on emphyſema; but that it generally paſſed the line.

1. The ſubcutaneous tiſſue is remarkably denſe under the ſcalp; it is looſe and abundant in the face. By its laxity in the trunk it favours the motions of the large muſcles in that ſituation. It is diſtributed almoſt uniformly in the limbs, except that it is denſe in the palms and ſoles, where conſequently the ſkin is more cloſely united to the aponeuroſes, and anaſarcous depoſitions are formed with difficulty. It is alſo more denſe and cloſe over the annular ligaments; and hence the conſtrictions which the limbs o children preſent in theſe ſituations, as the fat does no penetrate eaſily into cells ſo cloſely approximated.

The ſubcutaneous cellular tiſſue beſtows on the ſkin its power of motion with reſpect to the organs that it covers: this is exemplified in the movements of the trunk and limbs, in the effects of external bodies brought in contact with the ſurface, in the cutaneous coverings acquired by large tumours, as herniæ, ſarcocele, &c. at the expence of the ſurrounding parts. From the ſame cauſe ariſes the facility of motion in organs ſituated under the ſkin, as the muſcles.

It contains a larger proportion of ſerous fluid than other parts of the cellular ſubſtance, and is more liable to preternatural accumulations of that fluid, probably on account of its greater laxity. If the ſkin and ſubjacent tiſſue be ſtripped from an anaſarcous lower extremity, it will appear very little larger than a healthy limb treated in the ſame way.

2. The mucous membranes have the ſame relations to the cellular ſubſtance as the ſkin, of which they are continuations, and to which their ſtructure bears conſiderable analogy: the ſtructure occupying their ſurface is called by Bichat tiſſu ſoumuqueux. It is much more compact and denſe than the former, and the adheſion of the mucous ſyſtem to the ſurrounding parts is conſequently much more cloſe. Hence it is difficult to ſeparate the mucous membranes perfectly, and impoſſible to produce emphyſema under them artificially. Air is never ſeen in this tiſſue in the moſt extenſive natural emphyſema, nor is water ever depoſited in it in the moſt general anaſarca. Indeed the hollow organs would have their functions deſtroyed by the obliteration of their canals, if the ſubmucous were liable to the ſame diſtention as the ſubcutaneous tiſſue. This firmneſs in the former tiſſue enables it to ſerve as a point of attachment to the muſcular fibres, which belongs to the ſtomach, inteſtines, bladder, &c.

3. The adherent ſurfaces of ſerous membranes are covered by cellular tiſſue, called by Bichat tiſſu ſouſéreux, which is in general looſe and abundant. In ſome parts, however, the union is ſo cloſe that no cellular ſubſtance can be diſcerned; as in the tunica vaginalis and albuginea, the arachnoid and dura mater, &c.: theſe conſtitute ſero-fibrous membranes.

4. Arteries and veins are connected to the ſurrounding organs by a looſe and eaſily lacerable cellular ſubſtance. (See the account of their ſtructure in the article HEART.) The abſorbing veſſels are probably furniſhed with a correſponding covering; but their minuteneſs prevents us from aſcertaining this point by direct inveſtigation.

5. The various excretory tubes are ſurrounded by cellular tiſſue. All theſe have a mucous lining, which is covered by a denſe and firm ſtratum of matter, differing in the different tubes, and the exact nature of which is probably not yet well underſtood. It ſeems doubtful whether we ought to aſſign this exterior covering to the cellular tiſſue. See GLAND.

The organs of the body, except thoſe which have been juſt mentioned, are ſurrounded on all ſides by a more or leſs abundant cellular ſtratum, which inſulates them, and interrupts thoſe communications which would connect the vitality of one part to that of another in too intimate a manner, if their juxtapoſition were immediate. The ſerous vapour and fat of the cells probably contribute to this inſulation of vitality; but the eſſential difference, between the proper life of the cellular ſubſtance, and that of the organs which it incloſes, renders that tiſſue very capable of fulfilling this office.

office, independently of the fluids which it contains. The confinement of diſeaſes to particular organs is aſcribed by Bichat to this inſulation of their vitality. We meet every day with diſeaſed organs covered by healthy ſerous membranes, with catarrhal mucous membranes ſurrounded by ſound parts: the numerous cutaneous eruptions do not affect the ſubjacent organs, &c. On the other hand, diſeaſes are very often communicated from one part to another. A phlegmonous inflammation involves all the ſurrounding parts: the rheumatic affection of a joint produces exterior ſwelling, and diſeaſe of the ligaments of the knee is accompanied by an analogous phenomenon. Nor are diſeaſes alone communicated from one part to another: the effects of remedies often act in the ſame way, as for inſtance, bliſters and poultices. If the cellular ſubſtance has any influence on theſe changes, how are we to account for reſults apparently ſo contradictory under ſimilar circumſtances? Will it not be more philoſophical to confeſs that we are ignorant of the cauſes, by which the communication of diſeaſes is influenced and modified, than to adopt, in the abſence of all direct proof, a mode of explanation which ſo frequently fails? When Bichat tells us, in caſes where diſeaſe is confined to one organ, that the cellular atmoſphere, by poſſeſſing a different kind of vitality, prevents its propagation; and, in oppoſite inſtances, that this atmoſphere becomes charged with emanations raiſed from the morbid part, or that its vital powers experience a change analogous to that which has affected the diſeaſed organ, does this apparatus of words impart to us any further knowledge than that of the ſimple fact, that morbid changes ſometimes are, and ſometimes are not, propagated from one organ to another?

The quantity of cellular tiſſue ſurrounding any organ bears a relation to the motions which it is capable of executing; and is more abundant in proportion as theſe motions are more extenſive. Hence it is ſeen in conſiderable quantity about the large arterial trunks, the eye, the uterus, bladder, the large joints, as the hip and ſhoulder. By the extenſion and contraction of its cells it is very capable of accommodating the motions of the organs, particularly their dilatation and contraction. Parts, which enjoy extenſive power of motion, and yet have but little cellular tiſſue on their ſurface, as the viſcera, and the articular ends of bones, are ſurrounded by ſerous or ſynovial membranes. In many inſtances organs with very little motion are covered by an abundance of cellular tiſſue: the kidney, teſtis, thyroid gland, and pancreas are examples.

II. *The internal Cellular Syſtem of the Organs.*—After ſurrounding all parts, this ſyſtem enters into their ſubſtance, and forms one of its principal elements. In thoſe apparatuſes, which are an aſſemblage of ſeveral ſyſtems, each is united to the ſurrounding ones by it; as the different coats of the ſtomach, inteſtines, bladder, &c. Again, it enters largely into the compoſition of the organic ſyſtems: it ſurrounds their vaſcular and nervous ramifications, and unites the various homogeneous parts that compoſe them. Thus, ſays Bichat, each portion of an organ has a covering, performing the ſame office with reſpect to it, that the general covering does to the whole organ; it forms an atmoſphere, limiting and protecting the vitality of each fibre, or ſerving, (more readily on account of the greater juxtapoſition) as a means of communication from one to the other.

This interior cellular tiſſue is only a means of union, and preſerves all its own properties; it is inſenſible in the nerve, incapable of contraction in the muſcle, and unconnected with ſecretion in the glands. It is often affected alone in an organ; hence the numerous tumours in the liver, which have the glandular tiſſue perfectly healthy.

The texture of many organs is ſo cloſe that the cellular tiſſue is but little apparent, and its very exiſtence has been denied. In tendons and fibrous membranes maceration renders it diſcernible: ebullition has a ſimilar effect, by diſſolving the gelatine which a part may contain. In all inſtances, even in bones and cartilages, the production of granulations, which are eſſentially of a cellular nature, demonſtrates the exiſtence of this tiſſue. The converſion of bones into a ſoft and fleſhy ſtate, and the production of fungous tumours in other ſyſtems, by rendering the tiſſue more looſe, demonſtrate the cellular ſubſtances.

Of the Cellular Syſtem conſidered independently of the Organs.—In the interior of the cranium this tiſſue ſeems to be almoſt deficient. Yet the pia mater is formed by it; and a ſmall quantity of a very fine and perfectly tranſparent kind is ſeen where the nerves quit the ſurface of the brain. There is no poſſibility of demonſtrating cellular tiſſue in the ſubſtance of the brain, unleſs perhaps by its fungous tumours. Through the optic foramina and the ſuperior orbital fiſſures, the cellular ſubſtance of the cranium communicates with that of the orbit; through the holes of the cribriform plate with that of the noſe; through the various apertures of the baſis cranii, and the numerous but minute pores about the ſutures, with the correſponding external parts. It is more abundant, but ſtill in comparatively ſmall quantity, on the outſide of the cranium, and communicates evidently with that of the face, particularly in front.

It is very abundant in all parts of the face: the orbits are filled with it; the hollows of the cheeks, bounded by the buccinator, maſſeter, and zygomatic muſcles, contain it in large quantity, as well as all the parts about the tongue. The noſe and its ſinuſes have a very ſmall proportion. On its exiſtence in greater or ſmaller quantity, the appearance of the countenance, with reſpect to fulneſs or ſharpneſs, depends. The expreſſion is regulated by the muſcles. It communicates with that of the neck by its ſubcutaneous portion, by what accompanies the veſſels, particularly in the triangular ſpace lodging the parotid, and by the intervals of the muſcles about the root of the tongue.

Very little is found in the vertebral canal, between the arachnoid and the medulla ſpinalis and its nerves: there is none between the arachnoid and dura mater. It is more copious on the outſide of the latter, particularly towards the lower parts, where it is very looſe. On the outſide of the ſpine the muſcles are very numerous and cloſely arranged, and the cellular tiſſue very ſparing behind; it is copious on the front. It accompanies the carotids on the neck, the aorta and its large branches, the azygos, and the vena cava in the cheſt and neck. This diſpoſition is very favourable to the formation and extenſion of depoſitions of pus.

The neck is a very muſcular part, and contains much cellular tiſſue, beſides what belongs to the ſpine, particularly on its ſides, where the lymphatic glands are found. In this ſituation it communicates with that of the cheſt, by the ſuperior opening of the latter cavity. It alſo communicates with the upper limbs above and below the clavicles.

The largeſt quantity of cellular tiſſue occupies the middle line of the cheſt: there is much of it in the mediaſtinum, about the pericardium, and the large veſſels. In the parts occupied by the lungs, the quantity is conſiderably leſs. The communications between it and the abdominal cellular tiſſue take place, 1ſt, at the various openings of the diaphragm, particularly thoſe which tranſmit the aorta and œſophagus, for the vena cava is too cloſely united to its opening to allow of ſuch communication: 2dly, through the intervals of the diaphragmatic fibres, particularly at the triangular ſpace left between thoſe attached to the xiphoid cartilage. There are communications from within outwards at the intervals of the intercoſtal muſcles; but theſe are very trifling, and conſequently the internal affections ſeldom have any influence on the external parts.

On the outſide of the cheſt, the cellular tiſſue is abundant above; it encloſes the mammary glands, and produces the elegantly rounded forms which charm us in the female; it contributes to the bold prominence which is the attribute and character of male ſtrength. There is much of it under the pectoral muſcles, but the quantity decreaſes very ſenſibly downwards.

The abdomen contains more cellular tiſſue than the cheſt. It is accumulated in large quantity about the large arterial and venous trunks, and accompanies them to their reſpective organs. It is alſo very abundant along the back of the peritoneum, particularly about the kidney, but much more ſparing on the front and ſides of the abdominal parietes. It communicates with that of the pelvis all round the peritoneum, and with that of the lower limbs at the inguinal canal, and more particularly at the crural arch. In the latter ſituation, the pus generally deſcends in lumbar abſceſſes.

The outſide of the abdomen has the uſual ſubcutaneous ſtratum, which is continuous with that of the pelvis and lower limbs. Between the abdominal muſcles there is a moderate quantity. The outer and inner portions of cellular ſubſtance communicate through the muſcles, particularly at the poſterior and lateral regions: the fluid of lumbar abſceſſes ſometimes takes this direction and preſents in the loins.

Few parts have a more abundant diſtribution of cellular tiſſue than the pelvis; it is placed very copiouſly round the bladder, rectum, and uterus. The great dilatations of which the organs are ſuſceptible, and the unyielding nature of the parietes of the pelvis, explain this arrangement. The nature of the abſceſſes, which occur about the anus, and the diffuſion of urine from ruptures of the urethra, are modified by this ſtructure. It communicates with that of the lower limbs by the iſchiatic notch, the foramen ovale, and the arch of the pubes. The outſide of the pelvis has alſo much cellular ſubſtance: it is moſt copious in front, about the generative organs, particularly in the labia and ſcrotum, and more abundant on the ſides than behind.

Both in the upper and lower limbs the quantity of cellular tiſſue conſtantly decreaſes from above downwards. It is very conſiderable round the upper articulation of each: the hollow of the axilla is almoſt entirely filled with it; the bend of the thigh does not contain ſo much. There are large cellular intervals between the muſcles of the arm and thigh. The elbow has much leſs than the ham, the deep hollow of which holds a large quantity. In the fore-arm and leg the muſcles are more approximated, and the cellular ſtrata conſequently thinner. Towards the lower part of theſe two diviſions of the limbs, it is ſtill more diminiſhed in quantity. Yet the ſole contains much more than the palm. The difference in the extent of motion in the different parts of the limbs correſponds to this arrangement.

Concerning the general forms of the cellular tiſſue, the figure and permeability of the cells, and the ſerous fluid which lubricates them, we refer to the article CELLULAR *Subſtance*. We have only to remark here, that the capacity of the cells is extremely various. When diſtended with fat or ſerum, they are two, three, or four times as large as in the empty ſtate. Theſe variations in capacity produce the differences in the volume of the body in the ſtates of embonpoint or emaciation, in which all the other parts, as nervous, tendinous, and muſcular fibres, &c. remain unchanged, and the cellular tiſſue alone is altered.

When the cellular ſubſtance of a living animal, or of one recently killed, is expoſed to cold air, a vapour ariſes from it, as it does from ſerous ſurfaces. This moiſture ſeems juſt ſufficient, in the natural ſtate, to maintain the cells ſoft and pliant.

To the general obſervations on the fat, in the article CELLULAR *Subſtance*, we have a few remarks to add. Its proportion varies in the different organic ſyſtems. The arterial and venous tunics, the lymphatic glands, the brain and ſpinal marrow, contain none. There is always ſome in the intervals of the nervous fibres, as may be proved by drying them. Generally the muſcular fibres of the animal life contain a tolerably large proportion; but thoſe of the organic very little. Its place is ſupplied in the bones by the medullary ſtructure. The cartilaginous, fibrous, and fibro-cartilaginous ſyſtems, are almoſt entirely deſtitute of it. Sometimes it is obſervable in the glandular ſyſtem, as in the parotids, and about the pelvis of the kidney; but in other parts, as the liver, proſtate, &c. no trace is diſcernible. The ſerous and cutaneous ſyſtems are ſurrounded by much fat, but contain none in their tiſſue: the ſame obſervation is true of the mucous alſo. The epidermis and hair have none. Thus we ſee that the organic ſyſtems in general contain very little fat: the organs themſelves have but a ſmall quantity between their different parts. In general there is hardly any between the coats of the ſtomach, inteſtines, bladder, &c.; between the perioſteum and bone; the bone and cartilage, &c. It is accumulated principally in the intervals of the organs. In this point of view the cranium and face exhibit oppoſite arrangements; it is abundant in the latter, and deficient in the former, particularly on the inſide. There is a tolerable quantity in the neck. Very little exiſts about the lungs, but much round the heart: and there is a large depoſition on the outſide about the breaſts. In the abdomen, it lies principally behind, in the neighbourhood of the kidney, in the meſentery and epiploon: there is much in the pelvis about the bladder and rectum. It follows the ſame arrangement in the limbs as the cellular tiſſue, being more abundant at the upper parts, and about the large articulations, than in other ſituations.

All the fat in the child is concentrated under the ſkin: the omentum, and indeed the reſt of the abdomen, contains none, except perhaps a few flocculi about the kidney. The cheſt contains hardly any more, and the intermuſcular tiſſue is almoſt every where free from it. In the adult, the abdominal fat exceeds the proportion of the ſubcutaneous: the rounded contours, by which all the muſcular forms are concealed in the early years, are rare at the latter period. Theſe obſervations, however, concerning the proportions of fat, as connected with different ages, admit of frequent exceptions.

The fat is ſometimes accumulated in an unnatural quantity: it conſtitutes in ſuch caſes a real diſeaſe. (See CORPULENCE.) The oppoſite circumſtances to theſe, which produce this unnatural load of fat, cauſe emaciation.

The fat is almoſt always firm in the dead body, but it approaches more nearly to the liquid ſtate during life: its condition, however, is not uniform in all parts, the ſubcutaneous being the moſt ſolid, and that of the omenta moſt fluid. It is not ſo fluid in the living body as expoſure to heat renders it after death: its conſiſtence indeed muſt depend on other cauſes than temperature, as it varies ſo much in different parts of the body under the ſame heat. It is whitiſh and very firm after death in young animals: hence there is a ſtriking contraſt between the ſolid feel of the ſkin in a young ſubject, and the yielding ſenſation which it offers in the adult. It is collected into ſmall and more or leſs rounded granules in the fœtus: a remarkable and almoſt inſulated globular portion, which can eaſily be drawn out entire, occupies the hollow between the maſſeter and buccinator muſcles. It turns yellow as age advances, and acquires a different odour and taſte: every one muſt have noticed the difference between that of veal and beef, and the diſtinction is not leſs ſtrongly marked between that of a young and old perſon.

A yellowiſh, tranſparent, and ſemifluid ſubſtance, with a gelatinous aſpect, is found about the hearts of thoſe who have died from dropſy, phthiſis, or other tedious debilitating diſeaſes, and occupies the place of fat. It is alſo ſeen in other ſituations, but leſs frequently; and ſeems rather gelatinous than oily.

We have nothing to add to the remarks in the article CELLULAR *Subſtance*, concerning the mode in which the fat is formed; and we refer the reader to FAT for the hiſtory of its chemical properties.

Organiſation of the Cellular Subſtance.—The proper tiſſue, which compoſes the baſis of this ſyſtem, conſiſts of a tranſparent web, diſpoſed in plates of an uniform appearance, and ſo thin that they may be compared to ſoap bubbles; and of whitiſh filaments croſſing theſe in various directions, and forming with them cells. This ſtructure may be ſeen by taking a portion of the cellular matter of the ſcrotum, extending it and obſerving it againſt the light. The filaments are approximated, and ſeem to touch each other when the part is left to itſelf; when it is diſtended, the intervals left between them are larger, and the intermediate laminæ more diſtinct. Bichat conceives that the filaments are abſorbents or exhalants, or made up by the union of the laminæ, where they form cells. The plates are tolerably denſe when the cellular tiſſue is contracted; when air is forcibly impelled among them, they are reduced into a kind of thin froth, in which we could hardly ſuppoſe that vital properties could reſide.

In all parts where fat or ſerum is depoſited, we ſee true cells, communicating together; and the great accumulations of ſuch fluids are depoſited in theſe cells. But the ſubmucous tiſſue, and that which compoſes the outer coverings of arteries, veins, and excretory tubes, ſeems to be compoſed entirely of condenſed and approximated fibres, without any plates, and conſequently without any cells.

Compoſition of the Cellular Tiſſue.—Chemiſts have placed it in the claſs of white organs, or ſuch as furniſh a large quantity of gelatine. Solution of tan cauſes a conſiderable precipitate from water, in which it has boiled. Yet the effect of various agents on it is very different from what they produce on the fibrous, cutaneous, cartilaginous tiſſues, &c.

It is quickly dried in the air, but without aſſuming the yellow tint of the fibrous tiſſue; when plates of it are dried, it exactly reſembles a ſerous membrane treated in the ſame manner. In this ſtate it is perfectly flexible; it recovers its original appearance only in part, when immerſed in water.

It yields to putrefaction leſs readily than moſt other tiſſues, than the glandular and muſcular organs for example. This property is particularly obſervable in the ſubmucous tiſſue, and in that which forms the outer covering of arteries and veins. The ſame obſervation may be made concerning maceration: the exterior tiſſue of arteries is hardly changed in three months; the ſubcutaneous, the intermuſcular, and other parts of the ſyſtem, yield more quickly. It reſiſts longer when expoſed alone, than in conjunction with parts which decay quickly; and this reſiſtance is the more remarkable, ſince the nature of the tiſſue renders it acceſſible to the action of water at all points. The latter circumſtance muſt alſo render it more ſubject to the influence of ebullition; yet it does not yield quickly, and the exterior tiſſue of arteries, excretory tubes, &c. reſiſts for a long time. The phenomena produced by boiling are analogous to thoſe obſerved in other organs treated in the ſame way. It is not changed until a froth riſes to the ſurface; it is then reduced in ſize, rendered firmer and elaſtic, and is curled up. After a certain time, as the boiling is continued, it becomes ſoft again, and is broken by the ſlighteſt force. The continued action of boiling water gradually melts it.

The gaſtric juice acts on it leſs quickly than on the muſcular fibres.

Thus the cellular tiſſue ſeems to combine two oppoſite characters, ſoftneſs and pliancy; by which it facilitates the motions of organs; and conſiderable reſiſtance to the operation of various agents.

This tiſſue is diſtended with air in the bodies of the drowned, ſo that they float: probably the air is diſengaged from organs containing a great deal of blood, as the muſcles, glands, &c., and not from the cellular tiſſue. A ſimilar phenomenon is obſerved in bodies buried under the earth, out of the contact of air; but it does not often take place in thoſe left in the open air.

The blood-veſſels of the cellular tiſſue are not numerous in the natural ſtate. It is whitiſh, when obſerved in a living animal: large trunks paſs through it to the neighbouring parts, and ſend off branches, which are loſt in the tiſſue. After ſome expoſure the number of theſe veſſels is increaſed, as the red blood gains admiſſion into the exhalants.

Succeſsful minute injections have a ſimilar effect in the dead body; they make it appear like a vaſcular network.

The exhalants are proved by the production of apparently new veſſels where the part is expoſed during life, and by the effect of injections; by the natural and the morbid depoſitions of ſerum and fat into the cells, &c. Theſe veſſels are very numerous in the preſent ſyſtem: they are ſubſervient to its nutrition, and to the habitual exhalation, of which it is the ſeat.

Abſorbents cannot be ſhewn by actual inſpection, nor by injection; but their exiſtence is proved by phenomena: 1, by the natural and conſtant abſorption of the ſerum and fat; 2, by the removal of unnatural accumulations of either of theſe fluids; 3, by the abſorption of air in emphyſema, or of fluids injected into the cells, &c. This ſyſtem, indeed, ſeems to be a principal ſource of the abſorbing veſſels, at leaſt of ſuch as convey lymph. Some have conſidered it as formed excluſively of exhalants and lymphatics. Each cell is a reſervoir, placed between the exhalants which terminate in it, and the abſorbents which ariſe from it; we ſee the mouths of neither of theſe veſſels: the cells are on a ſmall ſcale what the ſerous cavities are on a larger.

Many nerves are ſeen going through the cellular tiſſue; but we do not know that any filaments terminate in it.

Properties of the Cellular Syſtem.

1. *Properties reſulting from Organiſation.*—The extenſibility of tiſſue is ſeen on a variety of occaſions: all the motions of the body call it into exerciſe; the arm cannot be elevated without the cellular ſubſtance of the axilla being drawn out to twice or thrice its natural length, and the motions of the neck, the thigh, and indeed all other parts, preſent analogous phenomena in different degrees. Whenever any organ is drawn away from a contiguous one, the connecting tiſſue muſt be lengthened. In the diſtentions of the hollow viſcera there is a ſimilar proceſs. In the accumulations of ſerum or fat, of which this tiſſue is ſo frequently the ſeat, in the formation of tumours of all kinds, in the diſtentions of the abdomen or other cavities, the exerciſe of this property is clearly obſerved, and indeed is abſolutely neceſſary to the production of the phenomena.

The different diviſions of the ſyſtem poſſeſs this property in very different degrees. The ſubcutaneous, the intermuſcular, and that which covers ſerous membranes, enjoy it to a much greater extent than that which ſurrounds arteries, veins, and excretory tubes: from its indiſpoſition to yield in the latter caſe ariſes the ſlow growth of aneuriſms. Whereever laminæ, and conſequently cells are found, the extenſibility can be brought ſuddenly into action: thus emphyſema diſtends the whole body to an enormous degree in a very ſhort time, and fractures and contuſions are followed by very rapid and conſiderable tumefaction.

When the diſtending force is carried beyond a certain point, the tiſſue is firſt rendered very thin, and then broken. No natural motion can be carried to an extent ſufficient to produce this effect; the tiſſue of the axilla may be diſtended three times as much as it is in the elevation of the arm, without any rupture. And this effect is ſtill further prevented by the kind of locomotion which it admits; when forcibly drawn in any direction, it drags the neighbouring tiſſue, and thus can change its ſituation in ſome degree. Thus, in large ſwellings of the ſcrotum, the cellular ſubſtance of the abdomen, perineum, and thighs, is brought over the part.

Inflammation entirely deſtroys this property. In the induration accompanying cancerous affections the cellular tiſſue is actually rendered very brittle.

The contractility of tiſſue is obſerved, when the cauſes of extenſion ceaſe to operate; as when a limb, after being extended, is reſtored to its former poſition, when fat, ſerum, or tumours are removed from the cellular ſubſtance, &c. If a wound be carried through the ſkin and cellular membrane, the edges are ſeparated to a certain degree. This power exiſts in its greateſt energy in youth, and is gradually weakened as old age advances. When a young man is emaciated, the ſkin is adapted cloſely to the organs, and preſerves its tenſion: in an old perſon, on the contrary, the integuments are looſe and flabby, becauſe the ſubjacent tiſſue does not contract.

2. *Vital Properties.*—This tiſſue, in its ordinary ſtate, does not poſſeſs animal ſenſibility; it may be cut, torn, or diſtended with gaſes without cauſing any pain, unleſs the nervous filaments paſſing through it ſhould be accidentally irritated. In diſeaſe, on the contrary, the ſenſibility may be exalted to ſuch a pitch, as to produce the moſt acute pain; for example, in phlegmonous inflammation.

The organic properties are very ſtrongly marked in this ſyſtem. The depoſition and abſorption of the fat and ſerum are performed under their influence. All ſubſtances are not in the ſame relation to the abſorbing power. Blood, lymph, and milk, when introduced into the cellular ſubſtance, are taken up like the ſerum or fat. On the contrary, urine, bile, ſaliva, and other fluids deſigned to be expelled from the body, produce inflammation, and are not abſorbed. Water and air artificially introduced are removed by the abſorbents. Wine and other irritating fluids excite inflammation, and are expelled with the pus formed in conſequence.

The cellular organ enjoys ſenſible organic contractility to a certain degree: this is evidenced in the corrugation of the ſcrotum from cold. It ſeems to be the firſt obſcure rudiment of that power, which in a higher degree belongs to the muſcular fibres.

The ſympathies of the cellular with other ſyſtems are very numerous, but cannot eaſily be appreciated, on account of its being ſo widely diſſeminated, and concurring in the ſtructure of all the organs. In acute affections of a part, as the lungs, ſtomach, &c. abſceſſes often take place, and the critical ſuppurations ſeem to be a ſympathetic phenomenon. Œdema often comes on ſuddenly in acute diſeaſes. But the influence of the principal viſcera on the cellular tiſſue is particularly ſhewn in the alterations of their ſtructure conſequent on chronic diſeaſe. The ſlow affections of the heart and lungs, of the liver, ſtomach, ſpleen, uterus, &c. are attended in their latter ſtages by a more or leſs general anaſarca. It ſeems now to be pretty generally agreed on, that the effuſion in all theſe caſes is ſymptomatic, and reſults from the influence of the affected organ on the cellular tiſſue. The very various conditions of the cellular ſubſtance in the dead ſubject, may be probably referred to the effect of the particular diſeaſe which has proved fatal.

It alſo acts upon other parts, when it is originally affected. Phlegmonous abſceſſes, when large, produce various affections of the brain, heart, liver, ſtomach, &c.

It is clear, from the preceding obſervations, that the vital forces exiſt in a very marked degree in the cellular ſyſtem: in this reſpect it is very different from the white organs, ſuch as the aponeuroſes, tendons, cartilages, ligaments, &c. among which it has been ranked, and which are remarkable for the obſcurity of their vital powers, and the ſlowneſs of their functions. Inflammation paſſes through its courſe with great rapidity in this ſyſtem, and the fluid, which reſults from it, forms in its colour, conſiſtence, and other properties, the ſtandard by which we judge all kinds of pus. Yet that which comes from a bone, a muſcle, a mucous membrane, &c. is equally good and *laudable* pus, as what is formed in a phlegmon.

Does the cellular tiſſue aſſume any peculiar vital modifications in the organs, of which it enters into the compoſition? This is not known.

However, theſe obſervations apply to it only in the intervals of parts, abſtractedly from all combination of its ſtructure with them.

We muſt not paſs unnoticed the very marked difference between the generally diffuſed tiſſue made up of laminæ and filaments, and that modification, conſiſting only of the filamentous part, which ſurrounds mucous ſurfaces, blood-veſſels, and excretory tubes: the latter is very ſeldom the ſeat of inflammation or tumours. It very often places a boundary to the affections of the former, and thus protects the organ which it includes. The tiſſue ſurrounding the axillary or inguinal artery is often generally inflamed or ulcerated, and the veſſel remains unaffected, &c.

The cellular tiſſue is diſtinguiſhed from all others, by its reproductive properties, by its power of becoming elongated and growing, of forming what are called granulations, when it has been cut or divided in any way. Hence are explained the formation of cicatrices, tumours, cyſts, &c. The reparation of injury, therefore, is chiefly confided to this tiſſue; and it goes on nearly alike in all parts, as all contain cellular ſubſtance: parts which have none of this never granulate.

Bichat ſtates, that the granulations are ſmall cellular veſicles, filled with a thick fatty (lardacée) ſubſtance, and not admitting diſtention by inflation of the ſurrounding tiſſue. They are developed ſeparately and irregularly over the wound, unite at their baſes, and thus form a kind of proviſional membrane, which completely protects the ſubjacent parts from the contact of air, until the completion of cicatriſation. The ſurface of this is tuberculated, and it differs in that reſpect only from a ſerous membrane. This explanation

nation of the proceſs of cicatriſation is confirmed by various conſiderations. Granulations are formed moſt readily, and wounds are healed moſt quickly, where this ſyſtem is the moſt abundant; cicatriſation proceeds ſlowly where the cellular tiſſue has been extenſively removed. Maceration reduces all granulating ſurfaces to this common baſis. The nature of granulations is every where the ſame, whatever organ, whether muſcle, cartilage, ſkin, bone, ligament, &c. may have produced them. They muſt, therefore, be produced from a tiſſue common to all organs, and this is the cellular ſubſtance.

The red aſpect of granulations has led to the opinion, that they are a vaſcular expanſion; but the appearance admits of an eaſier ſolution. The cellular membrane is crowded with exhalent and abſorbent veſſels, into which the red blood paſſes under inflammation. As the granulations are cellular, and in a ſtate of inflammation, they exhibit the redneſs of phlegmon or eryſipelas, which depends, not upon the elongation of veſſels, but ſimply on the tranſmiſſion of red blood through thoſe which ordinarily carry white. Thus, when the inflammation is paſſed, the membrane reſumes its natural colour; and granulations, after the cicatrix is formed, are colourleſs, becauſe the coloured blood has ceaſed to permeate them. How can we ſuppoſe red veſſels to be generated in ſtructures where they have no primitive exiſtence? for tendons and cartilages granulate.

The proceſs of nature is completely analogous in repairing the injuries of internal organs, as bones, cartilages, muſcles, &c., where there is no exterior wound. The ends of a broken bone become inflamed, and covered with a cellular production. Theſe granulations form a ſecretory or rather an exhalant organ, and firſt ſeparate gelatine, which gives to the callus a cartilaginous nature, and afterwards calcareous phoſphat, by which the bone is completed. In other organs the granulations ſeparate in a ſimilar way the peculiar nutritive matter of the organ; and the proceſs does not ſeem to be at all different from that of ordinary nutrition. The granulations of an external wound exhale pus, which is excreted.

As ſuppuration proceeds, the white ſubſtance in the cells of the granulations is removed, the cells are contracted, the tubercular elevations diſappear, and are replaced by a thin and ſmooth ſurface. It is thin, becauſe the thickneſs of the granulations depended on the contents of the cells, which are now empty; and it is much leſs extenſive than the original pellicle, becauſe the contraction of the cells draws together in every direction the edges of the divided part. Thus the granular productions, which ſeemed to be ſo abundantly developed as amply to repair the loſs of ſubſtance in the part, are reduced to a thin ſtratum conſtituting the cicatrix, of a reddiſh colour ſo long as the exhalants are full of blood, and afterwards whitiſh.

Fungous excreſcences from wounds, and exuberant granulations of all kinds, are overgrowths of the cellular ſubſtance, exceeding the ordinary laws of cicatriſation, which cannot be completed ſo long as they continue. The developement of the cellular ſyſtem is remarkably exhibited in tumours. The funguſes of mucous membranes, as in the antrum, the mouth and uterus, polypi, and cancers, are all the produce of cellular tiſſue: that ſyſtem forms their baſis, on which a peculiar matter is depoſited. It conſtitutes in ſhort the general baſis, or nutritive parenchyma, of all tumours; the formation of which exhibits phenomena exactly analogous to thoſe of ordinary nutrition. All the organs of the body have the ſame parenchyma of nutrition, which is vaſcular and cellular; they differ in the nutritive matters depoſited in it. In the ſame way all tumours are cellular, and their diſtinctions are drawn from the matters ſeparated by that tiſſue, which differ according to the different modifications of its vital powers, produced by the morbid alterations, of which it is the ſeat.

Cyſts have their origin in the cellular ſubſtance. Of this we have a proof in the ſtriking ſimilarity which they bear to ſerous membranes, which are eſſentially cellular. This analogy prevails throughout their conformation, ſtructure, vital properties, functions, and diſeaſes.

Developement of the Cellular Tiſſue—In the early periods of conception the fœtus is a ſoft mucous maſs, apparently homogeneous, in which the cellular tiſſue ſeems to prevail almoſt excluſively. Almoſt entirely fluid at firſt, it afterwards has the conſiſtence of jelly, and then cellular ſubſtance is viſible. The abundance of fluid is the cauſe of its peculiar appearance in the early periods: this fluid is viſcous and unctuous, and prevents us from producing artificial emphyſema. Nothing can exceed the delicacy of the plates and filaments which compoſe the cellular texture at this time.

Some time before birth, and during the years that follow it, the cellular fluid is conſtantly decreaſing; the cells become more apparent, and the maſs of the ſyſtem diminiſhed, becauſe as the organs grow, their intervals are rendered narrower. Yet it predominates over the other ſyſtems for a long time; hence the roundneſs of form, the multiplicity and facility of movements in the child. The tiſſue is ſtill extremely fine.

The vital powers of the ſyſtem are ſtrongly marked at this age; granulations are produced more readily, and paſs through their periods more rapidly than at any other time; wounds are healed more quickly, and tumours are developed, and grow in a much ſhorter time; ſerous fluid is quickly removed from the cells.

The cellular tiſſue aſſumes a more denſe and ſtrong form in the adult, and is in ſmaller quantity in proportion to the organs; hence the prominences of the latter under the integuments, the energy of muſcular forms, &c. Its quantity ſeems to vary in the different temperaments; and to be greater in the female than in the male.

It becomes ſtill more compact and hard in the old ſubject; and contains leſs fluid; hence the dryneſs and rigidity of parts in old age, and the general diminution of bulk in the body. Its vital powers are diminiſhed, and it no longer maintains the ſkin cloſe upon the ſubjacent parts, but allows it to become folded. Bichat, Traité des Membranes; and his Anatomie Générale, tom. i.

Membrane, *Nictitating*. See Nictitating, and the preceding article.

Membranes, in *Midwifery* and *Anatomy*, the coverings which ſurround the fœtus while it is contained in the uterus; they are three in number, the decidua, chorion, and amnios. See Embryo.

MEME. *Que eſt Meme*. See Que.

MEMECYLON, in *Botany*, a name adopted from Dioſcorides, whoſe μεμαικυλα is a ſynonym for the fruit of the *Arbutus* or Strawberry-tree, his κομαρος; and ſeems to be derived from μαω, *to deſire, or long for*, in alluſion to the tempting appearance of thoſe berries. The Latin name of the ſame fruit, *unedo*, carries the idea a ſtep further, implying that nobody would be tempted to eat more than one, becauſe the flavour is by no means anſwerable to the appearance. Linnæus in his *Flora Zeylanica*, 57, firſt applied this name to the genus which now retains it, and which is of a ſhrubby and berry-bearing nature, but does not appear to have any other pretenſions to this denomination. Mitchell choſe it, with rather more propriety, but too late, for a ſmall American plant, allied to *Arbutus*, which, as *Memecylon* was already pre-occupied, Linnæus called Epigæa; ſee that article.—Linn. Gen. 191. Schreb. 258. Willd. Sp. Pl. v. 2. 347. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 355. Juſſ. 321. Lamarck Dict. v. 4. 88. Illuſtr. t. 284. Gærtn. t. 127 and t. 179.—Claſs and order, *Octandria Monogynia.* Nat. Ord. *Onagræ,* Juſſ. or rather *Myrti.*

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, undivided, bell-ſhaped, turbinate, entire, or obſoletely four-toothed, permanent; cup-like and ſometimes furrowed within. *Cor.* Petals four, ovate, acute, equal, ſpreading, inſerted into the rim of the calyx. *Stam.* Filaments eight, erect, awl-ſhaped, dilated and abrupt at the top; anthers ſimple, of two diſtinct lobes, attached to the edges of the dilated top of the filament. *Piſt.* Germen inferior, turbinate, containing the rudiments of many ſeeds; ſtyle awl-ſhaped; ſtigma ſimple. *Peric.* Berry globoſe, crowned with the cylindrical calyx, of one cell. *Seeds* one, two or three, convex.

Eſſ. Ch. Calyx ſuperior, turbinate, nearly entire. Petals four. Anthers on the edge of the dilated ſummit of the filaments. Berry crowned with the cylindrical calyx.

Obſ. The corolla is ſaid to be monopetalous in Willdenow and Hort. Kew. which is an error of the preſs in Linn. Syſt. Veg. ed. 10, 12, 13 and 14, contradicting the character of four petals, rightly given at the head of the claſs.

1. M. *capitellatum.* Ceylon Memecylon. Linn. Sp. Pl. 497. Lamarck. fig. 1. (M. foliis ovatis; Linn. Zeyl. 57. Cornus ſylveſtris, foliis croceum colorem tingentibus, floſculis ad foliorum alas globoſis; Burm. Zeyl. 76. t. 30. Walikaha; Herm. Muſ. Zeyl. 4. Kasjavo-maram; Rheede Hort. Mal. v. 5. 37. t. 19.)—Leaves elliptic-ovate, obtuſe, on ſhort ſtalks. Umbels axillary, ſomewhat compound, on ſlender ſtalks, longer than thoſe of the leaves.—Native of Ceylon, Malabar and the iſland of Mauritius. It is a moderate-ſized *tree,* with many oppoſite *branches,* knotty or tumid under each ſubdiviſion. Every part is perfectly deſtitute of pubeſcence, which, as far as we can diſcover, is the caſe with the whole genus. *Leaves* on ſhort thick *footſtalks,* oppoſite, ovate, ſomewhat elliptical, and often roundiſh, blunt and generally emarginate, entire, as in the whole genus, about an inch long or more, and half as broad, coriaceous, ſingle-ribbed, without veins; their upper ſide dark green and ſhining; under paler, yellower and opaque. *Umbels* axillary, more or leſs compound, their common ſtalk ſlender, obſcurely quadrangular; its ſubdiviſions partly racemoſe, but always more or leſs umbellate. *Flowers* green with a purple tinge in the petals. Tops of the *filaments* very broad. *Calyx* very ſlightly four-cleft, obtuſe. *Style* thick, but twice the length of the calyx.

This is ſaid by Hermann to ſupply the place of Saffron, in Ceylon, for dyeing. Linnæus confounded ſo many ſpecies under this one, at different times, that it is hard to ſay exactly which he really meant. Our's is the plant of Burmann, and of the generality of botaniſts, though not of the Linnæan herbarium. But in the preſent caſe the latter is of no authority, the ſpecimen having been acquired after the publication of the *Species Plantarum,* and not even marked with any trivial name.

2. M. *ramiflorum.* Naked-flowering Memecylon. Lamarck. Dict. v. 4. 88. (M. tinctorium; Willd. Sp. Pl. v. 2. 347. Koen. MSS. Cornus zeylanica ſylveſtris altera, *korakaha* dicta; Burm. Zeyl. 76. t. 31. Korakaha; Herm. Muſ. Zeyl. 40.)—Leaves elliptical, obtuſe, on ſhortiſh ſtalks, deciduous. Umbels from the defoliated part of the branches, aggregate, compound, ſtalked. Style capillary, four times as long as the petals.—Native of Ceylon, and other parts of the Eaſt Indies. Very like the laſt, except that the *leaves* are rather more oblong, *flowers* much more copious, from the leafleſs part of the branches, and eſſentially diſtinguiſhed by the great length, and ſlenderneſs, of their *ſtyle.* We cannot comply with Willdenow's change of Lamarck's moſt excellent name, for an unpubliſhed one of Koenig's, which is at leaſt as ſuitable to the firſt ſpecies, if not to every other. We have no doubt of Burmann's ſynonym, though he deſcribes but four ſtamens; as he commits the ſame error reſpecting the foregoing.

3. M. *ovatum.* Ovate Memecylon.—Leaves ovate, bluntly pointed, veiny, on longiſh ſtalks, deciduous. Umbels from the defoliated part of the branches, aggregate, ſtalked. Style thread-ſhaped, four times as long as the petals.—Native of the Eaſt Indies? It lies in the Linnæan herbarium for *Santalum album;* but the ſpecimen is not an original one, and the real *Santalum album* is no other than *Sirium myrtifolium* of Linnæus; ſee Roxb. Coromand. v. 1. t. 2. The preſent ſpecies differs widely from the laſt in appearance, though nearly agreeing with it in ſeveral eſſential characters. The *footſtalks* are above half an inch long; *leaves* near three inches, exactly ovate, with an elongated bluntiſh point; their upper ſide marked with many tranſverſe parallel veins. *Flowers* ſmall, numerous, with a very long ſtyle. The bottom of their *calyx,* above the *germen,* has eight elevated ribs, making as many furrows, which we find alſo in moſt of the ſpecies, as deſcribed by Linnæus.

4. M. *acuminatum.* Pointed Memecylon.—Leaves on ſhort ſtalks, elliptical, pointed. Umbels axillary, ſtalked, in pairs, ſimple. Style about the length of the petals. We find a ſpecimen of this, without name, or mention of its native country, in the herbarium of the younger Linnæus. Its *leaves* agree in ſize with the laſt, but are elliptical, tapering at each end, with a longiſh acute point, and no perceptible veins; their *footſtalks* very ſhort and thick. *Umbels* ſmall and ſimple, axillary, and not from the naked parts of the branches, uſually in pairs, each umbel of four or five flowers. *Style* rather above half the length of the former, ſtraight.

5. M. *edule.* Eatable Memecylon. Roxb. Coromand. v. 1. 59. t. 82.—Leaves on ſhort ſtalks, ovate, acute, veiny, deciduous. Umbels from the defoliated part of the branches, aggregate, ſtalked. Style the length of the petals.—Very common in every thicket on the coaſt of Coromandel, flowering in the beginning of the hot ſeaſon. A ſmall *tree,* with numerous *branches.* *Leaves* moſt like thoſe of the third ſpecies, but leſs pointed, and on ſhorter ſtalks. *Flowers* purple, much like thoſe of that ſpecies, except that Dr. Roxburgh repreſents the *ſtyle* as not longer than the *petals.* *Berries* the ſize of a black currant, purple, juicy, aſtringent, eaten by the natives, who call the plant *Alie.* The *calyx* is drawn with four very diſtinct lobes. We have ſeen no ſpecimen, and much ſuſpect this plant may be the ſame with our *ovatum,* n. 3; but as we find reaſon to preſume the exiſtence of more ſpecies than we have ſeen in ſufficient perfection to define them, we think it beſt to keep theſe ſeparate.

The ſpecimen mentioned under the firſt ſpecies, as preſerved in the Linnæan herbarium, very cloſely reſembles Roxburgh's figure, as to *leaves* and *footſtalks,* but the *flowers* are much larger, fewer, on thicker ſhorter ſtalks, and axillary. It is marked *Tamba biſa,* which we believe is a Malay name. Our materials are ſcarcely ſufficient to diſtinguiſh this plant ſpecifically from the *edule.* It is however moſt indubitably different from our *ovatum* and *acuminatum.*

6. M. *grande.* Large-leaved Memecylon. Retz. Obſ. faſc. 4. 26. Willd. n. 3. (Nedum Schetti; Rheede Hort. Malab. v. 2. 21. t. 15?)—Leaves ſeſſile, ovate, long-pointed. Flowers in denſe, axillary, forked cluſters.—

Sent by Mr. Chriſtopher Smith from Malacca. The *branches* are round, knotty, ſmooth; purpliſh when young. *Leaves* nearly or quite ſeſſile, crowded, four inches or more in length, one inch and a half wide, ovate at the baſe, tapering to a bluntiſh point, ſcarcely marked with any tranſverſe veins; their ſubſtance very thick and coriaceous. *Flowers* larger than in any of the foregoing, purpliſh, in thick, denſe, globoſe, axillary cluſters. *Calyx* very obſcurely four-toothed. Of the proportion of the *ſtyle* we cannot judge. The plant of the *Hortus Malabaricus* ſeems, by the deſcription, to be this; but if ſo, the *flowers* are very badly drawn. We have ſeen no ſpecimen from Koenig or Retzius, but we preſume our plant to be the ſame as their's by the deſcription.

7. M. *cordatum.* Heart-leaved Memecylon. Lamarck Dict. v. 4. 89. fig. 2. Willd. n. 4.—Leaves ſeſſile, heart-ſhaped, bluntiſh. Umbels axillary, ſtalked, compound.—Brought by Commerſon from the iſle of Bourbon, where it is called *Bois de Mays.* There is a ſpecimen in ſir J. Banks's herbarium, gathered in the Mauritius, by Aublet, who deſcribes it as a tall and handſome *tree,* with a grey bark. The *leaves* of Commerſon's ſpecimen before us are from one to two inches long, and one broad, obſcurely veiny, more or leſs heart-ſhaped at the baſe. *Infloreſcence* very different from the laſt, conſiſting of no great number of *flowers,* in a variouſly divided umbel, on a ſlender ſtalk, full half an inch long. *Calyx* much leſs diſtinctly four-cleft than in Lamarck's figure.

MEMEL, in *Geography,* a town of Pruſſian Lithuania, ſituated on the bay called "Curiſch-Haff." On one ſide it has the Baltic; and on the other the Curiſch-Haff; and it is alſo watered by the river Dange. Its harbour is deep, and has a good entrance, and has, not long ago, been improved by two moles, which extend above 50 rods into the Haff or bay. Memel lies under the guns of the fort, and is well inhabited, the number of houſes being above 400. It has a German, Lithuanian, and Calviniſt church. The burghers, who are divided into thoſe of Alſtadt, or the Old Town, and Frederickſtadt, are employed in commerce, brewing, ſoap-boiling, agriculture, fiſhing, &c. Great quantities of flax, linſeed, thread, and hemp, are annually exported from this town. It is well-fortified, and was formerly one of the Hanſe towns; and it has now the eſtabliſhments of a royal magazine, a ſalt-factory, and a poſt-office of conſiderable revenue; 72 miles N.N.E. of Königſberg. N. lat. 55° 50′. E. long. 21° 25′.

MEMENE, a town of the iſland of Ceylon, near the E. coaſt; 86 miles E.S.E. of Candi.

MEMINISCA, a lake of Canada. N. lat. 52° 20′. W. long. 88° 50′.

MEMMINGEN, a town of Bavaria, on the Iller; which was imperial till the year 1804, when it was transferred, among other indemnities, to the elector of Bavaria. The inhabitants are chiefly Lutherans, but the principal church is poſſeſſed by them in common with the Roman Catholics. This town carries on a good trade with Switzerland, Italy, and other adjacent countries, in Bavarian ſalt, home-ſpun linen, hops, grain, and other goods. In 1805, it was taken by the French; 22 miles S.S.E. of Ulm. N. lat. 48° 3′. E. long. 10° 7′.

MEMNON, in *Biography,* a native of Rhodes, was a general in the ſervice of the laſt Perſian king, Darius, whom he ſerved, with great fidelity, againſt Alexander the Great. When that conqueror had landed in Aſia, and was advancing up the country, Memnon adviſed him not to hazard a battle, but to lay waſte the country before the invader. His counſel was rejected, and the battle of the Granicus, in the year 334 B.C. followed, in which Memnon, at the head of the Greek mercenaries, diſplayed the greateſt valour. After the defeat, he obtained, by his valour, the moſt honourable conditions, and was almoſt immediately after created the high admiral of Darius, and governor of the Lower Aſia. He had now the important command of the city of Halicarnaſſus, when it was beſieged by Alexander, and employed every effort in his power to ſave it. The ſiege was continued a long time, and great numbers of the Macedonians loſt their lives before the place. Memnon was generous as well as courageous, for when the fugitive Greek commanders, through hatred of Alexander, oppoſed the demand from the Macedonians of permiſſion to bury their dead, he would not liſten to their remonſtrances, alleging that it was unworthy of a Greek to refuſe the rites of burial even to an enemy. And hearing one of his ſoldiers abuſing Alexander in groſs and vulgar terms, he ſtruck him with his javelin, ſaying "I hired you to fight Alexander, not to revile him." When he found the place no longer tenable, he threw a ſtrong garriſon into the citadel, and with his troops, and the inhabitants with their effects, embarked for the iſland of Cos. He then adviſed Darius to make a powerful diverſion into Macedonia, as the only means of ſaving himſelf from deſtruction. Darius gave him full power to levy troops, and he exerted himſelf with ſo much vigour, that he reduced ſeveral of the Cyclades, and the iſlands of Chios and Leſbos, excepting Mitylene, the capital of the latter. While carrying on a ſiege againſt that city he died, and thus freed Alexander from the only foe of whom he ſtood in awe. Memnon had married Barſine, a Perſian lady of high rank, who, with her children, remained at the court of Darius ſome time, till at length ſhe fell under the power of the conqueror, who took her to his bed, and had a ſon by her. Univer. Hiſt.

Memnon, a Greek hiſtorian, is thought to have flouriſhed in the time of Auguſtus. He wrote a hiſtory of the affairs of Heraclea in Pontus, ſixteen books of which were abridged by Photius. They came down to the death of an Heraclean ambaſſador to Julius Cæſar, then emperor. A Latin tranſlation of his hiſtory was publiſhed at Oxford in 1597.

Memnon, *Statue of,* a coloſſal figure of gigantic ſize, formed of very hard granite, which was found in a mutilated ſtate, and lying on the earth, among the ruins of Thebes in Egypt. Diodorus Siculus (lib. i.) calls it Oſimandué; Strabo ſays (lib. xvii.), that it was called by the Egyptians Iſmandes; but writers in general give it the name of Memnon. This coloſſus, according to Philoſtratus, repreſented a young man in the flower of his age, whoſe face was turned towards the riſing ſun; and when the ſolar rays fell upon it, it was ſaid to ſpeak, or to utter harmonious ſounds. Strabo ſays, that he had been witneſs to this pretended miracle, which can be attributed to nothing but either the quality of the ſtone of which it was made, or to the impoſture of the prieſts, or rather to ſome ſecret ſpring, which the learned Kircher, after Pauſanias, (in Attic.) alleges to have been a kind of harpſichord incloſed within the ſtatue, whoſe ſtrings being firſt ſlackened by the moiſture of the night, and then diſtended by the heat of the ſun, broke with a noiſe reſembling that of the ſtring of a violin when it breaks. Cambyſes, who ſpared not the Egyptian ox Apis, having a mind to diſcloſe this myſtery, in which he ſuſpected ſome trick of magic, broke the ſtatue from the head to the middle of the body. Strabo, in his account of this ſtatue, reports, that he and ſome friends, whilſt they were ſurveying it, heard a certain ſound, without being able to determine whether it came from the ſtatue, or the baſe, or if it proceeded from any of the by-ſtanders; for, he adds, I would

I would rather believe any thing elſe, than imagine that ſtones ranged in ſuch and ſuch a manner were capable of yielding ſuch a ſound. Pauſanias informs us, that in his travels through Egypt, he ſaw the remains of this ſtatue, which Cambyſes had broke. The lower part of the coloſſus, he ſays, was ſtill upon its pedeſtal, but the reſt of the body was thrown down to the ground, and every morning at the ſun riſing yielded the ſound already mentioned. Pliny and Tacitus advance the ſame fact, but without having been witneſſes to it: and Lucian informs us, that Demetrius went on purpoſe to Egypt, to ſee there the pyramids, and Memnon's ſtatue, from which a voice proceeded at the riſing of the ſun. Of the fact that this ſtatue uttered ſounds, when the ſun ſhone upon it, there can be no doubt; nor can it be difficult to account for the phenomenon. The prieſts of Thebes might have carried the mechanic art to ſuch a degree of perfection as to be able to fabricate a ſpeaking head, the ſprings of which were ſo arranged, that it ſhould pronounce ſounds at the riſing of the ſun. Cambyſes deſtroyed this wonderful mechaniſm, by overturning the upper part of the ſtatue; and all the teſtimonies that are cited to the fact refer only to the trunk, which is now ſeen upon the pedeſtal. It is natural, therefore, to attribute the ſound of the mutilated coloſſus to the artifices of the prieſts, who oppoſed this pretended miracle to the riſe and progreſs of Chriſtianity. Lucian in particular would have been glad to have availed himſelf of a phenomenon, which he ſpeaks of with raillery, in this view of it. At all events, it is very certain, that ſince the commencement of the fourth century of the church, when the inhabitants of Egypt became Chriſtians, no more has been ſaid of the vocal ſtatue, firſt called Memnon by Herodotus, but in the chronicle of Alexandria, and by the Egyptians themſelves, Amenophis. In reply to thoſe who inquire concerning the object which the prieſts had in view in framing this vocal ſtatue, it has been ſaid that they were in the habit of conſecrating their ſecondary deities to the preſervation of the records of their moſt important diſcoveries. Amenophis was formed with the ſame intention. To this purpoſe the ancients and Jablonſki (De Memnon.) who has collected their teſtimonies with extreme attention, aſſure us that the ſeven vowels were conſecrated to the ſeven planets, and that the ſtatue of Amenophis repeated them at a certain epocha. Lucian introduces Eucrates on the ſtage, and makes him ſay, "In Egypt I have heard Memnon utter, not according to cuſtom, an inſignificant ſound, but pronounce from his mouth an oracle in ſeven ſounds." This paſſage, probably, is a mere pleaſantry of Lucian, but it is founded on the general perſuaſion, that before Cambyſes broke this coloſſus, it pronounced the ſeven vowels. The Egyptians, as we learn from Macrobius (Somn. Scip.) regarded the ſpring equinox as the era of the creation, and to this period the attention of the learned and of the people was chiefly directed. Amoun, a ſymbolical divinity, was conſecrated to it, and all the feſtivals they celebrated in his honour, related merely to this intereſting period. It was at this period the aſtronomical year commenced; and from hence, according to the prieſts, the ſeven planets renewed their courſe, which they allegorically ſtyled the celeſtial muſic. It was at this moment alſo that Amenophis pronounced the ſeven vowels which were the ſymbols of the planets, and which compoſed the terreſtrial muſic. This famous ſtatue may be called in ſacred language the couſin of Oſiris (Diod. Sic.) and the image of the ſun, ſince it imitated on earth the office which this luminary performed in the heavens. The prieſts by making him repeat the ſeven ſounds, of which all languages are formed, and which wonderfully paint our thoughts, were deſirous of immortalizing the moſt beautiful of their diſcoveries; a diſcovery which, according to Plato, could only be invented by a god, or by a divine mortal. Perhaps, alſo, the ſhadow of this lofty coloſſus ſerved to mark the inſtant of the equinox. Its name at leaſt compoſed of "Ame Nouphi," to tell good tidings, intimates ſomewhat of the kind, more eſpecially when we conſider that the ſun, when he arrived at the equator, in his annual courſe, promiſed the Egyptians a ceſſation of the ſoutherly winds, and the approach of the inundation, which made it an object of anxious attention.

There is no leſs variety of opinion among both ancients and moderns, concerning Memnon himſelf, than in relation to his ſtatue. Upon the authority of Heſiod, who ſaid that he was king of Thebes, the ſucceeding Greek authors adopted this opinion. Pauſanias, Strabo, Diodorus mention it, and alſo Pindar and Ovid. M. Le Clerc has a ſingular opinion concerning this prince; he takes him for Hammon, or Ham, the ſon of Noah; and Voſſius aſſerts that he was the ſame with Baaltis, a divinity of the Syrians, male and female, called by the Greeks *Aphrodité*, and repreſented under the form of a ſtone. Diodorus Siculus ſtates, "that this prince, the ſon of Tithonus, led to Troy the Aſſyrian troops, under the reign of Teutamus, who was the 20th king from Ninus and Semiramis; the Aſſyrians at that time, *i. e.* more than a thouſand years ago, poſſeſſing the empire of Aſia; Priam, who was tributary to the kingdom of Teutamus, having applied to him for aſſiſtance in his preſſing exigency, and having ſent to him, under the conduct of Memnon, 10,000 Aſſyrians, and as many Perſians, with 200 chariots." We ſhall cloſe this article with a paſſage from the learned Huetius's Treatiſe concerning the Terreſtrial Paradiſe (ch. 13.) which throws more light upon the hiſtory of Memnon than any thing that had been before ſaid of him. "Memnon," ſays that learned prelate, "was the ſon of Tithonus and Aurora. Tithonus was the brother of Priam king of Troy, and to him is ſometimes aſcribed the founding of the city Suſa, the capital of Suſiana. From the name of Memnon his ſon, the citadel was denominated Memnonium, the palace and the walls Memnonian, and Suſa itſelf the city of Memnon, upon account of the veneration that was paid to him there; and in honour of him a temple was built, whither the Aſſyrians went and mourned for him, which is to be underſtood of the people of Suſiana. This is that Memnon who came to the aſſiſtance of the Trojans, from whom he derived his original, and who was ſlain by Achilles. When the Greeks feigned that he was the ſon of Aurora, they would have us to underſtand that he came from the eaſt.—I know the hiſtory of Memnon is very perplexed, and very differently related. Moſt ancient authors tell us he was an Ethiopian; this error flows from their confounding Chus, which ſignifies Suſiana, with Chus which ſignifies the countries ſituated upon the borders of the Arabic gulf, I mean Ethiopia and Arabia.—What we are in reaſon to think concerning Memnon's expedition, may be gathered from Diodorus, and ſome others. The kingdom of Troas was in the dependence of the empire of Aſſyria. Tithonus, Priam's brother, who was maſter of that kingdom, went to the court of the king of Aſſyria, who gave him the government of Suſiana. There he married in his old age; and becauſe his wife was from a country ſituated to the eaſt of Greece and Troas, the Greeks, who turned all hiſtory into fiction, ſaid he had married the Morning. Memnon and Emathion were the iſſue of this marriage: the war having after this ariſen, Priam applied to Teutamus for aſſiſtance, or at leaſt to ſome king of Aſſyria, who granted him twenty thouſand men, and two hundred chariots of war. Diodorus ſays this ſupply conſiſted of ten thouſand Ethiopians, and ten thouſand Suſians, returning to the vulgar error, and confounding the Chus of Ethiopia with the Chus of Suſiana. To make this ſupply of more ſervice, Teutamus gave the command thereof to Memnon, a young prince of the Trojan race, and who was therefore concerned for the preſervation of Troy. He kept Tithonus with himſelf upon account of his age, which rendered him unfit for the expedition, and his prudence which qualified him for being member of his council. Memnon found reſiſtance in his march. The Solymi, who have been ſince called the Piſidians, would needs diſpute the paſſage with him; but he defeated them and all that oppoſed him. He cleared the paſſes, repaired the ways, and by reaſon of that long and dangerous march, had the honour to communicate his name to that high way which was denominated Memnonian. He ſuſtained the attacks of the Greeks before Troy with great valour; but at laſt was ſlain by Achilles. Various accounts are given of the place of his burial; for not to mention Philoſtratus, who will have it that he had no ſepulchre, but that he was transformed into that miraculous ſtone, Troas, Phœnicia, and Suſiana contended together for him, and eſpecially Ethiopia, though it has no other right to his burial any more than to his birth, but that which ariſes from the equivocation of the word Chus. But notwithſtanding the obſcurity that this equivocation has caſt upon this hiſtory, Philoſtratus, George Syncellus, that is, the coadjutor to the church of Conſtantinople, and Suidas who had read and copied good authors, though often not very judiciouſly, have not been wanting to bear teſtimony to the truth; the firſt telling us that Memnon the Ethiopian, that is Amenophis, never came from Troy, and that he was wrongfully confounded with Memnon the Trojan, not comprehending how Memnon could have brought ſupply to the Trojans from ſo great a diſtance, nor even by what adventure Tithonus had gone and ſettled in Ethiopia, and came to be king thereof; the ſecond, by diſtinguiſhing exactly Amenophis king of Thebes in Egypt, who is alſo ſtiled Memnon, from the ſpeaking ſtatue of Memnon the ſon of Tithonus, whom he ranks among the kings of Aſſyria; and Suidas, by aſſerting that that Memnon was not an Ethiopian, but a Suſian. Pauſanias, though of a very penetrating genius, has but half unravelled this confuſion; ſaying that Memnon the Ethiopian came not from Ethiopia to Troy, but from Suſa. Euſtathius, and the ſcholiaſt on Pindar, who goes by the name of Triclinius, write that Memnon and Emathion his brother were the only white men among thoſe Ethiopians, though Virgil and others make Memnon black. This remark confirms my opinion; for though the poets and writers of romance have taken the liberty to feign that Andromeda and Charicleus were born white among the blacks, yet this is ſo ſingular in the ordinary courſe of nature, that there is much more reaſon to believe that Memnon was white, becauſe in fact he was not an Ethiopian."

MEMOIRS, or MEMORIALS, a term now much in uſe for hiſtories compoſed by perſons who had ſome ſhare or concern in the tranſactions they relate, or who were eye-witneſſes of them; anſwering to what the Latins called *commentarii*.

The French are great dealers in this way of writing, and have an infinite number of books of memoirs, containing, for the generality, the lives, actions, intrigues, amours, &c. of the writers.

MEMOIRS alſo denote a journal of the acts and proceedings of a ſociety; or a collection of the matters debated, tranſacted, &c. therein. Such are the Memoirs of the Royal Academy of Sciences, &c.

MEMORY, μνημη, a power or faculty of the mind, which receives, retains, and exhibits again, as occaſion requires, all ſorts of ideas preſented to the underſtanding.

Of all the faculties, there is none harder to account for, or that has perplexed philoſophers more, than the memory. Some will have it a mere organ, as the eye, ear, &c. Dr. Hooke, in an "Eſſay towards a mechanical Account of Memory," makes it to conſiſt in a ſtock of ideas or images, formed occaſionally by the mind, out of the fine parts of the brain, and diſpoſed or laid by in order.

Deſcartes and his followers maintain, that the animal ſpirits, exciting a motion in the moſt delicate fibres of the brain, leave a kind of traces or footſteps, which occaſion our *remembrance*. Hence it happens, that by paſſing ſeveral times over the ſame things, the ſpirits becoming accuſtomed to the ſame paſſages, leave them open, and ſo make their way without any effort or labour; and in this conſiſts the eaſe wherewith we recollect ſuch ideas. Thus wine is found to ſharpen the memory, becauſe wine puts the animal ſpirits in motion, and agitates the fibres of the brain more briſkly.

Father Malebranche expreſſes his notion of memory thus: "It being granted, that all our different perceptions are owing to changes happening in the fibres of the principal part of the brain, wherein the ſoul more immediately reſides, the nature of the memory is obvious: for as the leaves of a tree, that have been folded for ſome time in a certain manner, preſerve a facility or diſpoſition to be folded again in the ſame manner; ſo the fibres of the brain, having once received certain impreſſions by the courſes of the animal ſpirits, and by the action of objects, preſerve, for ſome time, a facility to receive the ſame diſpoſition. Now it is in this facility that memory conſiſts; for we think the ſame things, when the brain receives the ſame impreſſions.

"Farther, as the animal ſpirits act ſometimes more briſkly, and ſometimes more languidly, on the ſubſtance of the brain; and as ſenſible objects make much deeper, and more laſting impreſſions, than the imagination alone; it is eaſy, on this ſcheme, to conceive why we do not remember all things alike; why a thing, for inſtance, ſeen twice, is repreſented more vividly to the mind than another ſeen but once: and why things that have been ſeen, are uſually remembered more diſtinctly, than thoſe that have been only imagined, &c.

"Old men are defective in memory, and cannot learn any thing without much difficulty, becauſe they want animal ſpirits to make new traces, and becauſe the fibres of the brain are become too hard to receive, or too moiſt to retain, ſuch impreſſions. For the ſame reaſon, thoſe who learn with the greateſt eaſe forget the ſooneſt; in regard when the fibres are ſoft and flexible, objects make a ſlight impreſſion, which the continual courſe of animal ſpirits eaſily wears off. On the contrary, the fibres of thoſe who learn ſlowly, being leſs flexible, and leſs ſubject to be ſhaken, the traces are more deeply engraven, and laſt the longer. From all which obſervations it follows, that the memory is abſolutely dependent on the body; being impaired or ſtrengthened, according to the changes that befal the body; a fall, the tranſports of a fever, &c. being frequently found to eraſe or blot out all the traces, to bear away all the ideas, and to cauſe an univerſal forgetfulneſs."

The chief difficulty that embarraſſes this doctrine of memory is to conceive how ſuch an infinite number of things, as the head is ſtored with, ſhould be ranged in ſo much order in the memory, as that the one ſhould not efface the other; and how, in ſuch a prodigious aſſemblage of traces impreſſed on the brain, the animal ſpirits ſhould awake preciſely thoſe which the mind has occaſion for.

Memory, according to Mr. Locke, is, as it were, the ſtorehouſe of our ideas. For the narrow mind of man not being capable of having many ideas under view and conſideration at once, it was neceſſary to have a repoſitory, in which to lay up thoſe ideas which it may afterwards have uſe for. But our ideas being nothing but actual perceptions in the mind, which ceaſe to be any thing when there is no perception of them; this laying up of our ideas in the repoſitory of the memory, ſignifies no more than this, that the mind has a power, in many caſes, to revive perceptions it has once had, with this additional perception annexed to them, that it has had them before. And it is by the aſſiſtance of this faculty, that we are ſaid to have all thoſe ideas in our underſtandings, which we can bring in ſight, and make the objects of our thoughts, without the help of thoſe ſenſible qualities which firſt imprinted them there.

Attention and repetition help much to the fixing of ideas in our memories: but thoſe which make the deepeſt and moſt laſting impreſſions, are thoſe which are accompanied with pleaſure and pain. Ideas but once taken in and never again repeated, are ſoon loſt; and thoſe of colours in ſuch as loſt their ſight when very young.

The memory of ſome men is tenacious even to a miracle; but yet there ſeems to be a conſtant decay of all our ideas, even of thoſe which are ſtruck deepeſt, and in minds the moſt retentive; ſo that if they be not ſometimes renewed, the print wears out, and at laſt there remains nothing to be ſeen.

Thoſe ideas that are often refreſhed by a frequent return of the objects or actions that produce them, fix themſelves beſt in the memory, and remain longeſt there: ſuch are the original qualities of bodies, *viz.* ſolidity, extenſion, figure, motion, &c. and thoſe that almoſt conſtantly affect us, as heat and cold.

In memory, the mind is oftentimes more than barely paſſive; for it often ſets itſelf to work to ſearch ſome hidden ideas; ſometimes they ſtart of their own accord; and ſometimes tempeſtuous paſſions tumble them out of their cells. This faculty other animals ſeem to have to a great degree, as well as men, as appears by birds learning of tunes, and their endeavours to hit the notes right. For it ſeems impoſſible that they ſhould endeavour to conform their voices (as it is plain they do) to notes whereof they have no idea. Eſſay concerning Hum. Und. book ii. chap. 10.

Dr. Hartley, agreeably to his mechanical theory of the human mind, defines memory to be that faculty by which traces of ſenſations and ideas recur, or are recalled, in the ſame order and proportion, accurately or nearly, as they were once preſented: and he obſerves, that memory depends entirely or chiefly on the ſtate of the brain, which is peculiarly conformable to his notion of vibrations. The rudiments of memory, he ſays, are laid in the perpetual recurrency of the ſame impreſſions, and cluſters of impreſſions: and thus he endeavours to account for the peculiar imperfections of the memory in children and aged perſons, as well as for other facts pertaining to the exerciſe of this faculty. Obſ. on Man, vol. i. p. 374, &c.

Thoſe who adopt Hartley's theory enumerate among other phenomena of memory ſuch as the following: ideas of recollection are diſtinguiſhed from ſenſations, chiefly by a difference in the vividneſs of the impreſſions, ſo that when from diſeaſe, or any cauſe, ideas become as vivid as ſenſations, they are miſtaken for ſenſations, as in phrenſy; and alſo by the aſſociates which accompany them. Ideas of memory are diſtinguiſhed from reveries, chiefly by the readineſs and ſtrength of the aſſociations by which they are cemented together; and recollected ideas are alſo diſtinguiſhed from reveries by their connection with known facts, and by various methods of reaſoning. Memory, it is alſo ſaid, depends entirely or chiefly on the ſtate of the brain. Hence diſeaſes, concuſſions of the brain, and ſpirituous liquors impair it; and it generally returns again with the return of health. Memory alſo differs in different ages, inſomuch that children ſoon learn and ſoon forget; old people learn with difficulty, and remember beſt what they learned when young; and this, it is alleged, is agreeable to the theory of vibrations. Senſations, attended with great pleaſure or pain, make a deep impreſſion on the memory, which is probably owing to the vigorous vibrations which they excite. Senſible ideas gradually decay in the memory, if not refreſhed by new ſenſations. Voluntary recollection is performed by calling up aſſociated ideas, which by degrees introduce the idea in queſtion. Some perſons of weak judgment poſſeſs retentive memories; but there are limits beyond which the two powers of receiving and of retaining ideas cannot conſiſt with each other. Memory is a faculty inceſſantly exerciſed while thought continues; nor is the mind wholly deprived of it, though it is often much impaired. The excellence of memory conſiſts partly in its ſtrength of retention, and partly in the quickneſs of recollection. All the faculties of the mind are dependent on the memory: and though ſome perſons may have ſtrong memories with weak judgment, no perſon can have a ſtrong judgment whoſe memory is remarkably defective.

It is commonly ſuppoſed, ſays profeſſor Dugald Stewart, (*ubi infra*) that genius is ſeldom united with a very tenacious memory. "So far, however," ſays this ingenious writer, "as my own obſervation has reached, I can ſcarcely recollect one perſon who poſſeſſes the former of theſe qualities, without a more than ordinary ſhare of the latter. On a ſuperficial view of the ſubject, indeed, the common opinion has ſome appearance of truth; for we are naturally led, in conſequence of the topics about which converſation is uſually employed, to eſtimate the extent of memory by the impreſſion which trivial occurrences make upon it; and theſe in general eſcape the recollection of a man of ability, not becauſe he is unable to retain them, but becauſe he does not attend to them. It is probable, likewiſe, that accidental aſſociations, founded on contiguity in time and place, may make but a ſlight impreſſion on his mind. But it does not therefore follow, that his ſtock of facts is ſmall. They are connected together in his memory by principles of aſſociation, different from thoſe which prevail in ordinary minds, and they are on that very account the more uſeful; for as the aſſociations are founded upon real connections among the ideas, (although they may be leſs conducive to the fluency, and perhaps to the wit of converſation,) they are of incomparably greater uſe in ſuggeſting facts which are to ſerve as a foundation for reaſoning or invention."—"Montaigne frequently complains in his writings of his want of memory: and he indeed gives many very extraordinary inſtances of his ignorance in ſome of the moſt ordinary topics of information. But it is obvious to any one who reads his works with attention, that this ignorance did not proceed from an original defect of memory, but from the ſingular or whimſical direction which his curioſity had taken at an early period of life."—"I can do nothing," ſays he, "without my memorandum book; and ſo great is my difficulty in remembering proper names, that I am forced to call my domeſtic ſervants by their offices. I am ignorant of the greater part of our coins in uſe: of the difference of one grain from another, both in the earth and in the granary: what uſe leaven is of in making bread, and why wine muſt ſtand ſome time in the vat before it ferments."—"Yet the ſame author appears evidently, from his writings, to have had his memory ſtored with an infinite variety of apophthegms and of hiſtorical paſſages, which had ſtruck his imagination: and to have been familiarly acquainted, not only with the names, but with the abſurd and exploded opinions of the ancient philoſophers." The foregoing obſervations ſerve to account, in part, for the origin of the common opinion, that genius and memory are ſeldom united in great degrees in the ſame perſon; and it alſo appears, that ſome of the facts, on which that opinion is founded, do not juſtify ſuch a concluſion. There are, however, other circumſtances, that ſeem rather to indicate an inconſiſtency between extenſive memory and original genius. "The ſpecies of memory which excites the greateſt degree of admiration in the ordinary intercourſe of ſociety, is a memory for detached and inſulated facts; and it is certain that thoſe men who are poſſeſſed of it, are very ſeldom diſtinguiſhed by the higher gifts of the mind, and ſuch a ſpecies of memory is unfavourable to philoſophical arrangement; becauſe it in part ſupplies the place of arrangement." Dr. Pemberton informs us, that ſir Iſaac Newton was often at a loſs when the converſation turned on his own diſcoveries: they probably made but a ſlight impreſſion on his mind, and a conſciouſneſs of his inventive powers prevented him from taking much pains to treaſure them up in his memory. He nevertheleſs, as Dr. Pemberton ſays, perfectly underſtood his own writings, though his memory was much decayed in the laſt years of his life. (See Preface to Pemberton's View of Newton's Philoſophy.) "A man of original genius," ſays profeſſor Stewart, "who is fond of exerciſing his reaſoning powers anew on every point as it occurs to him, and who cannot ſubmit to rehearſe the ideas of others, or to repeat by rote the concluſions which he has deduced from previous reflexion, often appears to ſuperficial obſervers to fall below the level of ordinary underſtandings; while another, deſtitute both of quickneſs and invention, is admired for that promptitude in his deciſions, which ariſes from the inferiority of his intellectual abilities." Here we cannot forbear citing one of the aphoriſms of lord Bacon: "Reading makes a full man, writing a correct man, and ſpeaking a ready man." See alſo on this ſubject Watts's Improvement of the Mind, chap. xvii. or Works, vol. v. p. 275, &c.

Memory is a ſource of refined and permanent pleaſure: painful recollections gradually ſubſide within the limits of pleaſure: and if time ſufficient be allowed, by the power of aſſociation, all pain will be ultimately abſorbed, and the pleaſures of memory will be pure and unmixed with miſery. See Rogers's Pleaſures of Memory.

Memory, according to Dr. Reid, is an original faculty given us by the author of our being, of which we can give no account, but that we are ſo made. I believe moſt firmly, ſays this author, what I diſtinctly remember; but I can give no reaſon of this belief. It is the inſpiration of the Almighty that gives me this underſtanding. Memory, he ſays, is always accompanied with the belief of that which we remember; and this belief we account real knowledge, no leſs certain than if it was grounded on demonſtration. The teſtimony of witneſſes, in cauſes of life and death, depends upon it, and all the knowledge of mankind, with regard to paſt events, is built on this foundation. Reid's Eſſays on the Intellectual Powers of Man, Eſſ. iii. ch. 1, 2. 7.

The word memory, ſays profeſſor Dugald Stewart, is not employed uniformly in the ſame ſenſe: it is ſometimes employed to expreſs the capacity of retaining knowledge, and ſometimes the power of recalling it to our thoughts, when we have occaſion to apply it to uſe. When we ſpeak of a retentive memory, we uſe it in the former ſenſe; when of a ready memory, in the latter. The various particulars which compoſe our ſtock of knowledge ſometimes recur to us ſpontaneouſly, or at leaſt without any interference on our part; in other caſes, they are recalled by an effort of our will. The former operation of the mind is denoted by Memory; the latter, though ſometimes called by the ſame name, is more properly diſtinguiſhed by the word Recollection. The operations of memory relate either to things and their relations, or to events. In the former caſe, thoughts which have been previouſly in the mind may recur to us, without ſuggeſting the idea of the paſt, or of any modification of time whatever, as when I repeat over a poem which I have got by heart, or when I think of the features of an abſent friend. In theſe caſes, the operations of memory do not neceſſarily involve the idea of the paſt. But when I think of events, I not only recal to the mind the former objects of its thoughts, but I refer the event to a particular point of time; ſo that of every ſuch act of memory, the idea of the paſt is a neceſſary concomitant. If it be inquired, to what it is owing that the memory retains ſome things in preference to others? our author replies, that this may be aſcribed to two principles of our nature, upon which memory is dependent, and with which it is very intimately connected; theſe are *attention* and the *aſſociation* of ideas. Without attention, even the objects of our perceptions make no impreſſion on the memory. (See Bacon, Nov. Org. lib. ii. aphor. 6.) This attention, though it be a voluntary act, requires experience to have it always under command. In the caſe of objects to which we have been taught to attend at an early period of life, or which are calculated to rouſe the curioſity, or to affect any of our paſſions, the attention fixes itſelf upon them, as it were, ſpontaneouſly, and without any effort on our part, of which we are conſcious. On the other hand, if an object does not intereſt ſome principle of our nature, we may examine it again and again, with a wiſh to treaſure up the knowledge of it in the mind, without our being able to command that degree of attention which may lead us to recogniſe it the next time we ſee it. By this kind of reaſoning we can account for a well-known fact, that objects are eaſily remembered which affect any of the paſſions. The paſſion aſſiſts the memory, not in conſequence of any immediate connection between them, but as it preſents, during the time it continues, a ſteady and excluſive object to the attention.

Our ingenious author proceeds to ſtate the connection between memory and the aſſociation of ideas. This, he ſays, is ſo ſtriking, as to have induced ſome to ſuppoſe, that the whole of its phenomena might be reſolved into this principle. This the profeſſor does not allow. "The aſſociation of ideas connects our thoughts with each other, ſo as to preſent them to the mind in a certain order; but it preſuppoſes the exiſtence of theſe thoughts in the mind; or, in other words, it preſuppoſes a faculty of retaining the knowledge which we acquire. It involves alſo a power of recognizing, as former objects of attention, the thoughts that from time to time occur to us; a power which is not implied in that law of our nature, which is called the aſſociation of ideas."—"On the other hand, it is evident that, without the aſſociating principle, the power of retaining our thoughts, and of recognizing them when they occur to us, would have been of little uſe; for the moſt important articles of our knowledge might have remained latent in the mind, even when thoſe occaſions preſented themſelves to which they are immediately applicable. In conſequence of this law of our nature, not only are all our various ideas made to paſs from time to time in review before us, and to offer themſelves to our choice as ſubjects of meditation; but when an occaſion occurs which calls for the aid of our paſt experience, the occaſion itſelf recalls to us all the information upon the ſubject which that experience has accumulated." Our author obſerves, "that the various theories which have attempted to account for memory by traces or impreſſions in the ſenſorium, are obviouſly too unphiloſophical to deſerve a particular refutation." He adds, after ſome other appropriate remarks on this ſubject, "that the immediate dependence of this faculty on the ſtate of the body, which is more remarkable than that of any other faculty whatever, (as appears from the effects produced on it by old age, diſeaſe, and intoxication,) is apt to ſtrike thoſe who have not been much converſant with theſe inquiries, as beſtowing ſome plauſibility on the theory which attempts to explain its phenomena on mechanical principles." Accordingly, it is recommended to medical writers to be at more pains than they have been at hitherto, in order to aſcertain the various effects which are produced on the memory by diſeaſe and old age; effects which are widely diverſified in different caſes. "In ſome it would ſeem that the memory is impaired, in conſequence of a diminution of the power of attention; in others, that the power of recollection is diſturbed, in conſequence of a derangement of that part of the conſtitution on which the aſſociation of ideas depends. The decay of memory, which is the common effect of age, ſeems to ariſe from the former of theſe cauſes."—"As far as the decay of memory, which old age brings along with it, is a neceſſary conſequence of a phyſical change in the conſtitution, or a neceſſary conſequence of a diminution of ſenſibility, it is the part of a wiſe man to ſubmit cheerfully to the lot of his nature. But it is not unreaſonable to think, that ſomething may be done by our own efforts, to obviate the inconveniences which commonly reſult from it. If individuals, who, in the early part of life, have weak memories, are ſometimes able to remedy this defect, by a greater attention to arrangement in their tranſactions, and to claſſification among their ideas, than is neceſſary to the bulk of mankind, might it not be poſſible, in the ſame way, to ward off, at leaſt to a certain degree, the encroachments which time makes on this faculty? The few old men, who continue in the active ſcenes of life to the laſt moment, it has been often remarked, complain, in general, much leſs of a want of recollection than their contemporaries. This is undoubtedly owing partly to the effect which the purſuits of buſineſs muſt neceſſarily have in keeping alive the power of attention. But it is probably owing alſo to new habits of arrangement, which the mind gradually and inſenſibly forms from the experience of its growing infirmities."

The learned profeſſor devotes a ſection of his excellent work to the illuſtration of the varieties of memory in different individuals. "As the great purpoſe," he ſays, "to which this faculty is ſubſervient, is to enable us to collect, and to retain, for the future regulation of our conduct, the reſults of our paſt experience; it is evident that the degree of perfection which it attains in the caſe of different perſons, muſt vary; firſt, with the facility of making the original acquiſition; ſecondly, with the permanence of the acquiſition; and, thirdly, with the quickneſs or readineſs with which the individual is able, on particular occaſions, to apply it to uſe. The qualities of a good memory are, therefore, in the firſt place, to be ſuſceptible; ſecondly, to be retentive; and, thirdly, to be ready." Theſe three qualities are rarely united in the ſame perſon.

Our author has advanced ſome very ingenious and judicious obſervations on the difference between a *caſual* and a *philoſophical* memory. The bulk of mankind aſſociate their ideas chiefly according to their moſt obvious relations, thoſe, for example, of reſemblance and analogy; and, above all, according to the caſual relations ariſing from contiguity in time and place; whereas, in the mind of a philoſopher, ideas are aſſociated according to thoſe relations which are brought to light in conſequence of particular efforts of attention, with the relations of cauſe and effect, or of premiſes and concluſion. The advantage is greatly in favour of the philoſopher; the arrangement he uſes ſtrengthens his memory, aſſiſts his invention, enables him to reaſon ſynthetically, and to correct his intellectual defects; but this kind of memory is not favourable to converſation. The man of caſual memory is open to every impreſſion, and readily accommodates his ideas to any circumſtance which may occur. But the philoſopher who thinks cloſely and reaſons ſyſtematically, is deficient in eaſe and quickneſs, and is in danger of becoming tedious by long diſcourſes. And as nothing appears weaker or more abſurd than a theory partially ſtated, it frequently happens that men of ingenuity, by attempting it, ſink in the vulgar apprehenſion, below the level of ordinary underſtandings. Profeſſor Stewart, after pointing out in various particulars the difference between philoſophical and caſual memory, obſerves, that they conſtitute the moſt remarkable of all the varieties which the minds of different individuals, conſidered in reſpect of this faculty, preſent to our notice. He afterwards enumerates, in detail, and with appropriate illuſtration, ſeveral other varieties of a leſs ſtriking nature. Stewart's Elements of the Philoſophy of the Human Mind, chap. vi. § 1, 2, 3.

For the difference between memory and imagination; ſee IMAGINATION.

Ariſtotle diſtinguiſhes between memory and reminiſcence. Memory is a kind of habit which is not always in exerciſe with regard to things we remember, but is ready to ſuggeſt them when there is occaſion. The moſt perfect degree of this habit is, when the thing preſents itſelf to our remembrance ſpontaneouſly, and without labour, as often as there is occaſion. A ſecond degree is, when the thing is forgot for a longer or ſhorter time, even when there is occaſion to remember it, yet at laſt ſome incident brings it to mind without any ſearch. A third degree is, when we caſt about and ſearch for what we would remember, and ſo at laſt find it out. It is this laſt which Ariſtotle calls reminiſcence, as diſtinguiſhed from memory Reminiſcence, therefore, includes a will to recollect ſomething paſt, and a ſearch after it. Ariſtotle ſays, that brutes have not reminiſcence, which Dr. Reid thinks to be probable, but, ſays he, they have memory. Thus, a dog knows his maſter after long abſence. A horſe will trace back a road he has once gone as accurately as a man. Reid, *ubi ſupra.* See the preceding part of this article.

Hiſtory furniſhes us with ſeveral ſurpriſing inſtances of the retentive powers of the faculty of memory. Seneca ſays of himſelf, that, by the mere effort of his natural memory, he was able to repeat two thouſand words upon once hearing them, each in its order; though they had no dependence or connection on each other. After which he mentions a friend of his, Portius Latro, who retained in his memory all the declamations he had ever ſpoken, and never found his memory fail him, even in a ſingle word. He alſo mentions Cyneas, ambaſſador to the Romans from king Pyrrhus, who, in one day, had ſo well learnt the names of his ſpectators, that the next he ſaluted the whole ſenate, and all the populace aſſembled, each by his name. Pliny ſays, that Cyrus knew every ſoldier in his army by name; and L. Scipio, all the people of Rome. Charmipas, or rather Carneades, when required, it is ſaid, would repeat any volume found in the libraries as readily as if he were reading. Dr. Wallis tells us, that without the aſſiſtance of pen and ink, or any thing equivalent, he was able in the dark, by mere force of memory, to perform arithmetical operations, as multiplication, diviſion, extraction of roots, &c. to forty places. Particularly, that, in February 1671-2, at the requeſt of a foreigner (by night in bed) he propoſed to himſelf a number of fifty-three places, and found its ſquare root to twenty-ſeven places; and without ever writing down the number, dictated it from his memory, at his next viſit, twenty days afterwards.

The perfection of memory conſiſts in two things; readily to admit the impreſſions or images of things; and to preſerve them from oblivion, that the underſtanding may have recourſe to them, and employ them for ſuch purpoſes, as reaſon ſhall direct. In order to aſſiſt and improve this faculty, every kind of intemperance and exceſs muſt be carefully avoided; and when we would commit any thing to memory, our firſt concern ſhould be to underſtand it thoroughly; we ſhould commit things to memory in a methodical and regular manner; writing down any thing is likewiſe a great advantage towards remembering it; a frequent review and careful repetition of the things that are learned will help to fix them in the memory, and likewiſe an abridgment of them in a narrow compaſs; converſation upon them with intelligent companions will alſo be found uſeful; care ſhould likewiſe be taken not to overburden the memory: ſuch ſeaſons ſhould be made choice of as are moſt proper for the exerciſe of this faculty, ſuch are the evening and morning; and the moſt effectual way of gaining a good memory, is its conſtant and moderate exerciſe. Ward's Or. vol. ii. ſect. 51. Rollin's Belles Lettres p. 208—216, ſixth ed. Watts's Improvement of the Mind, ubi ſupra. Stewart's Elem. of the Philoſophy of the Human Mind, ch. vi. ſect. 3, 4, 5.

MEMORY, *Local*, or *Artificial*, is an art, or invention, by means of which the memory is ſuppoſed to be aided, ſtrengthened, and enlarged.

This art ſeems to conſiſt in nothing elſe but a certain method of coupling or aſſociating the ideas of things to be remembered, with the ideas of other things, already diſpoſed orderly in the mind, or that are before the eyes. It is of an old ſtanding, having been practiſed by many of the ancient rhetoricians, under the denomination of "topical memory;" ſome of whom are ſaid to have made uſe of paintings, images, and emblems, on this occaſion; though others contented themſelves with the parts, members, ornaments, furniture, and other circumſtances of the place where they were to ſpeak. Muretus tells us that a young man of Corſica pretending to do wonders this way, Muretus put him to the trial; and upon dictating to him two or three thouſand words, ſome Greek, ſome Latin, ſome Barbarous; all without any relation to each other, and the greateſt part without any meaning at all; the artiſt immediately, and without any heſitation, or the leaſt ſtumbling or diſplacing, repeated them all, from firſt to laſt, in the ſame order wherein they had been dictated; and this done, beginning where he ended, he repeated them all backwards, from laſt to firſt. Adding, that this was but a ſlight eſſay of his memory; and that he would undertake to repeat thirty-ſix thouſand words in the ſame manner.

The truth is, this art ſeems better calculated for retaining things without any coherence or dependence on one another, as mere words or ſounds, &c. than for things where reaſon or judgment are any way required.

Raim. Lully took ſo much pains with it, that it now goes by his name, being called *Lully's art*.

Many have been the attempts, in all ages, to aſſiſt the memory. Some have had recourſe to medicine, ſuch as Horſtius, Marſilius Ficinus, Johnſton and others. That good health, a good digeſtion, and a mind free from care, are helps in this reſpect, is an old obſervation. That attention, application, frequent recapitulation, are neceſſary, is known to every one. But whether, beſides natural health and parts, and the exerciſe of our faculties, art may not give a farther aſſiſtance to memory, has been a queſtion. Simonides is ſaid to have been the firſt who found out the art of memory. His method was by a choice of *places* and *images*, as a repoſitory of ideas; ſuch, for inſtance, as a large houſe divided into ſeveral apartments, rooms, cloſets, &c. All theſe, and their order, were to be rendered extremely familiar to the imagination and memory. Then, whatever was to be remembered, was by ſome ſymbolical repreſentation or another, as an anchor for navigation, to be connected with ſome part of the houſe, or other artificial repoſitory, in a regular manner. Cicero and Quintilian give us ſome account of this method, and ſpeak of it with reſpect. As far as it was the object of this ſpecies of artificial memory to aſſiſt an orator in recollecting the plan and arrangement of his diſcourſe, the accounts which are given of it by the ancient rhetoricians are abundantly ſatisfactory. It appears, however, that its uſe was more extenſive; and that it was ſo contrived, as to facilitate the recollection of a premeditated compoſition. In what manner this was done, it is not eaſy to conjecture from the imperfect explanations of the art, which have been tranſmitted to modern times. The reader may conſult Cicero de Orat. lib. ii. cap. 87, 88. Rhetor. ad Herennium, lib. iii. cap. 16, &c. Quintil. Inſt. Orat. lib. xi. cap. 2.

Several moderns have attempted improvements of artificial memory. There was a collection of various treatiſes of this kind publiſhed at Leipzig; this, and Bruxius's Simonides Redivivus, are commended by Morhof. Paſchius gives us ſome account alſo of ſeveral authors who have treated of this art. It is certainly of uſe in hiſtory and chronology. The chief artifice, in this reſpect, is to form an artificial word, the letters of which ſhall ſignify numbers. Hence a date or era may more eaſily be recapitulated and remembered than without ſuch a contrivance. This invention is mentioned as a ſecret known to few, by Paſchius. It has been proſecuted in England, by Dr. Grey, in his well-known work, entitled "Memoria Technica," by means of which a great maſs of hiſtorical, chronological, and geographical knowledge is compriſed in a ſet of verſes, which the ſtudent is ſuppoſed to make familiar to himſelf as ſchool-boys do the rules of grammar.

The method is this: to remember any thing in hiſtory, chronology, geography, &c. a word is formed, the beginning of which being the firſt ſyllable or ſyllables of the thing to be remembered, does, by frequent repetition, of courſe draw after it the latter parts, which is ſo contrived as to give the anſwer. Thus, in hiſtory, the deluge happened in the year before Chriſt 2348. This may be ſignified by the word Dél *étok*; Del ſtanding for deluge, and *etok* for 2348.

How theſe words came to ſignify theſe things, or contribute to the remembering them, is now to be ſhewn.

The firſt thing to be done is to learn exactly the following ſeries of vowels and conſonants, which are to repreſent the numerical figures, ſo as to be able at pleaſure to form a technical word, which ſhall ſtand for any number, or to reſolve a word already formed into the number it ſtands for:

a	*e*	*i*	*o*	*u*	*au*	*oi*	*ei*	*ou*	*y*
1	2	3	4	5	6	7	8	9	0
b	*d*	*t*	*f*	*l*	*s*	*p*	*k*	*n*	*z*

Here *a* and *b* ſtand for 1, *e* and *d* for 2, *i* and *t* for 3, and ſo on. Theſe letters are aſſigned arbitrarily to the reſpective figures, and may very eaſily be remembered. The firſt five vowels in order naturally repreſent 1, 2, 3, 4, 5. The diphthong *au*, being compoſed of *a*, 1, and *u*, 5, ſtands for 6; *oi* for 7, being compoſed of *o*, 4 and *i*, 3; *ou* for 9, being compoſed of *o*, 4 and *u*, 5; the diphthong *ei* will eaſily be remembered for 8 (eight), being the initials of the word. In like manner for the conſonants, where the initials could conveniently be retained, they are made uſe of to ſignify the number, as *t* for 3, *f* for four, *s* for ſix, and *n* for 9. The reſt were aſſigned without any particular reaſon, unleſs that poſſibly *p* may be more eaſily remembered for 7, or *ſeptem*, *k* for 8, or οκτω, *d* for 2, or *duo*; *b* for 1, as being the firſt conſonant, and *l* for 5, being the Roman letter for 50, than any others that could have been put in their places. It is farther to be obſerved, that *z* and *y* being made uſe of to repreſent the cypher, where many cyphers meet together, as 1000, 1000000, &c. inſtead of a repetition of *azyzyzy*, &c. let *g* ſtand for 100, *th* for a thouſand, and *m* for a million. Thus *ag* will be 100, *ig* 300; *oug* 900, &c. *ath* 1000, *am* 1000000, *loum* 59000000, &c. Fractions may be ſet down in the following manner: let *r* ſignify the line ſeparating the numerator and denominator, the firſt coming *before* the other *after* it; as *iro* $\frac{3}{4}$, *urp*, $\frac{5}{7}$, *pourag* $\frac{79}{100}$, &c. When the numerator is 1 or unit, it need not be expreſſed, but begin the fraction with *r*; as *re* $\frac{1}{2}$, *ri* $\frac{1}{3}$, *ro* $\frac{1}{4}$, &c. So in decimals, *rag* $\frac{1}{100}$, *rath* $\frac{1}{1000}$.

This is the principal part of the method, which conſiſts in expreſſing numbers by artificial words. The application to hiſtory and chronology is alſo performed by artificial words. This part of the art conſiſts in making ſuch a change in the ending of the name of a place, perſon, planet, coin, &c. without altering the beginning of it, as ſhall readily ſuggeſt the thing ſought, at the ſame time that the beginning of the word, being preſerved, ſhall be a leading or prompting ſyllable to the ending of it ſo changed. Thus in order to remember the years in which Cyrus, Alexander, and Julius Cæſar, founded their reſpective monarchies, the following words may be formed; for Cyrus, Cyr*uts*; for Alexander, Alex*ita*; for Julius Cæſar, Juli*os*. *Uts* ſignifies, according to the powers aſſigned to the letters before mentioned, 536; *ita* is 331, and *os* is 46. Hence it will be eaſy to remember, that the empire of Cyrus was founded 536 years before Chriſt, that of Alexander 331, and that of Julius Cæſar, 46.

For the farther application of this method, we refer to the ingenious author's own account. We ſhall only add, that technical verſes contribute much to the aſſiſtance of the memory, both as they generally contain a great deal in a little compaſs, and alſo becauſe, being once learned, they are ſeldom or never forgot. The author before quoted has given us ſeveral ſpecimens of ſuch verſes in hiſtory, chronology, geography, and aſtronomy, as alſo the Jewiſh, Grecian, and Roman coins, weights and meaſures, &c. He adviſes his reader to form the words and verſes for his own uſe himſelf; as he perhaps will better remember them than thoſe formed by the author

Having given an account very much in detail of the moſt approved artifices that have been contrived for aſſiſting the memory, our limits will not allow our ſpecifying any of thoſe modern methods for this purpoſe that have engaged popular attention; probably without much claim to originality, and which, as long as they are not explicitly divulged, may be more lucrative to thoſe who teach than improving to thoſe who are at the pains and expence of acquiring them. Every attempt, however, to improve this important faculty merits encouragement. See MNEMONIC *Tables*.

Concerning the utility of the ſyſtem above ſtated, the ingenuity of which has been acknowledged, oppoſite opinions have been entertained. The prevailing opinion is, as profeſſor Stewart conceives, againſt it; although it has been mentioned in terms of high approbation by ſome writers of eminence. Dr. Prieſtley, whoſe judgment in matters of this nature commands reſpect, has ſaid of it (Lectures on Hiſtory, p. 157), that "it is a method ſo eaſily learned, and which may be of ſo much uſe in recollecting dates when other methods are not at hand, that he thinks all perſons of a liberal education inexcuſable, who will not take the ſmall degree of pains that is neceſſary to make themſelves maſters of it; or who think any thing mean, or unworthy of their notice, which is ſo uſeful and convenient." The learned profeſſor, of whoſe obſervations we have ſo often availed ourſelves, very juſtly remarks, that "in judging of the utility of this, or of any other contrivance of the ſame kind, to a particular perſon, a great deal muſt depend on the ſpecies of memory which he has received from nature, or has acquired in the courſe of his early education. Some men have an extraordinary facility in acquiring and retaining the moſt barbarous and the moſt inſignificant verſes; which another perſon would find as difficult to remember, as the geographical and chronological details of which it is the object of this art to relieve the memory. Allowing, therefore, the general utility of the art, no one method, perhaps, is entitled to an excluſive preference; as one contrivance may be beſt ſuited to the faculties of one perſon, and a very different one to thoſe of another."—"One important objection applies to all of them, that they accuſtom the mind to aſſociate ideas by accidental and arbitrary connections; and, therefore, how much ſoever they may contribute, in the courſe of converſation, to an oſtentatious diſplay of acquired knowledge, they are, perhaps, of little real ſervice to us, when we are ſeriouſly engaged in the purſuit of truth. I own too, (ſays the profeſſor,) I am very doubtful with reſpect to the utility of a great part of that information which they are commonly employed to impreſs upon the memory, and on which the generality of learned men are diſpoſed to value themſelves. It certainly is of no uſe, but in ſo far as it is ſubſervient to the gratification of their vanity; and the acquiſition of it conſumes a great deal of time and attention, which might have been employed in extending the boundaries of human knowledge. To thoſe, however, who are of a different opinion, ſuch contrivances as Grey's may be extremely uſeful; and to all men they may be of ſervice, in fixing in the memory thoſe inſulated and unintereſting particulars, which it is either neceſſary for them to be acquainted with, from their ſituation; or which cuſtom has rendered, in the common opinion, eſſential branches of a liberal education."

As to Simonides's method, Quintilian ſays he will not deny it to be of ſome uſe; for inſtance, in repeating a multitude of words in the order they occur, and in things of this nature; but he thinks it of leſs uſe in getting by heart a continued oration, and in this reſpect rather an incumbrance. He himſelf adviſes, if the ſpeech to be remembered be long, to get it by heart in parts, and thoſe not very ſmall. The partition ought chiefly to be made according to the different topics. He thinks it beſt to get things by heart tacitly, and if, the better to fix the attention, the words be pronounced, yet it ſhould be in a low voice. Apt diviſions help the memory greatly. But after all, the great art of memory is exerciſe; to get many things by heart, and daily, if poſſible. Nothing increaſes more by uſe, or ſuffers more by neglect, than the memory. At whatever age a man aims at the improvement of this faculty, he ſhould patiently ſubmit to the uneaſy labour of repeating what he has read or written. Here, as in other caſes, where habits are to be acquired, exerciſe ſhould be increaſed by degrees. Quint. Inſt. Orat. lib. xi. cap. 2. p. 989.

Lord Bacon enumerates ſeveral helps to memory, as order, artificial place, verſe, whatever brings an intellectual thing to ſtrike the ſenſes, and thoſe things which make an impreſſion by means of a ſtrong paſſion, as fear, ſurprize, &c. Thoſe things alſo ſink deepeſt, and dwell longeſt in the memory, which are impreſſed upon a clear mind unprejudiced either before or after the impreſſion, as the things we learn in childhood, or think of juſt before going to ſleep; as likewiſe the firſt time things are taken notice of.

A multitude of circumſtances alſo, or, as it were, handles or holds to be taken, help the memory; as the making many breaks in writing, reading or repeating aloud; but as to this laſt, ſee Quintilian's opinion before mentioned. Thoſe things which are expected, and raiſe the attention, ſtick better than ſuch as paſs ſlightly over the mind; whence if a man reads any writing twenty times over, he will not remember it ſo well, as if he read it but ten times with trying between whiles to repeat it, and conſulting the copy where his memory failed. Bacon's Works abr. vol. ii. p. 475. See alſo vol. i. p. 135, 136. vol. iii. p. 176, and the article Mnemonic *Tables*.

Memory, *Weakneſs* or *Loſs of*, in *Medicine*, technically called *amneſia*, is a diſeaſe which appears to depend upon two oppoſite conditions of the brain; namely, upon a plethora or oppreſſed ſtate of that organ, and upon an extreme debility of its veſſels and languor of the circulation. Hence it ariſes from two different ſets of cauſes, and is to be cured by two oppoſite modes of treatment. The firſt mentioned ſpecies of the diſeaſe is connected with the lethargic ſtate preceding apoplectic attacks, or with the paralytic condition that often ſucceeds them: it ariſes alſo from local injury to the brain, occaſioned by wounds and blows, which produce concuſſion or preſſure upon the brain. The plan of treatment directed for theſe morbid ſtates, and conſiſting chiefly of local evacuations, with low diet, will be neceſſary for the relief of theſe varieties of *amneſia*. But the ſecond ſpecies, connected with a feeble circulation in the head, ſuch as is ſaid to ariſe from exceſſive indulgence of the venereal appetite, or to follow the continued uſe of ſpirituous liquors, where there is no plethora, requires the uſe of tonics and of opium; the exciting cauſes being alſo avoided. (See Sauvages Noſol. Method. Spec. 1. Amneſia à Venere. Spec. 7. A. à temulentia.) Where the diſeaſe reſults from old age, however, or from any organic changes, which may have taken place in the brain itſelf, a cure cannot of courſe be expected from any expedient.

Memory, *Time of*, in *Law*, has been long ago aſcertained by the law to commence from the beginning of the reign of Richard I. (2 Inſt. 238, 239.) This rule was adopted, when by the ſtatute of Weſtm. 1. (3 Edw. I. c. 39.) the reign of Richard I. was made the time of limitation in a writ of right. But ſince by the ſtatute 32 Hen. VIII. c. 2. this period (in a writ of right) hath been very rationally reduced to ſixty years, it ſeems unaccountable that the date of legal preſcription or memory ſhould ſtill continue to be reckoned from an era ſo very antiquated. See Litt. § 170. 34 Hen. VI. 37. 2 Roll. Abr. 269. pl. 16. See Modus.

Memory *Rocks*, in *Geography*, a reef of rocks among the Bahama iſlands. N. lat. 27° 3'. W. long. 79° 30'.

MEMPHIS, in *Ancient Geography*, a large and populous city of Egypt, on the left ſide of the Nile. Concerning the epocha of its foundation and alſo of its deſtruction, as well as its preciſe ſituation, writers are not agreed. According to Diodorus Siculus it was ſeven leagues in circumference, and it contained magnificent temples and palaces. As to its poſition, Dr. Shaw ſays, that oppoſite to Cairo, on the banks of the Nile, which looks towards Libya, is the village of Giſa, where the ancient Memphis ſtood, the ruins of which are now covered and buried with earth. The authors of the Univerſal Hiſtory adopt the opinion of Dr. Shaw, and repreſent Memphis as ſituated on the ſcite now occupied by Giſa. According to Herodotus, Memphis was ſituated on the narroweſt ſpot in Egypt, on the weſtern bank of the Nile; a lake formed by the waters of the river ſurrounding it to the north and the weſt. But Strabo is more circumſtantial in his details; and he ſays, that at 40 ſtadia, or 1¼ league from Memphis, riſes a ſtony hill, where a great number of pyramids are built. This ſituation, it is ſaid, does not correſpond with that of Giſa, which is three leagues from the neareſt pyramids, and ſix from thoſe of Saccara. (See Gizé.) Pliny (N. H. l. vi.) ſays, that the three great pyramids, which are ſeen by navigators from all parts, are ſituated on a barren and ſtony hill, between Memphis and the Delta, one league from the Nile, two from Memphis, and near the village of Buſiris. Diodorus alſo places the pyramids 15 miles from Memphis. From theſe authorities we may infer, that as the pyramids are between Memphis and the Delta, and it is certain that Giſa or Gizé is between the pyramids and the Delta, Memphis could not have been ſituated on the ſpot where Giſa ſtands; or, in other words, Memphis, by Pliny's deſcription, is two leagues to the ſouthward of the pyramids, and Giſa being three leagues from them to the northward, it could not have been built on the ground occupied by Memphis. Moreover, the village of Buſiris ſtill exiſts under the name of Buſir, at a ſmall diſtance from the pyramids; they are ſtill a league from the river, and the ſmall town of "Menph," formerly Memphis, is about two leagues to the ſouthward of theſe monuments.

The foundation of this city is aſcribed by Herodotus to Menes; and by Diodorus to Uchoreus, the eighth deſcendant of Oſymandias. Some have propoſed to reconcile theſe two accounts by attributing the commencement of the city to Menes, and its completion and aggrandizement to Uchoreus, who made it a royal city. The occaſion of its having been erected is thus ſtated by Savary. After a king of Egypt had turned the courſe of the Nile, which loſt itſelf in the ſands of Libya, and the Delta was formed out of the mud depoſited by its waters, canals were cut to drain the Lower Egypt. The monarchs who till that time had fixed their reſidence at Thebes, were deſirous of coming nearer the mouth of the river, to enjoy a more temperate air, and to be more ready to defend the entrance of their empire. Accordingly they founded the city of Memphis, and ſtrove to make it a rival worthy of the ancient capital. They adorned it, as Strabo (lib. xvii.) informs us, with ſeveral temples, amongſt which that of Vulcan attracted the attention of travellers, by the grandeur of the edifice and the richneſs of its ornaments. Another temple, no leſs an object of wonder, was dedicated to Serapis, the principal approach to which was adorned by prodigious ſphinxes. Here was alſo a temple of Venus, which ſome have ſuppoſed to be the moon. In order to prevent the diſaſter which was likely to be occaſioned by drifts of ſand, the inundations of the river, and the attacks of an enemy, a long and lofty dyke was conſtructed towards the ſouth; and on the weſt, it was defended by the king's palaces and a fortreſs erected on the mountain. On the eaſt it was bounded by the Nile. Towards the north were lakes terminated by the plain of Mummies, and by the cauſeway which leads from Buſiris to the great pyramids. Thus ſituated, Memphis commanded the valley of Egypt, and communicated by canals with lake Mœris, and lake Mareotis. The citizen who inhabited it might travel from his own houſe all over Egypt in a boat; ſo that it became the centre of wealth, of commerce, and of the arts. The new capital, thus circumſtanced, ſunk Thebes and her 100 gates into oblivion; and the glory of Memphis laſted for many ages. It maintained its ſplendour till Cambyſes laid waſte Egypt at the head of a formidable army. This ferocious conqueror deſtroyed, as far as he was able, her temples and her famous buildings; and, above all, he ſtrove to extinguiſh the torch of the ſciences, which the Egyptians, ſurrounded by waves and deſerts, had lighted in their fertile valley. Memphis, however, retained ſo many traces of her magnificence as to be ſtill the firſt city in the world. For upwards of 200 years ſhe laboured to throw off the Perſian yoke. Alexander, to whom ſhe ſurrendered, amply revenged the outrages ſhe had ſuſtained. This conqueror, abandoning himſelf to a guilty delirium, removed, as Quintus Curtius informs us, within the walls of Perſepolis, the horrors Cambyſes had committed at Thebes and Memphis. In proceſs of time a city was founded which bore his name; and it was embelliſhed by the Ptolemies, his ſucceſſors. Alexandria became another Rome: the arts and ſciences acquired reputation in this place: commerce alſo attracted hither wealth from various regions. Hence it happened, that Memphis was gradually depopulated by the migration of her inhabitants to the new and more favoured city. Under Auguſtus, however, it was ſtill a great city, populous and full of ſtrangers; though it then held the rank of only the ſecond city of Egypt. Six hundred years after, it became the firſt conqueſt of the Arabs, who laid ſiege to its walls. The ſiege was long and bloody; but it was carried at length by ſtorm, as Abulfeda informs us. Menf (Memphis), ſays this writer, is the ancient Maſr of Egypt. It is ſituated on the weſtern bank of the Nile. Amron, ſon of El Aas, having taken it by ſtorm, raſed it to the ground, and went to build the town of Foſtat by order of Omar, ſon of Kettah, on the oppoſite ſide. At Menf are remarkable ruins, the remains of its ancient ſplendour, &c. Menf, he adds, is diſtant a ſhort day's journey from Grand Cairo. The village of Menf, the ſad remains of an immenſe city, is ſix leagues from Grand Cairo, on the weſtern bank of the Nile. The lakes mentioned by Herodotus and Strabo have not entirely diſappeared; one of them is near Saccara, with a wood of Acacia ſituated weſtward of Menf; the other is preciſely north of it. (Savary's Letters on Egypt, vol. i.) Memphis gave name to a nome or canton of Egypt, ſituated on the weſt of the Nile, and called "Memphitis Nomos."

MEMPHITES, or *Lapis Memphiticus*, a ſort of ſtone mentioned by Dioſcorides, Pliny, and other natural hiſtorians, ſuppoſed to be found in Egypt, not far from the city of Cairo, the ancient Memphis, whence its name.

The property it is famed for is, that being pulverized and ſmeared on any part of the body to be cut off, it deadens it ſo, as that the patient ſhall receive no pain, they ſay, from the operation.

MEMPHREMAGOG, in *Geography*, a lake which lies chiefly in the province of Canada, 40 miles in length from north to ſouth, and two or three wide from eaſt to weſt. The north line of Vermont ſtate paſſes over the ſouth part of the lake, in N. lat. 45°. This lake, which communicates by the river St. Francis with the river St. Laurence, is the reſervoir of three conſiderable ſtreams, *viz.* Black, Boſton, and Clyde rivers, which riſe in Vermont. The ſoil on its banks is rich, and the country round it is level.

MEMRAMCOOK River, a river of America, which has been recommended as the moſt proper boundary between the province of North Brunſwick and Nova Scotia. It lies a little to the eaſtward of Petitcodick, and purſues a north-eaſterly direction.

MEMRUMUS, in *Mythology*, a Phœnician deity, ſprung from the race of giants, and the brother of Hypſaranius. The latter dwelt at Tyre, and invented the art of building cottages of reeds and ruſhes, and the papyrus; and his brother, with whom he quarrelled, taught men to clothe themſelves with the ſkins of beaſts. When an impetuous fire kindled a foreſt near Tyre, he took a tree, cut off its branches, and having launched it in the ſea, made uſe of it for a ſhip. He alſo paid religious homage to two ſtones, which he had conſecrated to the wind and fire, and poured out libations to them of the blood of certain animals. This, ſays Banier, is the ſecond example of a worſhip paid to created beings; the ſun having been the firſt object of idolatry. After the death of theſe two brothers, their children, ſays Sanchoniathon, conſecrated to them mis-ſhapen pieces of wood and ſtone, which they adored, and inſtituted anniverſary feſtivals to their honour. This is the firſt time we find religious worſhip performed to dead men.

MEN—*Midſhipmen*, *Moot*, *Port*, *Queſt*, *Sides*, *Twelve*, *Veſtry* Men. See the adjectives.

Men, an abbreviation of the Italian adverb, *meno*, frequently uſed, in muſic, to announce a diminution; as *men forte*, leſs loud, &c.

Men *of May*, in *Geography*, rocks near the north coaſt of Scotland; 5 miles E. from Dunnat Head. N. lat. 58° 3'. W. long. 3° 3'.

MENA, Juan de, in *Biography*, a Caſtilian poet of great celebrity, was born at Cordova about the year 1411. It was not till the age of twenty-three that he diſcovered any propenſity towards literature; but then he made up for the time which he conſidered as having been loſt, and betook himſelf moſt paſſionately to his ſtudies, which he purſued firſt at Cordova, then at Salamanca, and afterwards at Rome. By his poetical talents he ſoon attracted a conſiderable degree of notice, and was patronized by ſeveral conſiderable perſons, and by Juan II. This king, though far from reſpectable as to character or talents, was a lover of learning, and an encourager of it, and appointed Juan de Mena his chronicler, communicated to him materials for the hiſtory of his reign, and took delight in beholding the progreſs of his works. The hiſtory was never finiſhed by de Mena; and he is chiefly known as a poet. The longeſt and moſt elaborate of his poems is entitled "El Labyrintho," commonly known by the title of "Las Trezientas," becauſe it conſiſts of three hundred ſtanzas. Mr. Southey, in the General Biography, has given a pretty full account of the plan and contents of this poem. It is ſaid that the king ordered him to add ſixty-five ſtanzas to his poem, for this *wiſe* reaſon, that there might be juſt as many as there are days in the year. Of theſe, twenty-four are printed at the end of the poem. They contain ſome execrable flattery of Juan, and an orthodox addreſs to the deity: the reſt is declamation againſt the factious nobles. Juan de Mena was probably not the author of theſe. He has been greatly praiſed in this country, and has been ſaid to unite the merits of Dante and Petrarca; but, according to Mr. Southey, the merits of Juan are excluſively what he may poſſeſs for his language; there is no glimpſe of imagination, and ſcarcely a trace of feeling. De Mena was author of two other poems, entitled “La Coronacion,” and “Tractado de Vicios y Virtudes.” This laſt he left unfiniſhed. There are many editions of theſe poems; the moſt complete are thoſe of Seville in 1528, and of Antwerp in 1552. In the royal library at Madrid there is an unfiniſhed abridgment of the Iliad, made by this author at the king's command. He died in 1456 at Tordelaguna, and was buried in the parochial church of that town. Gen. Biog.

Mena, in *Geography*, a town of Mexico, in the province of Nicaragua, on a river which runs into the lake of Nicaragua; 30 miles N.W. of St. Carlos.

Mena, in *Hindoo Mythology*, is the ſpouſe of Himalaya, and mother of Parvati, in one of her terreſtrial incarnations. The legend connected with this poetical fiction is very wild and fanciful. Himalaya, or the manſion of ſnow, is the Hindoo claſſical name of that vaſt chain of mountains that bounds India to the north, and embraces it with its eaſtern and weſtern arms, both extending to the ocean: one named, in Sanſcrit, Chandra-Sekra, or moon-crowned; and the other, which ſtretches weſtward to the mouths of the Indus, was called by the ancients Montes Parveti. The mountain Himalaya, being perſonified, is repreſented as a powerful monarch, bearing the moon as his crown, and being the ſource of all the good derivable from the many rivers that iſſue from him. Theſe mountains were the reſort of the god Siva; and his celeſtial conſort having no children by him, became regenerated in the daughter of Himalaya and Mena, and was named Parveti, or mountain-born. In this incarnation, ſhe, according to ſome legends, bore him two ſons: Ganeſa, the wiſeſt of deities, the god of prudence and policy, always invoked at the beginning of every literary work; and Kartikya, commander of the celeſtial armies. (See Kartikya, Siva, and Parvati.) The name Himalaya is uſually altered by European writers to Himmaleh; the range of mountains is otherwiſe called Hindookho. See theſe articles. See alſo Mera.

MENACES, in *Law*. See Threats.

MENACHA, in *Geography*, a town of Arabia, in Yemen; 36 miles W.S.W. of Sanaa.

MENACHANITE, or Menakanite. See Titanium.

MENADON Bay, or *Panadon*, in *Geography*, a bay which lies two leagues from Port Balena, or Port Nove, on the coaſt of Cape Breton iſland, at the ſouth part of the gulf of St. Laurence, having the iſland of Scatair, formerly called Little Cape Breton, oppoſite to it.

MENAGE, Gilles, in *Biography*, a diſtinguiſhed man of letters, was born at Angers in the year 1613, of which city his father was a king's advocate. Having completed his ſtudies, he was admitted to the bar at Angers in 1632. He remained here but a ſhort time, but went to Paris in the ſame year, where he purſued the legal profeſſion, till he became diſguſted with the chicanery connected with it, and adopted the eccleſiaſtical character, and thence gave himſelf up entirely to literary purſuits. He was ſoon diſtinguiſhed among his contemporaries as a man of wit and erudition; but by the uſual freedom of his remarks on different characters with whom he aſſociated, he was perpetually involved in quarrels. For ſome years he was an inmate in the houſe of cardinal de Retz; and when he quitted it, he took apartments in the cloiſter of Notre Dame, where he held weekly aſſemblies of the learned, to which he gave the title “Mercuriales.” Menage was in eaſy circumſtances. He had ſold a ſmall paternal eſtate for a life-annuity, enjoyed a conſiderable rent-charge upon two abbies, and obtained a royal penſion, which, however, was paid but a ſhort time. By theſe means he was enabled to cultivate literature in the way moſt agreeable to him, and to print ſome of his works at his own expence, which the bookſellers would probably not have choſen to undertake. By a witty ſatire, entitled “Requête des Dictionnaires,” he had precluded himſelf from an admiſſion into the French academy, though it was afterwards a great object of his ambition. In the former part of his life he was diſtinguiſhed by a prodigious memory; but in advanced age he experienced almoſt a total failure of that important faculty. Fortunately this defect was not permanent: he recovered it again, and recorded the grateful feelings of his heart in a Latin hymn to “Mnemoſyne.” He died at Paris in 1692, at the age of ſeventy-nine. His principal works are, 1. “Dictionnaire Etymologique, ou Origines de la Langue Françoiſe,” firſt printed in 1650, and reprinted in 1750, with corrections and additions by M. Jault, in two volumes, folio: it is regarded as a work of much real value, though in the firſt editions there are numerous errors and abſurd etymologies. 2. “Origines de la Langue Italienne:” in this he was aſſiſted by ſeveral members of the academy of Della Cruſca, of which he was an aſſociate. 3. “Miſcellanea,” in quarto, being a collection of pieces in proſe and verſe, and in different languages. He alſo publiſhed an edition of Diogenes Laertius, with notes and illuſtrations; “Juris Civilis Amœnitates;” “Notes on the Poems of Malherbe;” “Hiſtoire de Sable;” “Hiſtoria Mulierum Philoſophorum,” and ſeveral other pieces. Menage was an entertaining companion, by the variety of his knowledge, and the happy manner which he had of communicating it; but he was apt to be overbearing and opiniative. After his death, a “Menagiana” was compiled from notes of his converſation, anecdotes, remarks, &c. which has been ſeveral times reprinted. The laſt edition was publiſhed in 1715 by M. de la Monnoye, in four volumes, 12mo. Moreri.

In his admirable work, entitled “Dictionnaire Etymologique de la Langue Françoiſe,” and in his “Origine della Lingua Italiana,” curious inquirers after the muſical language of the middle ages will find more information than in any other Lexicons or philoſophical works with which we are acquainted, except in the Gloſſarium of Ducange.

Menage, *Fr.*, denotes a collection of animals; whence we have derived the word *menagery*.

Menage, in *Geography*, an iſland in the river Senegal.

MENAGIO, a town of Italy, in the department of the Lario; 15 miles N.N.E. of Como.

MENAI, a channel between the iſland of Angleſey and the county of Caernarvon.

MENAIS, in *Botany*, perhaps from μενω, *to ſtand undaunted againſt the attacks of an enemy*, becauſe this ſhrub is, as its ſpecific name *topiaria* expreſſes, able to bear clipping, and platting into bowers. No explanation of the name having been given, we offer the beſt that occurs to us. Linn. Gen. 95. Schreb. 130. Willd. Sp. Pl. v. 1. 997. Loefl. It. 306. Juſſ. 128. Lamarck Dict. v. 4. 90.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Aſperifoliæ*, Linn. *Borragineæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of three lax, concave, ſmall, pointed, ſtriated, permanent leaves. *Cor.* of one petal, ſalver-ſhaped; tube cylindrical, longer than the calyx; limb ſpreading, in five deep rounded ſegments. *Stam.* Filaments five, very ſhort; anthers awl-ſhaped, in the mouth of the corolla. *Piſt.* Germen ſuperior, roundiſh, depreſſed; ſtyle thread-ſhaped, erect, the length of the tube; ſtigmas two, oblong, acute. *Peric.* Berry globoſe, of four cells. *Seeds* ſolitary, nearly ovate, acute at one end.

Eſſ. Ch. Corolla ſalver-ſhaped. Calyx of three leaves. Berry of four cells. Seeds ſolitary.

1. M. *topiaria*. Bower Menais. Linn. Sp. Pl. 251.—Native of South America. A *ſhrub*, with round, ſomewhat hairy *ſtems*. *Leaves* alternate, ovate, undivided, rough. We have ſeen no figure nor ſpecimen of this plant. Linnæus mentions Aymen as the author of the genus. Juſſieu ſuſpects it not to be different from *Ehretia*, to which we have chiefly to object the three-leaved calyx. See Ehretia.

MENAKA, the name of a ſemi-divine female, in the Puranic romances of the Hindoos, frequently alluded to in their writings and converſation, proverbially, as highly beautiful and faſcinating. When the evil counſellor Indra, (ſee Indra,) jealous of the growing ſanctity of the aſcetic Viſwamitra (which ſee), reſolved to counteract his meritorious penance, he thought female blandiſhment the readieſt mode of debauching the ſaint; and ſelected Menaka, as a promiſing inſtrument through whom to effect his unholy purpoſe. The moral legend is thus alluded to in the 50th ſection of the firſt book of the Ramayana. (See that article.) “When the ſanctified aſcetic Viſwamitra, who had for thouſands of years been engaged in the moſt rigid mortifications, beheld Menaka the Apſara, ſent by Indra to debauch him, bathing, of ſurpriſing form, unparalleled in beauty, in appearance reſembling Sri (ſee Sri), her clothes wetted by the ſtream, exhibiting her faſcinating ſymmetry of frame; he, ſubdued by the arrows of Kandarpa (ſee Kandarpa), approached her; and five times five years, ſpent in dalliance with this ſeducing female, paſſed away like a moment. What!—exclaimed at length the reflecting ſage,—my wiſdom, my auſterities, my firm reſolution, all deſtroyed at once by a woman! Seduced by the crime in which Indra delights, am I ſtripped of the advantages ariſing from all my auſterities!” In this manner we occaſionally find ſound morality inculcated by the wild fables of the Hindoos. If we object to the warmth of language ſometimes obſervable in ſuch writings, we ſhould recollect that in fairneſs we ought not to eſtimate them by any ſtandard of European criticiſm; but ſhould advert to the uſages of the people, the times, and the countries, for whom and wherein they were promulgated.

MENALD Deer, a ſpecies of the common fallow-deer, beautifully variegated.

MENAMAN, in *Geography*, a town of Aſiatic Turkey, in Natolia, ſituated on the north coaſt of the gulf of Smyrna; 6 miles N.W. of Smyrna.

MENANDER, in *Biography*, the moſt celebrated of the Greek comic poets, was born at Athens in the year 342 B.C. He is conſidered as the perſon who introduced the new comedy, which refined upon the groſſneſs and licence of the old, and baniſhed living characters from the ſtage. He is repreſented as poſſeſſing every part of a perfect dramatic writer, *viz.* elegance of language, force and delicacy of ſentiment, and the true and humorous delineation of character. He was ſo much the poet of nature, that the grammarian Ariſtophanes once exclaimed, “O Menander and Nature, which of you copied from the workmanſhip of the other!” Quintilian praiſes him for the ſtrength and conſiſtency diſplayed in the characters of his dramas. Ovid predicts that the fame of Menander would be immortal. His fame extended as far as the Greek language; and we are informed by the elder Pliny, that the kings of Egypt and Macedonia gave him preſſing invitations to their courts, and even offered fleets for his ſafe conveyance. He preferred, however, a life of freedom in his native city; yet he could not be accounted a moral philoſopher. By Plutarch he is called “the chief prieſt of Love;” and Suidas gives him the character of one “mad after women.” Phædrus paints him as paying his compliments to Demetrius Phalereus at Athens, perfumed all over, with a flowing garment, and advancing with an affected and languid ſtep. He compoſed 108 comedies, eight of which obtained the theatrical prize. It is extraordinary that, of an author ſo much eſteemed as Menander was, nothing has come down to our time except ſome fragments, chiefly of the ſentimental kind, and generally of a gloomy and querulous tenour, which perhaps were characteriſtic only of the perſons into whoſe mouth they were put: and what remains of him does not mark ſo ſtrongly his own peculiar genius, as the taſte of thoſe ſelectors who have choſen his words to illuſtrate their own ideas. Thus, to the melancholy ſelector we owe the ſurvival of the ſad and peeviſh complaints on the many ſorrows to which fleſh is the natural heir. On the other hand, the ſtrikingly moral paſſages with which his works abounded alone caught the attention of the fathers of the primitive church, who found in the Greek comedian a ſtrain of piety ſo nearly approaching to their own faith and feelings, that all ideas of a preponderance of ſatire over moral precept muſt yield to evidence ſo irreſiſtible as the approbation of Clemens Alexandrinus and Euſebius. It is from theſe two ſources alone, the writings of the melancholy and pious man, that we are furniſhed with our ſpecimens of Menander. Happy had it been for us and the world, had the gay and the witty finiſhed the portrait of the bard, by tranſmitting to after-ages examples that would have enabled us to meaſure him by the ſtandards of humour, ſprightlineſs, and fancy. The ſuperiority of the Grecian dramatiſt was felt and acknowledged by Roman imitators; and Cicero frequently reprobates the prevailing partiality of his countrymen for ſuch foreign authors. Menander was drowned in the harbour of Piræus, in the year B.C. 293, at a period of his life when he had done enough to obtain immortality, and while the powers of his mind were unimpaired by age, and his genius ſufficiently ardent to do ſtill more. He is ſaid to have thrown himſelf into the ſea in a fit of jealouſy, occaſioned by his unfortunate competition with Philemon. He was vanquiſhed, as Aulus Gellius aſſerts, by the ſuperior intereſt rather than talents of his ſucceſsful rival; and the ſame writer relates, that, meeting him ſhortly after the conteſt had been decided, he aſked him, “If he did not bluſh at gaining the prize againſt him?” The fragments of Menander have been ſeveral times reprinted. The moſt complete edition is that of Le Clerc in 1709. To this, on account of many miſtakes in proſody, Bentley, in 1713, gave his “Emendationes in Menandri et Philemonis Reliquias.” Monthly Mag.

MENANDRIANS, in *Eccleſiaſtical Hiſtory*, the moſt ancient branch of Gnoſtics; thus called from Menander their chief, ſaid by ſome, without ſufficient foundation, to have been a diſciple of Simon Magus, and himſelf a reputed magician.

He taught, that no perſon could be ſaved, unleſs he were baptiſed in his name: and he conferred a particular ſort of baptiſm, which would render thoſe who received it immortal in the next world; exhibiting himſelf to the world, with the phrenſy of a lunatic more than the founder of a ſect, as a promiſed ſaviour. For it appears by the teſtimonies of Irenæus, Juſtin, and Tertullian, that he pretended to be one of the Æons ſent from the pleroma, or eccleſiaſtical regions, to ſuccour the ſouls that lay groaning under bodily oppreſſion and ſervitude; and to maintain them againſt the violence and ſtratagems of the dæmons that hold the reins of empire in this ſublunary world. As this doctrine was built upon the ſame foundation with that of Simon Magus, the ancient writers looked upon him as the inſtructor of Menander. See Simonians.

MENAN-FAN, in *Geography*, a town of Siam; 6 miles N. of Porſelon.

MENANGEABOW, a kingdom of Sumatra, being the principal ſovereignty of the iſland, which formerly comprehended the whole, and ſtill receives a ſhadow of homage from the moſt powerful of the other kingdoms, that have ſprung up from its ruins. This kingdom is the principal ſeat of empire of the Malays, and of the whole iſland. It lies near the centre, extending partly to the northward, but chiefly to the ſouthward of the equinoctial, about 60 or 100 miles. The country is, generally ſpeaking, a large plain, bounded by hills, clear of woods, and, comparatively, well cultivated. It has an eaſy communication with both ſides of the iſland, lying nearer to the weſtern coaſt, but having the advantage, to the eaſt, of the large rivers Racan, Indergeree, Siak, Jambee, and even Palembang, with which it is ſaid to have connection by means of a large lake, that gives ſource to the two laſt, as well as to the river of Cattown on the oppoſite ſide. Colonies of Malays from Menangeabow are ſettled on ſeveral branches of Jambee river, or rather thoſe ſmall rivers which run into it. Here they collect large quantities of gold. The name of Menangeabow is ſaid to be derived from the words "menang," to win, and "carbow," a buffalo; from a ſtory, which bears a very fabulous air, of a famous engagement on that ſpot between the buffalos and tigers, in which the former are reported to have gained a complete victory. The actual power and reſources of the ſultan are, at this day, ſcarcely ſuperior to thoſe of a common raja; yet he ſtill aſſerts all his ancient rights and prerogatives, which are not diſputed, as long as he refrains from attempting to carry them into force. His character is held in a ſacred light, and the obſcurity and air of myſtery which ſurround his court, together with the influence of the Mahometan prieſts, who regard him as the head of their religion, keep up this veneration. This empire is allowed to be very ancient; though when the Europeans firſt made diſcoveries in theſe parts, it was in its decline. Like the other people of Sumatra, thoſe of Menangeabow are entirely without records or annals. They are expert at writing in the Arabic character; but their literature amounts to nothing more than tranſcripts of the Koran, and "cabar," or hiſtoric tales, reſembling our old romances, but having leſs ingenuity. They are famous for compoſing ſongs, called "pantoon," which ſpread throughout the iſland. The arts, in general, are carried among them to a greater degree of perfection than by the other natives of Sumatra. The Malays are the ſole fabricators of the gold and ſilver *filagree;* which ſee. Menangeabow has alſo been celebrated for its conſiderable traffic in gold, lying in the midſt of the mines, where it is chiefly produced. Much cloth is wrought in, and exported from it. Here alſo have been manufactured, from the earlieſt times, arms for their own uſe, and for the ſupply of the northern inhabitants of the iſland, who are the moſt warlike. Their guns are thoſe pieces called matchlocks, nor is the improvement of ſprings and flints yet adopted by them; their barrels are well tempered, and of the juſteſt bore. Powder is made by them in great quantity, but it is defective in ſtrength. Beſides guns, they have other arms, which are, for the moſt part, weapons of a make between that of a ſcimitar and a knife. Their cruſes are a ſpecies of dagger of a particular conſtruction, and are worn by all deſcriptions of people. They have other implements of warfare, called "Ranjows," which are ſharp-pointed ſtakes of bamboo, of different lengths, ſtuck into the ground, in order to penetrate the naked feet or body of an enemy. They are made uſe of in caſes of flight, to annoy and retard the purſuers, and planted in the path-ways, or among the long graſs, by the vanquiſhed party as they run. They are alſo diſpoſed in the approaches to fortified dooſoons. Their wars are generally carried on rather in the way of ambuſcade, and ſurpriſe of ſtraggling parties, than open combat. The ſoldiers have no pay, but the plunder is thrown into a common fund, and divided.

The people of Menangeabow are all Mahometans, and in that reſpect diſtinguiſhed from the other inland inhabitants of the iſland. This country is looked upon as the ſupreme ſeat of that religion; and next to a voyage to Mecca, which ſome Sumatrans have undertaken, to have been at Menangeabow ſtamps a man learned and of ſuperior ſanctity. With the change of their religion, the people of this country altered their language, laws, cuſtoms, and manners. This was effected by the ſettlement of the Malays among them.

By late accounts it appears, that the kingdom of Menangeabow, even in its limited ſtate, is rent into various ſovereignties. Marſden's Sumatra.

MENAPII, in *Ancient Geography*, a people who, in the time of Cæſar, inhabited the banks of the Lower Rhine. They were bounded on the N. and E. by the Moſa, and on the W. by the Scaldis. Their country correſponded to Brabant.

MENARD, Leon, in *Biography*, an hiſtorical writer, was born at Taraſcon in 1706. It is imagined he was educated for the legal profeſſion, though he certainly did not purſue it to any great extent, but devoted moſt of his time and talents to the ſtudy of hiſtory and antiquities. He obtained a place in the Academy of Inſcriptions and Belles Lettres, and from that time paſſed his life chiefly at Paris, where he died in indigent circumſtances in 1767. His principal works are, "A Hiſtory of the Biſhops of Niſmes," in two vols. 12mo.: "L'Hiſtoire civile eccleſiaſtique et litteraire de la Ville de Niſmes," which conſiſted of ſeven volumes 4to., and was the product of many laborious years. In depth of reſearch, and abundance of curious matter, this is ſaid to be ſurpaſſed by few topographical works. As a relaxation from more ſerious labours, he compoſed a romance, entitled "Les Amours de Caliſthene et d'Ariſtoclie:" the ſcene is laid in Ancient Greece, and it conſiſts in the delineation of Grecian manners, which ſubject is expreſsly treated on in another work of our author, entitled "Mœurs et Uſages des Grecs," which was very much read, and proved honourable to his induſtry and learning. He next carried his reſearches into French hiſtory, and publiſhed, as the reſult of his labours, a collection of "Pieces fugitives pour ſervir a l'Hiſtoire de la France," in three vols. 4to. Another, and probably his laſt publication, was entitled "A Refutation of the Arguments of Voltaire againſt the Authenticity of the Political Teſtament of Cardinal Richelieu." Gen. Biog.

MENARUOLO, in *Geography*, a town of Italy; 17 miles N.W. of Verona.

MENAS, St., an iſland in the Grecian Archipelago, about ſix miles in circumference. N. lat. 37° 33′. E. long. 26° 30′.

MENASSEH, Ben Israel, in *Biography*, a celebrated rabbi, who flouriſhed in the ſeventeenth century, was a native of Spain, and born very early in that century. His father, after having been cruelly tortured by the Spaniſh Inquiſition, and ſtripped of his property, eſcaped into Holland with his wife and ſons, of whom Ben Iſrael, the ſubject of this article, was one. Here he was placed under a learned preceptor, Iſaac Uſieli, and purſued his ſtudies with ſuch diligence and ſucceſs, that at the age of eighteen he was ſo deeply ſkilled in Hebrew and theology, that he was judged fully qualified to ſucceed his tutor as preacher and expounder of the Talmud in the ſynagogue of Amſterdam, a poſt which he occupied with high reputation for many years. He was not quite twenty-eight years of age, when he publiſhed in the Spaniſh language the firſt part of his work entitled "Conciliador:" of which was publiſhed a Latin verſion, in the following year, by Dionyſius Voſſius, entitled "Conciliator, ſive de Convenientia Locorum S. Scripturæ, quæ pugnare inter ſe videntur, Opus ex Vetuſtis et Recentioribus omnibus Rabbinis magna Induſtria ac Fide congeſtum." This work ſhews that its author had a profound and intimate acquaintance with the Old Teſtament writings, and it procured for him the eſteem and admiration of all the learned, as well Chriſtians as Jews. It was recommended to the notice of biblical ſcholars by the learned Grotius.

Notwithſtanding the learning and diligence of our rabbi, he found that the expences of a large and growing family could not be defrayed by the ſalary attached to his appointment, and engaged in the mercantile line of buſineſs; and he alſo ſet up a printing-preſs in his own houſe, at which he printed three editions of the Hebrew bible, and a number of other books. Under the protectorate of Cromwell, he came over to England, in order to ſolicit leave for the ſettlement of the Jews in this country. Here he met with a favourable reception from the protector and his parliament, and ſucceeded in obtaining greater and more important privileges for his nation than they had ever enjoyed before in this country, and in 1656 publiſhed an "Apology for the Jews," in the Engliſh language. This piece was afterwards publiſhed in the ſecond volume of the collection of ſcarce and curious tracts entitled "The Phœnix," &c. Menaſſeh died at Amſterdam about the year 1659, and left a ſon, who inherited his printing-preſs, buſily employed in printing ſome of his father's works. The rabbi was reſpected and eſteemed as well for his moral virtues as for his great learning, and had been long in habits of correſpondence and intercourſe with ſome of the moſt learned men of his time, among whom were the Voſſii, Epiſcopius, and Grotius. The following are his principal works independently of that already noticed: 1. An Edition of the Hebrew Bible, two vols. 4to.: 2. The Talmud corrected, with Notes: 3. De Reſurrectione Mortuorum: and 4. Spes Iſraelis, dedicated to the parliament of England in the year 1650; it was originally publiſhed in Spaniſh, and afterwards tranſlated into the Hebrew, German, and Engliſh, one object of which is to prove that the ten tribes are ſettled in America. He was author likewiſe of numerous other pieces. Moreri. Univerſal Hiſtory.

MENAT, in *Geography*, a town of France, in the department of Puy-de-Dôme, and chief place of a canton, in the diſtrict of Riom; 24 miles N.N.W. of Riom. The place contains 1748, and the canton 10,014 inhabitants, on a territory of 180 kiliometres, in 11 communes.

MENCKE, Lewis Otho, in *Biography*, was born in 1644, at Oldenburg, in Weſtphalia, of which city his father was a ſenator, and alſo in trade. After ſtudying at and viſiting ſeveral of the univerſities in Germany and Holland, he was appointed profeſſor of moral philoſophy at Leipſic in 1668, He was, in the courſe of an active and well ſpent life, five times rector of the univerſity, and occupied his poſt as profeſſor till his death, in 1707. He was editor of ſeveral learned works, and was the planner of the periodical work called the Leipzig Journal, but better known by the name "Acta Eruditorum," of which, with the aſſiſtance of other learned men, he publiſhed thirty volumes. Moreri.

Mencke, John Burchard, ſon of the preceding, was born at Leipſic in 1674, and in 1699 we find him appointed to the profeſſorſhip of hiſtory, an office in which he acquired a high reputation by his lectures. He was alſo hiſtoriographer and aulic counſellor to Frederic Auguſtus of Saxony, king of Poland; a member of the Academy of Berlin, and of the Royal Society of London. He died at Leipſic in 1732, leaving behind him ſeveral very learned and uſeful publications on hiſtorical and philoſophical ſubjects. One of the moſt remarkable of theſe conſiſted of two Latin declamations, "De Charlataneria Eruditorum," which were tranſlated into various languages. He had a large ſhare in, and was the original projector of a German "Dictionary of Learned Men," but his chief undertaking was a collection of the German hiſtorians, under the title of "Scriptores rerum Germanicarum, ſpeciatim Saxonicarum," in three volumes folio. He publiſhed an enlarged edition of Lenglet's "Methode pour etudier l'Hiſtoire avec un Catalogue des principaux Hiſtoriens," and after the death of his father, he continued the Leipſic journal to thirty-three volumes more. Moreri.

MEND, in *Geography*, a town of Perſia, in the province of Mekran, at the union of the Mekſhid and the Nehenk, which hence take the name of Mend, and run into the Indian ſea. The town is diſtant 40 miles S.W. from Kidge. N. lat. 25° 50′. E. long. 63° 30′.

MENDÆANS, in *Eccleſiaſtical Hiſtory*. See Hemerobaptists.

MENDAMA, in *Geography*, a town of the iſland of Ceylon; 18 miles N. of Candi.

MENDAVIA, a town of Spain, in Navarre; 8 miles E.S.E. of Viana.

MENDE, a town of France, and principal place of a diſtrict, in the department of the Lozére; ſituated on an eminence, near the Lot; before the revolution the ſee of a biſhop; 49 miles W. of Privas. The place contains 5014, and the canton 10,610 inhabitants, on a territory of 305 kiliometres, in ten communes. N. lat. 44° 31′. E. long. 3° 34′.

MENDELI, a fortreſſed town of the Arabian Irak, on the frontiers of Perſia; 50 miles N.E. of Bagdad. N. lat. 33° 54′. E. long. 45°.

MENDELSOHN, Moses, in *Biography*, a Jewiſh philoſopher, and elegant writer in the laſt century, was born at Deſſau, in Anhalt, in the year 1729. His father was a ſchoolmaſter, and undertook the education of his ſon. He was brought up to buſineſs, but devoted every hour he could claim as his own to literature, in which he greatly excelled, and obtained as a ſcholar a diſtinguiſhed reputation; but it was, unfortunately, at the expence of his health. He was alſo deſtined to a ſtate of extreme penury: at the age of fourteen, he travelled on foot to Berlin, where he lived in indigence and obſcurity, and frequently in want of the neceſſaries of life. At length he got employment from a rabbi as a tranſcriber of MSS., who, at the ſame time that he afforded him the means of ſubſiſtence, liberally initiated him into the myſteries of the theology, the juriſprudence, and ſcholaſtic philoſophy of the Jews. The ſtudy of philoſophy and general literature became from this time his favourite purſuit, but the fervours of application to learning were by degrees alleviated and animated by the conſolations of literary friendſhip. He formed a ſtrict intimacy with Iſrael Moſes, a Poliſh Jew, who, without any advantages of education, had become an able, though ſelf-taught, mathematician and naturaliſt. He very readily undertook the office of inſtructor of Mendelſohn, in ſubjects of which he was before ignorant, and taught him the Elements of Euclid from his own Hebrew verſion. "The ſingular ſpectacle of the two youthful rabbies, circumſtanced as they were, ſitting in the corner of retired ſtreets, the one with a Hebrew Euclid, inſtructing the other, who was hereafter to be claſſed among the moſt eminent literati of his country, may inſtruct the young and the indigent, that the cold touch of poverty can never palſy the ſublime efforts of reſolute genius." The intercourſe between theſe young men was not of long duration, owing to the calumnies propagated againſt Iſrael Moſes, which occaſioned his expulſion from the communion of the orthodox; in conſequence of this, he became the victim of a gloomy melancholy and deſpondence, which terminated in a premature death. His loſs, which was a grievous affliction to Mendelſohn, was in ſome meaſure ſupplied by Dr. Kiſch, a Jewiſh phyſician, by whoſe aſſiſtance he was enabled to attain a competent knowledge of the Latin language. In 1748 he became acquainted with another literary Jew, *viz.* Dr. Solomon Gumperts, by whoſe encouragement and aſſiſtance he attained a general knowledge of the living and modern languages, and particularly the Engliſh, by which he was enabled to read the great work of our immortal Locke in his own idiom, which he had before ſtudied through the medium of the Latin language. About the ſame period he enrolled the celebrated Leſſing among his friends, to whom he was likewiſe indebted for aſſiſtance in his literary purſuits. The ſcholar amply repaid the efforts of his inſtructor, and ſoon became his rival and his aſſociate, and after his death the defender of his reputation, even at the expence of his own life: for when Leſſing was charged with Atheiſm by M. Jacobi, a German writer, he rouſed all his powers in his juſtification, and entered ſo vehemently into the controverſy, as to exhauſt an already feeble and delicate frame: his whole nervous ſyſtem became ſo completely deranged, that ſevere ſtudy, for a ſhort time only, produced fainting fits. To avoid theſe, when he found them approaching, Mendelſohn would inſtantly abandon what he was about, and baniſh all thought from his mind. Being aſked how he contrived to exiſt without thinking, and exerciſing the powers of reflection, he replied, "I retire to the window and count the tiles upon the roof of my neighbour's houſe." He died at the age of fifty-ſeven, highly reſpected and beloved by a numerous acquaintance, and by perſons of very different opinions. When his remains were conſigned to the grave, he received thoſe honours from his nation which are commonly paid to their chief rabbies. As an author, the firſt piece was publiſhed in 1755, entitled "Jeruſalem," in which he maintains that the Jews have a revealed law, but not a revealed religion, but that the religion of the Jewiſh nation is that of nature. His work entitled "Phœdon, a Dialogue on the Immortality of the Soul," in the manner of Plato, gained him much honour: in this he preſents the reader with all the arguments of modern philoſophy, ſtated with great force and perſpicuity, and recommended by the charms of elegant writing. From the reputation which he obtained by this maſterly performance, he was entitled by various periodical writers the "Jewiſh Socrates." It was tranſlated into French in 1773, and into the Engliſh in 1789. Among his other works, which are all creditable to his talents, he wrote "Philoſophical Pieces;" "A Commentary on Part of the Old Teſtament;" "Letters on the Senſation of the Beautiful." Gen. Biog.

MENDEN, in *Geography*, a town of Weſtphalia; 42 miles N E. of Cologne.

MENDES, or Myndes, a town of Aſiatic Turkey, in Natolia, in a bay of the Archipelago; anciently called "Myndus;" 20 miles S. of Milets. N. lat. 33 5'. E. long. 27° 10'.

Mendes, in *Ancient Geography*, a town of Egypt, near the mouth of one of the eaſtern branches of the Nile, between Sebennytus to the weſt, and Tanés to the eaſt. The arm of the Nile on which it was ſeated was denominated the *Mendeſian.* This ancient city was famous for its temples, and the indecency of the worſhip paid there to the ram. When the ſacred animal dies, the Mendeſian province ſolemnizes his death by a general mourning. Herodotus, lib. ii. *Euterpe.*

Mendes, in *Mythology*, an Egyptian deity, who was worſhipped as the emblem of the ſun. The Egyptians having diſcovered that they owed the fertility of their country to the influence of the ſun, worſhipped him under the name of Mendes, which ſignifies "very fruitful." Accordingly they conſecrated the goat to him, as the moſt prolific of all animals. This animal was fed in the temple of Mendes, as the living image of the God whom he repreſented. The Greeks gave to Mendes the name of *Pan;* which ſee.

MENDESCAO, in *Geography*, a town of Naples, in Calabria Citra; 3 miles W. of Coſenza.

MENDEZ, Moses, in *Biography*, an Engliſh poet and dramatic writer, who flouriſhed in the laſt century, and died about the year 1758. He was of Jewiſh extraction, though he had abandoned the religion of his fathers. He was author of ſeveral poems in Dodſley's Collections.

MENDHAM, in *Geography*, a townſhip of America, in Morris county, New Jerſey; ſix miles W. of Morriſtown.

MENDICANTI, the title of one of the muſic ſchools at Venice for girls, known by the name of conſervatorios. The maeſtro di capella of the hoſpital de Mendicanti, in 1770, was the worthy Bertoni, by whoſe favour we were admitted into the interior of this admirable ſeminary, to an extra concert of two hours, by the beſt vocal and inſtrumental performers of this hoſpital: it was really curious to *ſee,* as well as to *hear* every part of this excellent concert, performed by females, violins, tenors, baſes, harpſichord, French horns, and even double baſes; and there was a prioreſs, a perſon in years, who preſided: the firſt violin was very well played by Antonia Cubli, of Greek extraction; the harpſichord ſometimes by Franceſca Roſſi, maeſtra del coro, and ſometimes by others: theſe young perſons frequently change inſtruments. The ſinging was truly excellent in different ſtyles; and the whole was very judiciouſly mixed; no two airs of a ſort followed each other, and there ſeemed to be great decorum and good diſcipline obſerved in every particular; for theſe admirable performers, who are of different ages, all behaved with great propriety, and ſeemed to be well educated. It was here that the two celebrated female performers, the Archiapate, afterwards ſignora Guglielmi, and ſignora Maddalena Lombardini, afterwards madame Sirman, who received ſuch great and juſt applauſe in England, had their muſical inſtructions.

MENDICANTS, Beggars, a term applied to ſeveral orders of religious, who live on alms and go a begging from door to door.

The religious ſociety diſtinguiſhed by this appellation ſurpaſſed all the reſt in the purity of its manners, the extent of its fame, the number of its privileges, and the multitude of its members. Its order was firſt eſtabliſhed in the 13th century, and the members of it, by the tenor of their inſtitution, were to remain entirely deſtitute of all fixed revenues and poſſeſſions; though in proceſs of time their number became a heavy tax upon the people. Innocent III. was the firſt of the popes who perceived the neceſſity of inſtituting ſuch an order, and accordingly he gave ſuch monaſtic ſocieties, as made a profeſſion of poverty, the moſt diſtinguiſhing marks of his protection and favour. They were alſo encouraged and patronized by the ſucceeding pontiffs, when experience had demonſtrated their public and extenſive uſefulneſs. But when it became generally known, that they had ſuch a peculiar place in the eſteem and protection of the rulers of the church, their number grew to ſuch an enormous and unwieldy multitude, and ſwarmed ſo prodigiouſly in all the European provinces, that they became a burthen, not only to the people, but to the church itſelf. The great inconvenience that aroſe from the exceſſive multiplication of the Mendicant orders was remedied by Gregory X. in a general council, which he aſſembled at Lyons, in 1272. For here all the religious orders, that had ſprung up after the council held at Rome, in 1215, under the pontificate of Innocent III. were ſuppreſſed; and the extravagant multitude of Mendicants, as Gregory called them, was reduced to a ſmaller number, and confined to the four following ſocieties or denominations, *viz.* the Dominicans, the Franciſcans, the Carmelites, and the Auguſtins, or the hermits of St. Auguſtin.

As the pontiffs allowed theſe four Mendicant orders the liberty of travelling wherever they thought proper, of converſing with perſons of every rank, of inſtructing the youth and multitude wherever they went; and as theſe monks exhibited, in their outward appearance and manner of life, more ſtriking marks of gravity and holineſs than were obſervable in the other monaſtic ſocieties, they aroſe all at once to the very ſummit of fame, and were regarded with the utmoſt eſteem and veneration through all the countries of Europe. The enthuſiaſtic attachment to theſe ſanctimonious beggars went ſo far, that, as we learn from the moſt authentic records, ſeveral cities were divided, or cantoned, into four parts, with a view to theſe four orders; the firſt part being aſſigned to the Dominicans, the ſecond to the Franciſcans, the third to the Carmelites, and the fourth to the Auguſtinians. The people were unwilling to receive the ſacrament from any other hands than thoſe of the Mendicants, to whoſe churches they crowded to perform their devotions, while living, and were extremely deſirous to depoſit there alſo their remains, after death; nor did the influence and credit of the Mendicants end here; for we find in the hiſtory of this, and of the ſucceeding ages, that they were employed, not only in ſpiritual matters, but alſo in temporal and political affairs of the greateſt conſequence, in compoſing the differences of princes, concluding treaties of peace, concerting alliances, preſiding in cabinet councils, governing courts, levying taxes, and other occupations, not only remote from, but abſolutely inconſiſtent with, the monaſtic character and profeſſion. However, the power of the Dominicans and Franciſcans greatly ſurpaſſed that of the other two orders; inſomuch that theſe two orders were, before the Reformation, what the Jeſuits have been ſince that happy and glorious period, the very ſoul of the hierarchy, the engines of the ſtate, the ſecret ſprings of all the motions of the one and the other, and the authors and directors of every great and important event, both in the religious and political world. By very quick progreſſion their pride and confidence arrived at ſuch a pitch, that they had the preſumption to declare publicly, that they had a divine impulſe and commiſſion to illuſtrate and maintain the religion of Jeſus; they treated with the utmoſt inſolence and contempt all the different orders of the prieſthood; they affirmed, without a bluſh, that the true method of obtaining ſalvation was revealed to them alone; proclaimed, with oſtentation, the ſuperior efficacy and virtue of their indulgences; and vaunted, beyond meaſure, their intereſt at the court of heaven, and their familiar connections with the Supreme Being, the Virgin Mary, and the ſaints in glory. By theſe impious wiles, they ſo deluded and captivated the miſerable and blinded multitude, that they would not entruſt any other but the Mendicants with the care of their ſouls. They retained their credit and influence to ſuch a degree, towards the cloſe of the 14th century, that great numbers of both ſexes, ſome in health, others in a ſtate of infirmity, and others at the point of death, earneſtly deſired to be admitted into the Mendicant order, which they looked upon as a ſure and infallible method of rendering heaven propitious. Many made it an eſſential part of their laſt wills, that their bodies after death ſhould be wrapped in old ragged Dominican or Franciſcan habits, and interred among the Mendicants. For ſuch were the barbarous ſuperſtition and wretched ignorance of this age, that people univerſally believed, they ſhould readily obtain mercy from Chriſt, at the day of judgment, if they appeared before his tribunal aſſociated with the Mendicant friars.

About this time, however, they fell under an univerſal odium; but being reſolutely protected againſt all oppoſition, whether open or ſecret, by the popes, who regarded them as their beſt friends, and moſt effectual ſupports, they ſuffered little or nothing from the efforts of their numerous adverſaries. In the 15th century, beſides their arrogance, which was exceſſive, a quarrelſome and litigious ſpirit prevailed among them, and drew upon them juſtly the diſpleaſure and indignation of many. By affording refuge, at this time, to the Beguins in their order, they became offenſive to the biſhops, and were hereby involved in difficulties and perplexities of various kinds. They loſt their credit in the 16th century by their ruſtic impudence, their ridiculous ſuperſtitions, their ignorance, cruelty, and brutiſh manners. They diſcovered the moſt barbarous averſion to the arts and ſciences, and expreſſed a like abhorrence of certain eminent and learned men, who endeavoured to open the paths of ſcience to the purſuits of the ſtudious youth, recommended the culture of the mind, and attacked the barbariſm of the age in their writings and diſcourſe. Their general character, together with other circumſtances, concurred to render a reformation deſirable, and to accompliſh this happy event. Moſheim's Eccl. Hiſt. vol. iii. paſſim.

Among the number of Mendicants are alſo ranked the Capuchins, Recollects, Minims, and others, who are branches or derivations from the former.

MENDING, in *Agriculture*, a term uſed to ſignify the improving of land by means of manure.

MENDIP HILLS, in *Geography*, a range of hills, in the county of Somerſet, near the city of Wells; celebrated for mines of lead and coals.

MENDLING, a town of Auſtria, on a river of the ſame name, which runs into the Salza, near Keifling, in Stiria; the town is 15 miles diſtant S.S.E. from Bavarian Waidhoven.

MENDOCINO, CAPE, a cape of North America, on the coaſt of New Albion; off the cape lie ſome rocky iſlets and ſunken rocks, about a league from the ſhore. This cape is rendered remarkable by being the higheſt on the ſea-ſhore of this part of New Albion. The mountains behind it are elevated and break into ſeparate hills, riſing abruptly and divided by many deep chaſms. On both the hills and chaſms are ſome few dwarf trees. The general ſurface exhibits vegetables of a dull green colour, interſperſed with perpendicular ſtrata of red earth or clay. N. lat. 40° 19'. E. long. 235 53'.

MENDOLCIA, a town of Naples, in Calabria Citra; three miles W. of Bova.

MENDON, a poſt-town of America, in Worceſter county, Maſſachuſetts; 37 miles S.W. of Boſton. The townſhip, called "Quanſhipauga" by the Indians, was incorporated in 1667, and contains two congregational pariſhes, a ſociety of Friends, and 1628 inhabitants. On the S. it is bounded by the ſtate of Rhode iſland; and it is watered by the Charles and Mills rivers, and other ſtreams, which turn ſeveral mills.

MENDOW, a town of Hindooſtan, in Guzerat; 33 miles E. of Amedabad.

MENDOZA, DON INIGO LOPEZ DE, SENOR DE HITA Y BUYTRAGO, firſt marques de Santillana, and Conde del Real de Manzanares, in *Biography*, was born in Auguſt 1398; he married in 1418 Dona Catalina de Figueroa, and died in 1458. During the reign of Juan II. his courage was conſpicuous, and his prudence ſtill more ſo, as he aggrandized himſelf without injuring his reputation. He is mentioned not only as a contributor to the literature of his own country, but as an early patron of it. His works are as follow: 1. Maxims of morality in verſe, written by deſire of Juan II. for the inſtruction of his ſon Henrique. This book has paſſed through ten editions at leaſt, and is ſtill reckoned one of the rareſt in that language. 2. Proverbs which old women repeat by the fire-ſide: this is ſuppoſed to be the oldeſt collection of proverbs in any modern language. 3. A letter addreſſed to D Pedro, ſon of the Infante D. Pedro of Portugal. This letter, which the marques ſent with a collection of his own poems, is regarded as one of the moſt valuable documents for the literary hiſtory of Spain, as containing an account of all the Spaniſh poets, whoſe works the writer had either ſeen or heard of. Beſides theſe, many of the marques' poems are in the "Cancionero General," and others in MSS.: among them is a poem upon the "Creation," conſiſting of 333 ſtanzas, in the ſame metre as the "Trezientas" of MENA, which ſee. He firſt introduced the ſonnet into Spaniſh poetry.

MENDOZA, D. DIEGO HURTADO DE, ſon of Lopez de Mendoza, firſt marques de Mondejar, was born at Granada about 1503, and there, during his childhood, he acquired a practical knowledge of Arabic, which he continued to cultivate through life. He ſtudied the Greek language very ſucceſsfully at Salamanca, and was a ſoldier in the Italian wars. While engaged in the military ſervice, he ſpent every winter, while the troops were inactive and in quarters, at Rome, or Padua, or ſome other Italian univerſity, where he could enjoy and profit by the ſociety of learned men. He was employed as ambaſſador by Charles V. in the moſt important tranſaction of his whole reign, at the council of Trent, at Venice, and at the papal court. At Venice he exerted himſelf to recover Greek MSS. He obtained many of the writings of St. Baſil the Great, and of Gregory Nazianzen, the works of Cyril of Alexandria, and the more valuable remains of Archimedes, of Hero and of Appian: all theſe, with copies alſo of cardinal Beſarion's and of other collections, he left to the Eſcurial library. Don Diego was ſuperſeded at Rome in 1551 to ſatisfy the papal court. He continued ſome years one of Philip's counſellors, but was at length baniſhed from his court. He retired to Granada, and there upon the ſpot compoſed his hiſtory of the war againſt the Moriſcoes: here he amuſed himſelf with literature during the remainder of his life. In 1574 he obtained leave to return to Madrid, and died in a few days after his arrival. None of his works were publiſhed during his lifetime. In 1610 a volume of his poems was collected by J. D. Hidalgo, the king's chaplain, who ſuppreſſed the comic and ſatiric pieces, which were numerous. His hiſtory of the Moriſcoes was publiſhed the ſame year by Luis Tribaldos; part of the third book having been loſt, was ſupplied by the count de Portalegre, D. Joam de Silva. It has been reprinted ſeveral times, and is reckoned the very beſt ſpecimen of hiſtorical compoſition in the Spaniſh language. The ſtory of Lazarillo de Tormes, which has been tranſlated into almoſt every European tongue, is attributed to this author as a youthful work, written at Salamanca. Others impute it to Juan de Ortega. Gen. Biog.

MENDOZA, PETER GONZALEZ DE, a Spaniſh cardinal, and archbiſhop of Toledo, was born in 1428. He acquired his high preferments in the church by his talents as a ſtateſman. Pope Sixtus IV. made him cardinal. He died in 1495: as a literary man he is ſaid to have tranſlated the Iliad and Æneid, alſo Salluſt, into the Spaniſh. Another perſon of the ſame name, an Auguſtine friar, was ſent by the king of Spain as ambaſſador to the emperor of China in 1584. After obtaining ſeveral inſtances of preferment, he was appointed, in 1608, biſhop of Popayan in the Weſt Indies. He is known as an author by a hiſtory of China, written in the Spaniſh language. Moreri.

MENDOZA, in *Geography*, a juriſdiction of Chili, in South America, ſubject to the vice-royalty of Buenos Ayres. It has a town of the ſame name, which lies on the E. ſide of the Cordilleras, about 50 leagues from Santiago. It is ſituated on a plain, adorned with gardens, and ſupplied with water by means of canals. The town contains about 100 families, half Spaniards and half Indians, together with a college founded by the Jeſuits, a parochial church, and three convents. This juriſdiction comprehends alſo the towns of St. Juan de la Frontera, on the E. of the Cordilleras, and about 30 leagues N. of Mendoza, and St. Louis de Loyola, about 50 miles E. of Mendoza; the latter is ſmall, but has a pariſh church, a Dominican convent, and a college founded by the Jeſuits. S. lat. 33° 25'. W. long. 69° 47'.

MENDOZA, a river which riſes in the Cordilleras of the Andes; over which is a natural bridge of rocks, from the vaults of which hang icicles, formed of the water as it drops from the rocks. The bridge is broad enough to admit of three or four carts abreaſt. Near it is another bridge, called the bridge of the Incas, betwixt two rocks, and elevated a great height from the river.

MENDRA, a ſmall iſland in the Indian ſea, near the coaſt of Africa. S. lat. 2° 15'.

MENDRAH, a town of Fezzan, in a diſtrict or province of the ſame name, nearly S. from Mourzouk, and diſtant from it about 60 miles. Although much of the land is a continued level of hard and barren ſoil, the quantity of "Trona," a ſpecies of foſſil alkali that floats on the ſurface, or ſettles on the banks of its numerous ſmoaking lakes, has given it a higher importance than that of the moſt fertile diſtricts. Of this valuable produce, great quantities are annually brought by the merchants of Fezzan to Tripoli, from whence it is ſhipped for Turkey and Tunis, and the dominions of the emperor of Morocco. The people of the latter employ it as an ingredient in the dye of the leather, for which they are famous, and in that of the woollen caps that are worn by the Arabs and the Moors as the baſis of their turbans. Proceedings of the African Aſſociation, &c. 1790.

MENDRISIO, or **Mendris**, a ſmall well-built market-town of Italy, in the department of the Verbano, late the capital of a ſmall bailiwick of the ſame name, lying between the lakes of Como and Lugano, which is extremely fertile, and contains 19 pariſhes, and about 16,000 inhabitants. The town is about 26 miles N.N.W. of Milan, and 7 miles from Como. N. lat. 45° 45′. E. long. 9° 0′.

MENDURAGU, a town of Ruſſia, in the government of Viburg, on the borders of Finland; 48 miles W.N.W. of Velmanſtrand.

MENEDEMUS, in *Biography*, a Greek philoſopher, who flouriſhed towards the cloſe of the fourth century before Chriſt, was a native of Eretria, in the iſland of Eubœa. He was of the Eliac *School* (which ſee), which he afterwards transferred to his native city, and gave it the name of *Eretrian*. Menedemus, though nobly deſcended, was obliged, through poverty, to ſubmit to a mechanical employment, either as tent-maker or maſon. He formed an early intimacy with Aſclepiades, who was a fellow-labourer with him in his humble occupation. Having minds more adapted to ſtudy than manual labour, they reſolved to devote themſelves to the purſuit of philoſophy. For this purpoſe, they left their native country, and went to Athens, where Plato preſided in the academy. (See Asclepiades.) In his own ſchool at Eretria he neglected thoſe forms which were commonly obſerved in places of this kind, and allowed his hearers and diſciples to attend him in whatever poſture they pleaſed, ſtanding, walking, or ſitting. At firſt Menedemus was received by the Eretrians with great contempt; and, on account of the vehemence with which he diſputed, obtained the appellations of "Cur" and "Madman." But he afterwards roſe into high eſteem, and was entruſted with a public office, to which was annexed an annual ſtipend of 200 talents. He diſcharged the truſt with fidelity and reputation, but accepted only of a fourth part of the ſalary attached to the appointment. He was ſent upon ſeveral embaſſies to Ptolemy, Lyſander, and Demetrius, and rendered his countrymen eſſential ſervices, by obtaining a diminution of their tribute, and reſcuing them from other burdens. Antigonus entertained a perſonal reſpect for him, and profeſſed himſelf one of his diſciples. His intimacy with this prince created a ſuſpicion among his countrymen, that he had a ſecret intention to betray their city into his hands. To ſave himſelf he fled to Antigonus, and ſoon after died, in the eighty-fourth year of his age. It is thought he precipitated his end by abſtaining from food for ſeveral days, being oppreſſed with grief, as well on account of the ingratitude of his countrymen, as on his diſappointment in not being able to prevail on Antigonus to reſtore the loſt liberties of his country. Menedemus poſſeſſed great talents as a philoſopher and diſputant. He declared his opinions with freedom, inveighed with ſeverity againſt the vices of others, and, by the purity of his own manners, commanded univerſal reſpect. He obſerved the ſtricteſt moderation in the manner of his living. His entertainments, which were frequented by many philoſophers and men of diſtinction, were ſimple and frugal, conſiſting chiefly of vegetables. Enfield's Hiſt. vol. i.

Menedemus, a Cynic philoſopher, was a native of Lampſacus, who lived during the reign of Antigonus, king of Macedon. At this period, the peculiarities of the Cynic ſect had been carried to an abſurd and ridiculous extreme. In Menedemus, the ſpirit of the ſect was degenerated to downright madneſs: at firſt, its members being no more than ſevere public monitors, commanded attention and reſpect, but their freedom in cenſuring had degenerated into ſcurrility, and the conduct of Menedemus ſurpaſſed, in folly and extravagance, every thing that had gone before him. He appeared in public dreſſed in a black cloak, with an Arcadian cap upon his head, on which were drawn the figures of the twelve ſigns of the zodiac, with tragic buſkins on his legs, with a long beard, and with an aſhen ſtaff in his hand, exclaiming, that he was a ſpirit returned from the infernal regions to admoniſh and reform the world. Enfield's Hiſt. Phil.

MENEHOULD, St., in *Geography*, a town of France, and principal place of a diſtrict, in the department of the Marne. The place contains 3394, and the canton 12,820 inhabitants, on a territory of 437½ kiliometres, in 30 communes. The town is ſituated in a moraſs between two rocks, on the higheſt of which is a caſtle; 22 miles E.N.E. of Chalons. N. lat. 49° 5′. E. long. 4° 55′.

MENEJRE, a town of Arabia, in Yemen; 34 miles S.E. of Loheia.

MENELAUS, in *Biography*, king of Sparta, famous in ancient hiſtory for the ſhare which he took in the Trojan war, was ſon of Atreus, king of Argos, and brother of Agamemnon. He married Helen, the daughter of Tyndarus, king of Sparta, and in her right ſucceeded to the crown of that country. According to the beſt account of the origin of the Trojan war, Paris, ſon of Priam, induced by the fame of Helen's beauty, paid a viſit to the court of Menelaus, where he was moſt hoſpitably received. During his ſtay, Menelaus was obliged to take a voyage to Crete, and Paris made uſe of this opportunity to carry off Helen, together with all the treaſure and rich moveables he could lay his hands upon. This injury was made a common cauſe by the petty kings of Greece, who, with a powerful army under the command of Agamemnon, laid ſiege to Troy. Menelaus was preſent as a leader of the confederates. In the tenth year of the Trojan war, Helen obtained the forgiveneſs and favour of Menelaus, by introducing him with Ulyſſes, the night that the city was reduced to aſhes, into the chamber of Deiphobus, whom ſhe had married after the death of Paris. This perfidious conduct totally reconciled her to her firſt huſband, and ſhe returned with him to Sparta, where Telemachus is repreſented in the Odyſſey as finding them living in peace and proſperity. Menelaus is ſaid to have been ſucceeded in this kingdom by two illegitimate ſons, who were expelled by Oreſtes, ſon of Agamemnon. The palace which Menelaus once inhabited was entire in the days of Pauſanias, as well as the temple which had been raiſed to his memory by the people of Sparta. Homer. Univer. Hiſt.

Menelaus, a celebrated mathematician, who flouriſhed under the reign of the emperor Trajan, was of Grecian extraction, but a native of Alexandria. He is called by Ptolemy a geometrician, as having made aſtronomical obſervations at Rome in the year 98 of the Chriſtian era. He is ſuppoſed to have been the Menelaus referred to by Plutarch in his dialogue "De Facie quæ in orbe Lunæ apparet." He was author of three books "On Spherics," which have come down to the preſent times through the medium of the Arabic language. A Latin verſion of this work was publiſhed at Paris by father Merſenne, in 1664, with corrections, reſtorations, and additional illuſtrative propoſitions. Gen. Biog.

Menelaus, called alſo *Menelaites*, in *Ancient Geography*, a town of Egypt, and capital of a nome called *Menlaites* by Pliny. According to Strabo, Menelaus is not far from the nome of Nitria.—Alſo, a town of Africa, in Marmarica,

rica, placed by Ptolemy in the interior of the country between Leucæ and Gaphara.

Menelaus, in *Geography*, a town of Africa, in Barca; 105 miles E.S.E. of Cureu. N. lat. 32° 10'. E. long. 23° 10'.

MENENIUS, in *Biography*. See Agrippa.

MENERANDRE, in *Geography*, a river on the S. coaſt of Madagaſcar, which runs into the ſea, S. lat. 25° 5'. E. long. 42° 24'.

MENERBES, a town of France, in the department of the Mouths of the Rhone; 9 miles S.W. of Apt.

MENEROLA, a town of Genoa; 5 miles S.W. of Spezza.

MENES, in *Biography*, the founder of the Egyptian empire, was born at This, a town of Thebais, in Upper Egypt. He is ſuppoſed to have reigned 117 years after the birth of Phaleg, ſon of Heber, which was the year of the diſperſion of the people throughout the earth. He built the town of Memphis, and in the proſecution of his work ſtopped the courſe of the Nile near it, by conſtructing a cauſeway ſeveral miles broad, and cauſed it to run through the mountains. By his ability and popularity he was deified after his death. He had three ſons, who ruled after him, *viz.* Athotis, who ruled at This and Thebes; Curudes, who founded the kingdom of Heliopolis, afterwards the kingdom of Dioſpoli; and Necherophes, who reigned at Memphis.

MENESTREL, a muſician, whoſe name and employment have been recorded by Pithou in his "Hiſtory of the ſecond Race of Kings of France," who tells us, that it was during the reign of Pepin that the chapel royal was eſtabliſhed at Paris, under a muſic-maſter named Meneſtrel; which, perhaps, may have been the origin of the name of Meneſtrel, or Minſtrel, being given, in after times, to muſicians in general. Pepin died in 768.

Menestrels were the ſingers, and *Menetriers* the inſtrumental performers in France, who, in the time of king Robert, formed themſelves into a ſociety of muſicians, in imitation of the ancient bards; they compoſed and executed the muſic to the poetry of the *trouvers*, *troubadours*, or *romancers*, who compoſed poems in rhyme. Others were called *jongleurs*, and *chantores* or *meneſtrels*.

In a tarif of St. Louis to regulate the toll at the entrance into Paris, it is ſaid that the jongleurs ſhould be excuſed paying the toll, upon condition that they ſung a ſong, (hence, perhaps, the proverb of paying for any thing with a *ſong*), or made their monkies dance, (whence, probably, the French have derived another proverb, "payer en monnoie de ſinge.")

MENESTRIER, John Baptist le, in *Biography*, an able antiquary, was born at Dijon in 1564. He obtained ſome conſiderable offices at court, but is particularly known by a work entitled "Medailles, Monnoies, et Monumens antiques d'Imperatrices Romaines." This was publiſhed in 1625: the author died in 1634, and in 1642 a poſthumous work was given to the world by his friends, under the title of "Medailles illuſtres des anciens Empereurs et Imperatrices de Rome." Neither of theſe works is in much eſteem by modern medalliſts.

Among the curious works of this ingenious Jeſuit, his treatiſes on repreſentations in muſic, and on ballets, or ſtage-dances, ancient and modern, ſhould be conſulted by thoſe who read, as well as thoſe who write hiſtories of muſic and dancing: as the information they contain is original, and ſuch as no other books can ſupply.

John Baptiſt le Meneſtrier, the learned antiquary of Dijon, who died in 1634, was an anceſtor of the eccleſiaſtic, and had the ſame ſingular paſſion for ſcience and curious inquiries. He wrote on medals, coins, ancient monuments, on the Roman empreſſes, &c. Being buried in the church of St. Medard, in Dijon, the following extraordinary epitaph was formerly legible on his tomb-ſtone:

> "Cy git Jean le Meneſtrier,
> L'an de ſa vie ſoiſante-dix
> Il mit le pied dans l'eſtrier,
> Pour s'en aller en Paradis."
>
> "Here John le Meneſtrier was put,
> At threeſcore years and ten, preciſe;
> Who then in ſtirrup placed his foot,
> To go full ſpeed to Paradiſe."

Menestrier, Claude le, alſo of Dijon, and a contemporary of the preceding, was likewiſe attached to the ſtudy of antiquity, and became keeper of the Barberini Muſeum. He is author of "Symbolica Dianæ Epheſiæ Statua explicata," 4to. publiſhed in 1657. Moreri.

Menestrier, Claude Francis, a Jeſuit known by his works on heraldry, &c. was born at Lyons in 1631. He entered, at an early age, into the ſociety of the Jeſuits, where he acquired a great knowledge of the ancient languages, and of literature in general. As he advanced in life, he devoted himſelf chiefly to the ſtudy of hiſtory, with all that relates to family diſtinctions, and the monuments of antiquity. He travelled into moſt of the countries of Europe, and by the knowledge which he acquired, he was enabled to make a figure in theological diſputations, and in pulpit oratory. He was, however, particularly famous for his talents in planning and arranging all kinds of feſtive exhibitions, ſacred and profane, from the entry of a prince to the canoniſation of a ſaint. In his deſigns, devices, and inſcriptions, his invention was inexhauſtible. He had a great acuteneſs in decyphering old and mutilated inſcriptions, blazoning coats-of-arms, explaining paintings and ſculptures, and in all operations of antiquarian ſcience. He died in 1705, at the age of ſeventy-four. The principal works of this author were, 1. "Hiſtoire Civile ou Conſulaire de la Ville de Lyon;" "Eloge Hiſtorique de la même Ville;" "L'Hiſtoire du Regne de Louis le Grand par les Medailles, Emblemes, Deviſes, &c.;" "Methode du Blaſon;" "La Philoſophie des Images:" beſides theſe, however, he wrote a number of ſmaller pieces on ſimilar topics. Moreri.

MENETOU-Salon, in *Geography*, a town of France, in the department of the Cher, and chief place of a canton, in the diſtrict of Bourges; 9 miles N. of Bourges. The place contains 3277, and the canton 10,873 inhabitants, on a territory of 367½ kiliometres, in 11 communes.

MENETOUS, a town of France, in the department of the Loir and Cher, and chief place of a canton, in the diſtrict of Romorantin; 8 miles S.E. of Romorantin. The place contains 824, and the canton 4794 inhabitants, on a territory of 240 kiliometres, in 10 communes.

MENEZES, in *Biography*. This is the name of the Condes de la Ericeira, a noble houſe in Portugal, in which the love of literature, united with conſiderable talents, continued to be hereditary for many generations. In the General Biography, the moſt celebrated perſons are mentioned, with their principal works, in one article. To this we ſhall be indebted for the following account. The firſt of the family diſtinguiſhed for literary talents was Don Diego, who, in 1628, publiſhed "Vida de D. Henriquede Menezes Governandor de la India," 4to. Madrid. The ſecond diſtinguiſhed perſon was Don Fernando, whoſe chief publications were, 1. "Hiſtoriarum Luſitanarum libri decem ab anno 1640, uſque ad annum 1656." 2. "Hiſtoria de Tangere," folio, Liſboa, 1732. 3. "Vida de el Rey D. Joam I." His brother, ſon-in-law, and heir, Don Luiz, publiſhed a ſtill more valuable work than any of the foregoing, under the title of "Hiſtoria de Portugal Reſtaurado." The wife of Don Luiz kept up the credit and fame of the family as an author, and it has been ſaid of her, that "ſhe wrote not with the quill of an eagle, for of ſuch there are many;—but with the quill of a Phœnix, of which there is but one." This lady, as we have hinted, belonged to the family by blood, as well as marriage, having married her father's brother. Don Franciſco Xavier, the ſon of this marriage, left behind him forty-four works, of which the moſt known and celebrated is the "Henriqueida, Poema Heroico, em doze Cantos," 1741. The Conde, Don Henrique, founder of the royal houſe of Portugal, is the hero of the piece. It appears that the author of this work, at the age of eight, was member of one academy, which ſeems by its title to have been deſigned for extemporary ſpeaking; and, when a little older, was admitted into another, of which, at twenty, he was preſident. This, ſays his biographer, was the age of academies in Portugal: he was ſecretary and protector of the Portugueſe, and cenſor and director of the royal one; a member of the Arcadians of Rome, and of our own Royal Society. He had as correſpondents the moſt learned men in the different nations of Europe. He ſays in his preface, that the knowledge which he has of Greek is not ſufficient for him to underſtand Homer well, a proof how little that language was cultivated in his country, when the moſt learned man in it would make ſuch a declaration: in other reſpects, this preface diſcovers a range of poetical reading which few have equalled, and none, perhaps, exceeded. The poem itſelf is not worſe than its French name-ſake, though its faults are of a different character. He was blind when he wrote it, and died before it was publiſhed. This truly eſtimable man was the munificent patron of letters. He increaſed the family library with 600 MSS., and 20,000 volumes.

"This vein was not yet exhauſted; Don Luiz, the fifth Conde, wrote commentaries of his own adminiſtration in India, corrections, and a ſupplement to Bluteau's Portugueſe dictionary, and alſo to Moreri. He completed the catalogue of the library which his predeceſſor had begun: it was one of the nobleſt which any private family ever collected together, but it has been diſperſed, and I (Mr. Southey), who write, have purchaſed ſome volumes from its wreck at the ſtalls in London. Portugueſe literature is deeply indebted to this noble houſe. Individuals have ſucceeded better, but no family has ever done ſo much." Gen. Biog.

MENF, in *Geography*. See Memphis.

MENFRICI, a town of Sicily, in the valley of Mazara, containing about 2700 inhabitants; 9 miles N.W. of Sacca.

MENFUS Keddus, a town of Abyſſinia; 60 miles S.S.E. of Siré.

MENGEN, a town of Wurtemberg, inſulated in the county of Scheer; 33 miles S.W. of Ulm. N. lat. 48° 3'. E. long. 9° 23'.

MENGENGUT, a town of Pruſſia, in the province of Oberland; 12 miles E. of Oſterrod.

MENGERINGHAUSEN, a town of Germany, in the county of Waldeck; 24 miles W.N.W. of Caſſel.

MENGERSDORF, a town of Germany, in the principality of Culmbach; 13 miles S. of Culmbach.

MENGERS-KIRCHEN, a town of Germany, in the county of Naſſau-Dillenburg; 7 miles S.W. of Dillenburg.

MENGESTA Semaiat, a town of Abyſſinia; 165 miles S. of Gondar.

MENGOLI, Peter, in *Biography*, was an able Italian mathematican in the 17th century, concerning the place and time of whoſe birth there is no trace. He ſtudied mathematics under Cavalieri, to whom the Italians aſcribe the invention of the firſt principles of the infiniteſimal calculus. Mengoli was appointed profeſſor of "Mechanics," in the college of nobles at Bologna, and acquired high reputation by the ſucceſs with which he filled that poſt. His principal works are, "Geometriæ Speciosæ Elementa;" "Novæ Quadraturæ Arithmeticæ, ſeu de additione Fractionum;" "Via regia ad Mathematicas ornata;" "Refrazzione è paralaſſe Solare;" "Speculationi de Muſica;" "Arithmeticæ rationalis Elementa;" "Arithmetica realis." Moreri.

His "Speculationi di Muſica," a deſultory and fanciful work, was publiſhed at Bologna, 1670. An account of this treatiſe was given in the Phil. Tranſ. vol. viii. N° c. p. 6194. ſeemingly by Birchenſha, who, at the cloſe of the article, has not forgotten himſelf, or his own intereſt. The ſpeculations contained in Mengoli's work are ſome of them ſpecious and ingenious; but the philoſophy of ſound has been ſo much more ſcientifically and clearly treated ſince its publication, that the difficulty of finding the book is no great impediment to the advancement of muſic. He was ſtill living in 1678.

MENGRAVILLA, in *Geography*, a town of Spain, in Old Caſtile, famous for its mines of ſalt; near Avila.

MENGS, Anthony Raphael, in *Biography*, was born on the 12th of March, 1728, at Auſig, in Bohemia. His father, whoſe name was Iſmael, was a miniature and enamel painter, and dedicated his ſon to the art from his birth: hence he had him chriſtened after the names of *Anthony Allegri da Correggio*, and *Raphael d' Urbino*. His firſt ſtudies were of courſe under the eye of his father, who from his earlieſt childhood obliged him to labour with his pencil; and as ſoon as poſſible gave him information of geometry and chemiſtry, in which ſciences he became the moſt intelligent artiſt in Europe. Seeing that his ſon purſued his ſtudies with a reflective mind, Iſmael juſtly concluded, that it would be right at once to introduce him to the fountain head of the art, and lay before him the pureſt models for his ſtudy; and, therefore, at the early age of 12, he took him to Rome, and there introduced him to the works of M. Angelo, Raphael, &c. &c. Young Mengs was ſo far advanced in the art as to be capable of reliſhing the ſuperior productions now laid open before him; prints and drawings from which he had long been accuſtomed to copy: and was eagerly deſirous of perſevering in the laudable deſire of imitating them. At firſt, his father confined him to drawing in crayons from the Laocoon, the Torſo, and the works of M. Angelo; and afterwards from thoſe of Raphael. This moſt excellent ſyſtem of education he himſelf thwarted, by enacting too much and too minute an imitation, and too long confinement to that alone; at a time when, if the vivid fancy of youth had been permitted to indulge itſelf, Mengs might have imbibed the ſpirit which animates, which governs the compoſitions of thoſe great labours which were before him, inſtead of dwelling on the ſurface, and forgetting the object of the whole; which is, or ſhould always be, the prime end in view in all ſtudies made upon the works of others. That he was capable of all this fully appears by what he did, particularly by his future reaſonings (which are publiſhed) upon the works of the principal painters; and that he did not do it effectually, equally appears by his paintings; which poſſeſs more of the character of the lines and compoſition obſervable in the works of Raphael, who was his favourite, than his juſt perception of point and intereſt in a ſtory, and the true pathos with which he ſelected incidents, and gave expreſſion and grace to his figures.

It was only for three years that his father, who was extremely tyrannical and arbitrary, allowed him to ſtay at Rome, at the end of which time, probably being anxious to turn his ſon's talents to account, he obliged him to return with him to Dreſden, where all this excellent preparation was debaſed, by our artiſt being employed to paint portraits in crayons; by which, however, he became known to, and employed by, the king of Poland, who made him his cabinet painter, gave him a houſe and a penſion, without any other obligation, than to give him the preference of thoſe works he might perform, and for which he would pay the full price.

With this good fortune he returned to Rome to proſecute his ſtudies; at firſt copying, but at length beginning to compoſe his own pictures. About this time he married a young lady of a reſpectable family, Margarita Guazzi, and was in hopes of being permitted finally and fully to eſtabliſh himſelf in Rome; but his father, at the end of four years, again, in 1749, forced him to return to Dreſden, and in purſuance of his arbitrary feeling quarrelled with him, ſeized his whole property, and turned him out of doors.

His talents were now his only ſafeguard and ſupport, and, to the honour of the king, proved truly ſo. His majeſty patronized him, gave him a houſe and a carriage, appointed him his firſt painter, and doubled his penſion, without any obligation, and permitted him again to viſit Rome.

His firſt work there was a copy of the ſchool of Athens by Raphael, for the earl of Northumberland, which is now at Northumberland Houſe. The failure of affairs at the court of Saxony and Poland, which happened ſoon after, cauſed a ſtoppage of his penſion, threw Mengs upon the world, and induced him to accept many commiſſions for pictures; the principal one of which, a freſco ceiling in the church of the Auguſtines, dedicated to St. Euſebius, acquired him great reputation, and ſome employment of the like nature in the villa Albani; where he painted in freſco Apollo, and the Muſes on Parnaſſus.

Some pictures which Mengs had executed acquired him the favourable regard of the king of Naples, who, upon becoming king of Spain under the title of Charles III., ſent for him to Madrid, offering him a ſhip of war to convey him, a ſalary of 2000 doubloons, a houſe, a carriage, and to defray all the expences attending his profeſſional labours. This munificent offer was readily accepted, and Mengs arrived in Spain in October 1761. The king received him with great kindneſs, and continued the ſame attention to him all the while he remained in that country, which was ſeveral years. He executed a great number of pictures both in freſco and in oil, which were highly admired and applauded by the court, but were criticiſed by ſome, as being too cold and phlegmatic in their ſtyle and expreſſion.

Exceſs of ſtudy, and diſguſt at the harſh conduct of ſome of his contemporaries, affected his health; and being deprived of the benefit of domeſtic enjoyment, having ſent his family to Rome, he fell into deſpondency, and a decline approaching, his life was deſpaired of, when he obtained permiſſion to return to Rome, ſtill enjoying his penſion as firſt painter to the king.

His health and ſpirits were ſoon re-eſtabliſhed in his favourite reſidence, and he was employed by Clement XIV. to paint in the Vatican; particularly in the cabinet where the ancient papirii were preſerved. He prolonged his ſtay in Italy as long as he could, though adviſed by his friend the chevalier d'Azara, the Spaniſh miniſter at Rome, that his return to Spain was looked for by the king, by whoſe command he was at laſt obliged to go there again. He took part of his family with him, and remained there two years and a little more, painting many things; and again becoming exhauſted and ill, too ill to proſecute his labours, his majeſty left him at full liberty to return, with his penſion of 3000 ſcudi, and 1000 more to divide in dowers among his daughters.

He had not been long in Rome when he loſt his wife, which ſevere affliction entirely changed his mind and manners, and rendered him moroſe and unhappy, a ſcourge to himſelf and thoſe around him. His old diſeaſe returned upon him, and in a ſhort time afterwards he paid the debt of nature, having only attained the age of 51.

If the name and qualifications of Mengs had not been ſo extravagantly exalted by his friend and commentator Azara, and by Winkelmann, it is moſt likely his memory would have been in more eſteem with the world than it now is. But when they reſorted, in ſpeaking of his talents, to ſuch a degree of abſurdity, as to place him above all competitors, either ancient or modern; to ſpeak of him as the man for whom it was reſerved to unite all the excellencies of art, criticiſm is excited, and a more ſcrupulous and leſs prejudiced examination induced, which beſtows upon our artiſt a far leſs exalted rank among thoſe great men with whom he has been compared, and even to whom he has been preferred, than his partial and prejudiced friends allotted to him. He certainly was the moſt ingenious profeſſor they were acquainted with. His long and laborious reſearches into the more obſcure matters relating to art, and his careful and even enthuſiaſtic examination of the works of the ancients, and conſequent knowledge of them, rendered him in their eyes, who do not appear to have had ſo much taſte as enthuſiaſm, a kind of demi-god. But it is not reſearches and knowledge of this nature which make the artiſt; they will indeed aſſiſt him with principles and materials, they will preſent compoſitions, and fill vacant ſpaces upon a canvas, or on a wall, with ſomething agreeable to, or impoſing upon, the eye; but if the ſoul be wanting, if the true perception of that which alone ſtimulates the feeling heart and underſtanding mind, impreſs not its energy upon the obſerver, the artiſt is but a mechanic, whoſe ſtudies happen to have fallen into a more ſide-long track than thoſe of the generality; or at moſt he may be ſaluted with the title of the man of ſcience, never in compariſon with the truly great artiſts will he merit their diſtinguiſhing appellation.

Theſe remarks are juſtly applicable to Mengs, who, though a very ingenious and extraordinary man, is but a tame and rather unintereſting artiſt. Mr. Cumberland, in his memoirs of painters in Spain, has given a very excellent and juſt critique upon his merits, which we will here tranſcribe. He was excited to it by a remark of Mengs upon the diſcourſes of ſir J. Reynolds, in which that artiſt obſerves, that "thoſe diſcourſes would lead youth into error, becauſe they abandon them to ſuperficial principles, the only ones known to the author." After ſome little petulancy exhibited in the former part of his anſwer to this remark, Mr. Cumberland ſays, "that Mengs was an artiſt that had ſeen much and invented little; that he diſpenſes neither life nor death to his figures, excites no terror, rouſes no paſſions, and riſks no flights; that, by ſtudying to avoid particular defects, he incurs general ones, and paints with tameneſs and ſervility; that the contracted ſcale and idea of miniature painting to which he was brought up, is to be traced in all or moſt of his compoſitions, in which a finiſhed delicacy of pencil exhibits the hand of the artiſt, but gives no emanation of the ſoul of a maſter; if it is beauty, it does not warm; if it is ſorrow, it excites no pity." The picture of our Saviour's appearing to Mary Magdalen in the garden, known by the name of *The Noli me tangere*, which is in the chapel of All Souls' college, Oxford, will enable our readers to judge how far theſe remarks are founded in truth.

As a critic, Mengs has a more fair claim to attention. He certainly entertained ſublime ideas of the capabilities of art, and therefore inſpires them in the minds of his readers. There is, however, too great a mixture of metaphyſics and ſubtle diſquiſition in his writings, to be generally uſeful. His explanations of beauty and taſte are extremely vague. The former is built entirely upon the Platonic ſyſtem of the beauty of goodneſs. On this, however, he propoſes material ſelection from various objects of the ſame kind, to produce the beautiful of each ſpecies, and this choice he completely confounds with taſte. Notwithſtanding theſe defects, his writings convey much uſeful matter, and preſent many important points, for the conſideration of an artiſt; as they embrace all the eſſential principles of the art of painting. They were publiſhed after the death of Mengs, by his friend the chevalier d'Azara; who alſo mentions that all the technical parts of Winkelmann's hiſtory of the arts are written by Mengs.

MENHAIA, in *Geography*, a town of Fez, in the province of Chaus, inhabited by Arabs.

MENHUSS, a town of Africa, in the country of Barca; 160 miles S.W. of Tolomata.

MENIAL Servants. See Servants.

MENIAN Column. See Column.

MENIE', in *Geography*. See Miniet.

MENIF, or Menuf, a town of Egypt, and chief place of a diſtrict; 28 miles N. of Cairo.

MENIGOUTTE, a town of France, in the department of the Two Sevres, and chief place of a canton, in the diſtrict of Parthenay; 11 miles S.S.E. of Parthenay. The place contains 880, and the canton 7101 inhabitants, on a territory of 240 kiliometres, in 10 communes.

MENIL, a town of the Arabian Irak, on the Tigris; 110 miles S.E. of Bagdad.

MENILITE; *Menilit*, Wern.; *Leber-Opal*, Karſt.; *Quarz-réſinite menilite*, Haüy.

The colour of this foſſil, on the planes of fracture, is between cheſnut and liver-brown, paſſing into hair-brown, and into greyiſh-yellow: externally the brown variety poſſeſſes a blueiſh tarniſh, owing to cloſely adhering particles of the matrix in which it is found.

It occurs in knob-ſhaped or tuberoſe imbedded maſſes, and in amorphous tuberculated pieces, with rough dull ſurface.

Internally it is gliſtening, paſſing into ſhining; luſtre ſometimes reſinous.

Longitudinal fracture coarſe ſplintery, paſſing into flat conchoidal; tranſverſal fracture flat conchoidal, more or leſs in a parallel direction; fragments indeterminately angular and ſharp-edged, tranſlucent on the edges. It yields a greyiſh-white ſtreak.

Not very hard; hardneſs that of the ſemiopal; brittle, eaſily frangible. Spec. grav. 2 185, Klapr.; 2.162, Jordan.

It is infuſible before the blowpipe, but becomes of a lighter colour, opaque, and flawed. With borax it fuſes ſlowly, and with ſome ebullition. According to Klaproth's analyſis of the menilite, a hundred parts are compoſed of

Silica - - -	85.50
Argil - - -	1.00
Lime - - -	0.50
Oxyd of iron - -	0.50
Water and carbonaceous matter	11.00
	98.50

It is found near Paris, the darker variety at Menil-Montant, the lighter or greyiſh at Argenteuil; at both places under a thick bed of clay, in a particular kind of ſlate, called *Klebſchiefer* by Werner, or *adheſive ſlate*. According to Haüy it alſo occurs on the banks of the Maas. A blackiſh-green foſſil, agreeing in moſt of its characters with menilite, and likewiſe in being found imbedded in adheſive ſlate, is met with at Zamuto, in the diſtrict of Semplin, in Hungary.

This foſſil was firſt referred by Werner to the ſemiopal; and Karſten ſtill enumerates it as a particular ſubſpecies of opal, under the name of liver-opal, derived from its colour.

MENIMAN, in *Geography*, a town of Aſiatic Turkey, in Natolia, from which Smyrna draws its chief ſupply of fruits and proviſions.

MENIN, a town of France, in the department of the Lys, and chief place of a canton, in the diſtrict of Courtray. This town conſiſts of little more than one ſtreet, with one pariſh church, ſituated on the Lys; and yet it has been the ſubject of many conteſts and viciſſitudes during various wars. The place contains 4911, and the canton 17,769 inhabitants, on a territory of 100 kiliometres, in ſeven communes. N. lat. 50° 48'. E. long. 3° 5'.

MENING, in *Botany*, a name given by the people of Guinea to a plant of the *reſinous* or *palma Chriſti* kind, which they uſe in medicine: they dry and powder the leaves, and then give them to be ſnuffed up the noſtrils, to cure all ſorts of ſtuffings or ſtoppages in the head. Its leaves reſemble thoſe of the finch and ivy, and are hairy; whence Petiver has named it *ricinus Guineenſis hederæ quinquefolia Virginianæ facie foliis hirſutis*. It is not known to grow any where in America. Philoſ. Tranſ. N° 232.

MENINGE, in *Ancient Geography*, an iſland of Africa. Plutarch, in Mario, ſays that Marius landed on the iſland of Meninge, and that from thence he paſſed to Carthage. This iſland is called by Ptolemy Lothophagites, in which were two towns, *viz.* Gerrapolis and Meninge.

MENINGEA Arteria, in *Anatomy*, a branch of the internal maxillary artery diſtributed upon the dura mater. See Artery.

MENINGES, from μηνιγξ, *a membrane;* a term ſometimes employed in ſpeaking of the membranes of the brain.

MENINGOPHYLAX, from μηνιγξ, *a membrane*, and φυλασσω, *to guard*, an inſtrument in uſe amongſt the ancient ſurgeons for protecting the dura mater and brain from injury, in their mode of trepanning. It was ſomewhat like the lenticular, only its blade was completely round, without any edge, and it ended, like this other inſtrument, in a lentiform cup.

MENINSKI, or Menin, Francis, in *Biography*, a conſiderable oriental ſcholar, was born at Lorraine in 1623. Of the early part of his life we have no account, but he ſtudied at Rome, and being particularly attached to the acquiſition of the Eaſtern languages, when about the age of thirty he accompanied the Poliſh ambaſſador to Conſtantinople, and there applied ſo aſſiduouſly to the ſtudy of the Turkiſh tongue, that in a very ſhort time he was made firſt interpreter to the Poliſh embaſſy at the Porte; and afterwards was raiſed to the office of ambaſſador plenipotentiary to that court. Hence he was naturalized in Poland, and added the termination *ſki* to the family name of *Menin*. In 1661 he accepted the poſt of interpreter of the Oriental languages at the court of Vienna, and accompanied the imperial ambaſſador to the Porte. In 1669 he viſited the holy ſepulchre at Jeruſalem, and was created a knight of that order. His ſervices were ſo much approved, that on his return to Vienna he was appointed one of the emperor's council of war, as well as firſt interpreter. He died in 1698. As an author, the great work of Meninſki was his "Theſaurus Linguarum Orientalium," publiſhed at Vienna in 1680, in four volumes folio. Of theſe the fourth was entirely deſtroyed by the falling of a bomb upon the author's houſe during the ſiege of Vienna by the Turks, which obliged him to recompoſe it. The other volumes were greatly injured at the ſame time, which rendered the work extremely ſcarce and dear. A new edition of it with improvements was begun at Vienna in the year 1780. The Turkiſh, Perſian, and Arabian grammars contained in the "Theſaurus," were republiſhed in two volumes quarto, 1756.

MENIPEAN, *Satira* MENIPEA, a kind of ſatire conſiſting of proſe and verſe intermixed.

It is thus called from Menippus, a Cynic philoſopher, who delighted in compoſing ſatirical letters, &c. In imitation of him, Varro alſo wrote ſatires under the title of "Satiræ Menippæ;" whence this ſort of compoſition is alſo denominated *Varronian ſatire*.

Among the moderns, there is a famous piece under this title, firſt publiſhed in 1594, againſt the chiefs of the league, called alſo the "Catholicon" of Spain. It is eſteemed a maſter-piece for the time.

MENISCIUM, in *Botany*, ſo called by Schreber, the author of the genus, from μηνισκος, *a creſcent*, in alluſion to the ſhape of the fructification. Schreb. Gen. 757. Swartz. Syn. Fil. 19. Sprengel Crypt. 93. t. 3. f. 20. Cavan. Leccion. 548. Mart. Mill. Dict. v. 3. Lamarck Dict. v. 4. 93. Claſs and order, *Cryptogamia Filices*. Nat. Ord. *Filices*, Linn. Juſſ.

Gen. Ch. *Capſules* annulated, in ſmall, ſingle, curved lines, nearly parallel to each other, and ſituated tranſverſely, in regular ſeries, betwixt the veins of the *frond*. *Involucrum* none.

Eſſ. Ch. Fructification in a ſeries of ſmall, tranſverſe, creſcent-ſhaped lines, between the veins of the frond. Involucrum none.

1. M. *triphyllum*. Swartz. n. 1. Sprengel as above.—Frond three-leaved. Native of China and the Eaſt Indies. Sprengel repreſents the *frond* as about five inches long, ſmooth, conſiſting of one large, terminal, oblong, pointed, entire *leaflet*, and a pair of much ſmaller, oppoſite, ſeſſile ones, a little below it. Each of the leaflets is furniſhed with a midrib, and numerous tranſverſe, oblique, parallel veins, connected by fine, regular, decuſſating lines of fructification.

2. M. *reticulatum*. Sw. n. 2. (Polypodium reticulatum; Linn. Sp. Pl. 1549. Aſplenium ſorbifolium; Jacq. Coll. v. 2. 106. t. 3. f. 2. Filix latifolia non ramoſa, nigris tuberculis pulverulenta; Plum. Amer. 6. t. 9. Lingua cervina, nigris tuberculis pulverulenta; Plum. Fil. 92. t. 110.)—Frond pinnate; leaflets undivided.—Native of the Weſt Indies. We have it from St. Kitt's. Plumier found it very abundantly in aſcending the mountain called *de la Calebaſſe*, in Martinico. This is a very large and handſome *fern*, about four feet high; the *ſtalks* ſmooth and ſhining, dark brown, or black. *Leaflets* numerous, about a ſpan long, and above an inch wide, almoſt ſeſſile, alternate, broadeſt near the baſe, tapering to a ſharp narrow point; the margin ſlightly crenate, or wavy. The whole under-ſide is covered with *fructification*, in curved *lines*, more anſwering to the form of a creſcent than thoſe of the former ſpecies. Sprengel cenſures Linnæus without reaſon for making this fern a *Polypodium;* for the latter, having never ſeen a ſpecimen in fructification, neceſſarily truſted to Plumier, whoſe figures, leſs faithful than uſual, as well as his definition, abundantly juſtify Linnæus.

3. M. *proliferum*. Sw. n. 3. (Hemionitis prolifera; Retz. Obſ. faſc. 6. 38.)—Frond pinnate; leaflets lanceolate, crenate, with axillary ſmaller leaflets. Sent by Koenig from the Eaſt Indies. It is deſcribed as a large decumbent *fern*, with alternate, ſeſſile, lanceolate, crenate *leaflets*, about half a foot long, abrupt at their baſe. From theſe are produced, at their origin, other axillary *fronds* or *branches*, a foot and half long, often in pairs, whoſe *leaflets* are exactly like the former, but much ſmaller, and the *ſtalk* has a knot at the part whence they originate. *Fructification* in decuſſating irregular *lines*, ſo as ſometimes to give the character of a *Polypodium*, ſometimes of an *Acroſtichum*.

4. M. *criſtatum*. Lamarck Dict. v. 4. 94.—"Frond pinnate; leaflets nearly oppoſite, lanceolate, pointed; the lower ones pinnatifid, with obtuſe finely toothed ſegments."—Native of Martinico. *Fronds* about a foot and a half high, or more, with numerous falcate *leaflets*, of a delicate texture, about four inches long, and near an inch broad. The margin is cut throughout into rounded lobes or ſegments, finely toothed at their edge. *Fructification* copious, in curved lines.

Swartz enumerates this among his doubtful ſpecies; we do not diſtinctly ſee for what reaſon.

5. M. *ſerratum*. Cavan. Leccion. 548.—"Frond pinnate; leaflets alternate, lanceolate, ſerrated."—Native of the Havannah. *Fronds* above two feet high, ſhining. *Leaflets* five inches long, the lower ones an inch broad; all ſharp-pointed, finely toothed. *Fructification* in curved parallel *lines*.

This alſo is reckoned by Swartz among the ſpecies which merit further inquiry; as well as a *Meniſcium* from Cayenne, of which nothing is given but the generic character by Richard in the *Actes de la Société d'Hiſt. Nat. de Paris*, *v.* 1. 114.

Although *Meniſcium* is, as yet, known to conſiſt of but few ſpecies, it has all the characters of a very natural genus, nearly reſembling *Hemionitis* indeed in character, but diſſimilar in habit.

MENISCUS, in *Optics*, a glaſs or lens, concave on one ſide, and convex on the other; ſometimes alſo called *lunula*. See LENS, and OPTIC *Glaſs*.

In a meniſcus, if the diameter of the convexity be equal to that of the concavity, a ray, falling parallel to the axis, will continue parallel thereto after refraction.

Such a meniſcus, therefore, will neither collect nor diſperſe the rays; and is therefore of no uſe in dioptrics.

To find the focus of a meniſcus, the rule is, as the difference of the ſemidiameters of the convexity and concavity is to the ſemidiameter of the convexity, ſo is the diameter of the concavity to the diſtance of the focus from the meniſcus. Hence, if the ſemidiameter of the concavity be triple the ſemidiameter of the convexity, the diſtance of the focus from the meniſcus will be equal to the ſemidiameter; and therefore the meniſcus will be equivalent to a lens equally convex on either ſide.

Again, if the ſemidiameter of the concavity be double that of the convexity, the diſtance of the focus will be equal to to the diameter ; and therefore the meniſcus will be equivalent to a plano-convex lens.

If the ſemidiameter of the concavity be quintuple that of the convexity, the meniſcus will be equivalent to a ſphere. The ſemidiameter, therefore, of the convexity being given, that of the concavity required to remove the focus to any given diſtance from the meniſcus, is eaſily found.

MENISPERMA, in *Botany*, the ſeventy-ſeventh natural order in Juſſieu's ſyſtem, the ſeventeenth of his thirteenth claſs, named from the principal genus belonging to it ; ſee the next article. For the characters of the claſs, ſee GERANIA. The order is defined as follows :

Calyx of a definite number of leaves. *Petals* of a definite number, oppoſite to the calyx ; with an equal number of ſcales, in ſome of the genera, at the inſide of the petals and oppoſite to them. *Stamens* of a definite number, equal to that of the petals, and oppoſite to them. *Germens* ſeveral, with as many ſtyles and ſtigmas. *Fruits* as many, either pulpy or capſular, kidney-ſhaped, each containing one ſeed, of their own ſhape ; many of them however are frequently abortive, one only coming to perfection. *Embryo* flat, ſmall, with thin lobes, ſituated at the top of the fleſhy albumen, which is much more incurved than itſelf. *Stem* ſhrubby, moſtly ſarmentoſe. *Leaves* alternate, ſimple, without ſtipulas. *Flowers* axillary or terminal, often in aggregate ſpikes or cluſters, each collection attended by a ſingle bractea ; they often become dioecious by imperfection of the reſpective organs of impregnation.

The genera enumerated by Juſſieu are *Ciſſampelos* ; *Meniſpermum* ; *Leæba* of Forſkall, perhaps not different from it ; *Epibaterium* of Forſter ; and *Abuta* of Aublet.

The oppoſite ſituation, with reſpect to each other, of the calyx, petals, and ſtamens, brings this order near that of the *Berberides* ; but the germen of the latter is ſimple, with many ſeeds, their albumen ſtraight, ſurrounding the whole embryo, which is longer than in the *Meniſperma*, and their anthers are differently formed, being very peculiar, and opening by revolute valves, in the *Berberides*. Their habits moreover are very unlike.

MENISPERMUM received its name, compoſed of μηνη, *the moon*, and σπερμα, *ſeed*, from Tournefort, in the Memoires de l'Acad. des Sciences for 1705 ; in alluſion to the creſcent-like form of the ſeed. Linn. Gen. 530. Schreb. 700. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 3. 411. Juſſ. 285. Michaux Boreal-Amer. v. 2. 241. Lamarck Dict. v. 4. 94. Illuſtr. t. 824. Gærtn. t. 46. and t. 70. Claſs and order, *Dioecia Dodecandria*. Nat. Ord. *Sarmentaceæ*, Linn. *Meniſperma*, Juſſ.

Gen. Ch. Male, *Cal.* Perianth of two ſhort linear leaves. *Cor.* Outer petals four, ovate, ſpreading, equal ; inner eight, ſmaller, inverſely heart-ſhaped, concave, four of them in an inner row and broader. *Stam.* Filaments 16, cylindrical, rather longer than the corolla ; anthers terminal, very ſhort, bluntly four-lobed.

Female, *Cal.* and *Cor.* as in the male. *Stam.* Filaments eight, like the male, but with pellucid abortive anthers. *Piſt.* Germens two or three, ſuperior, ſtalked, ovate, incurved, approaching each other ; ſtyles ſolitary, very ſhort, recurved ; ſtigmas cloven, obtuſe. *Peric.* Berries two or three, roundiſh-kidney-ſhaped, of one cell. *Seeds* ſolitary, large, kidney-ſhaped.

Obſ. By the accounts of authors, the number of the different parts of fructification either differs in different ſpecies, or varies in the ſame. The above characters are taken from *M. canadenſe*.

Eſſ. Ch. Male, Outer petals four, inner eight. Stamens ſixteen. Female, Petals as in the male. Eight imperfect ſtamens. Berries two or three, ſingle-ſeeded.

A genus of twining, perennial, often ſhrubby, plants, altogether ſtrangers to Europe, but found in North America, Arabia and Japan, as well as in the Eaſt and Weſt Indies. The *roots* of ſome are large and ſolid, worthy of inquiry as to their medicinal powers. *Leaves* alternate, ſtalked, ſimple, generally undivided, entire, and more or leſs downy, of a heart-ſhaped or ovate figure, without *ſtipulas*. *Flowers* ſmall, racemoſe, axillary, inconſpicuous, of a green, whitiſh, yellowiſh, or lurid hue. *Berries* dark, the ſize of ſmall peas, in ſome caſes narcotic. The ſpecies are not very correctly underſtood, and it is probable many more exiſt than botaniſts have aſcertained. The fourteenth edition of Syſt. Veg. enumerates eleven. The volume of Willdenow which comprehends this genus is not yet come to our hands. We ſhall therefore only mention ſome of the moſt remarkable ſpecies.

M. *canadenſe*. Canadian Moon-ſeed. Linn. Sp. Pl. 1468. Mill. Illuſtr. t. 93. (Hedera monophylla, convolvuli foliis, virginiana ; Pluk. Phyt. t. 36. f. 2)—Leaves peltate, heart-ſhaped, rounded and angular. Cluſters compound, drooping.—Native of North America—"from Canada to Carolina." *Michaux*. *Stem* ſomewhat ſhrubby, twining contrary to the ſun's courſe, (*Miller*,) round, ſmooth, leafy, ſlightly branched. *Leaves* on long ſtalks, generally broader than long, peltate a little way from the baſe, either ſimply cordate and undivided, or more or leſs deeply lobed, the lobes either rounded or angular ; the upper ſide dark green, nearly ſmooth ; under glaucous, a little hairy at the ribs and numerous veins. *Panicles* in pairs, ſhorter than the leaves, drooping. *Flowers* greeniſh-white. *Berries*, according to Clayton, black.—This plant is preſerved in ſome botanic gardens, but has little beauty to recommend it to general favour.

M. *virginicum*. Virginian Moon-ſeed. Linn. Sp. Pl. 1468. (M. folio hederaceo ; Dill. Elth. v. 2. 223. t. 178. f. 219.) Upper leaves ovate, undivided ; lower three-lobed and wavy. Cluſters ſimple, ſolitary, erect.—Native of Virginia. Linnæus appears not to have known this ſpecies. The ſpecimen in his herbarium, from whence the ſpecific character was taken, is only the foregoing. Dillenius has well figured and deſcribed the real *virginicum*, as having *leaves* much reſembling ivy, the upper ones being ovate and undivided ; the lower lobed and angular. The latter eſpecially are ſomewhat downy. None of them are peltate. The *flowers* are whitiſh, in upright, ſimple, much ſmaller cluſters. *Berries* black. Michaux does not mention this in his *Flora*. It is ſaid to be cultivated in the Cambridge garden, flowering in July.

M. *carolinum*. Carolina Moon-ſeed. Linn. Sp. Pl. 1468. Michaux Boreal-Amer. v. 2. 242.—Leaves heart-ſhaped, downy beneath. Cluſters cymoſe.—Native of Carolina, *Linn.* alſo of Georgia and Florida. *Michaux*. This has the *leaves* heart-ſhaped, undivided, roughiſh above, ſoft and downy beneath. *Cluſters* nearly as long as the leaves, cymoſe, hairy, of numerous ſmall *flowers*. Michaux ſays the *berries* are red ; otherwiſe we ſhould have a ſuſpicion that his plant was the *virginicum*.

M. *Cocculus*. Indian-berry Moon-ſeed. Linn. Sp. Pl. 1468. (Cocculæ officinarum ; Bauh. Pin. 511. Cocci ; Ger. em. 1548. Tuba baccifera ; Rumph. Amb. v. 5. 35. t. 22.)—Leaves heart-ſhaped, pointed, ſomewhat downy beneath. Cluſters compound, from the naked woody ſtem. Berries nearly globular. Native of Ceylon and Malabar. This has a very woody, branched and twiſted *ſtem*, from whence the *flowers* proceed, in compound *cluſters*. The *branches* are leafy. *Leaves* large, a ſpan long, heart-ſhaped, pointed; dark green above; downy beneath; on long twiſted *footſtalks*. *Berries* purpliſh-black, as big as a black currant; but they come to us dried, and of a much ſmaller ſize. They are uſed in India for catching fiſh, which they intoxicate if thrown into the water. Their uſe for this purpoſe is, we believe, prohibited in England; nor is it eaſy to account for the copious importation of theſe berries as an article of trade, unleſs they ſerve to adulterate fermented liquors, as is often reported. (See COCCULUS and CISSAMPELOS.) We apprehend that Poiret, quoted in the laſt article, has confounded two very diſtinct plants. We have from the Eaſt Indies, by the name of *Meniſpermum orbiculatum*, as well as from the Mauritius, ſpecimens which anſwer exactly to his deſcription of the female *Ciſſampelos Cocculus*; but their axillary ſimple *cluſters*, and large heart-ſhaped *bracteas*, to ſay nothing of their rounder *leaves*, mark them as ſufficiently diſtinct from the above ſhrub of Rumphius. Perhaps the berries of ſeveral Indian plants, of this family, may have the ſame intoxicating quality, and be uſed indiſcriminately.

MENISPERMUM, in *Gardening*, contains plants of the hardy climbing kind, of which the ſpecies cultivated are, the Canadian moon-ſeed (M. canadenſe); the Virginian moon-ſeed (M. virginicum); and the Carolina moon-ſeed (M. carolinum.)

Method of Culture.—The two firſt ſorts are eaſily propagated by laying down the branches in the autumn ſeaſon, and when the layers have made good roots, in the following autumn they may be ſeparated and planted out where they are to remain. As their branches are weak and ſlender, they require ſupport; and when planted near trees thrive better than in an open ſituation.

And the third ſort may be increaſed by parting the roots, and planting them out in the ſpring, a little before the plants begin to ſhoot, in warm ſituations where the ſoil is light, as in ſtrong retentive land the roots are apt to rot. When planted cloſe to a wall expoſed to the ſouth or weſt, their ſtalks may be faſtened againſt the wall to prevent their trailing upon the ground; in which ſituations the plants frequently flower. They ſhould have a little ſhelter in ſevere froſt, in order to preſerve their ſtalks.

All theſe plants afford ornament and variety in the ſhrubberies and other parts of pleaſure grounds.

MENITZ, in *Geography*, a town of Moravia, in the circle of Brunn; nine miles S.S.E. of Brunn.

MENKIN, a town of Aſiatic Turkey, in Natolia; 36 miles N.E. of Boli.

MENMEN, a town of Aſiatic Turkey, in Natolia; 18 miles N.W. of Smyrna.

MENNO, in *Biography*. See the following article.

MENNONITES, in *Eccleſiaſtical Hiſtory*, a ſect in the United Provinces, in moſt reſpects the ſame with thoſe in other places called Anabaptiſts.

They had their riſe in 1536, when Menno Simon, a native of Frieſland, who had been a Romiſh prieſt, and a notorious profligate, reſigned his rank and office in the Romiſh church, and publicly embraced the communion of the Anabaptiſts.

Menno was born at Witmarſum, a village in the neighbourhood of Bolſwert, in Frieſland, in the year 1505, and died in 1561, in the duchy of Holſtein, at the country ſeat of a certain nobleman, not far from the city of Oldeſloe, who, moved with compaſſion by a view of the perils to which Menno was expoſed, and the ſnares that were daily laid for his ruin, took him, with certain of his aſſociates, into his protection, and gave him an aſylum. The writings of Menno, which are almoſt all compoſed in the Dutch language, were publiſhed in folio, at Amſterdam, in the year 1651. About the year 1537, Menno was earneſtly ſolicited by many of the ſect with which he connected himſelf, to aſſume, among them, the rank and functions of a public teacher; and as he looked upon the perſons who made this propoſal, to be exempt from the fanatical phrenzy of their brethren at Munſter (though, according to other accounts, they were originally of the ſame ſtamp, only rendered ſomewhat wiſer by their ſufferings), he yielded to their intreaties. From this period to the end of his life he travelled from one country to another, with his wife and children, exerciſing his miniſtry, under preſſures and calamities of various kinds, that ſucceeded each other without interruption, and conſtantly expoſed to the danger of falling a victim to the ſeverity of the laws. Eaſt and Weſt Frieſland, together with the province of Groningen, were firſt viſited by this zealous apoſtle of the Anabaptiſts; from thence he directed his courſe into Holland, Guelderland, Brabant, and Weſtphalia, continued it through the German provinces that lie on the coaſts of the Baltic ſea, and penetrated ſo far as Livonia. In all theſe places his miniſterial labours were attended with remarkable ſucceſs, and added to his ſect a prodigious number of followers. Hence he is deſervedly conſidered as the common chief of almoſt all the Anabaptiſts, and the parent of the ſect that ſtill ſubſiſts under that denomination. Menno was a man of genius, and directed by a very ſound judgment; he poſſeſſed a natural and perſuaſive eloquence, and ſuch a degree of learning as made him paſs for an oracle in the eſtimation of the multitude. He appears, moreover, to have been a man of probity, of a meek and tractable ſpirit, gentle in his manners, pliable and obſequious in his commerce with perſons of all ranks and characters, and extremely zealous in promoting practical religion and virtue, which he recommended by his example, as well as by his precepts. The plan of doctrine and diſcipline drawn up by Menno was of a much more mild and moderate nature than that of the furious and fanatical Anabaptiſts, whoſe tumultuous proceedings have been recited under that article, but ſomewhat more ſevere, though more clear and conſiſtent than the doctrine of the wiſer branches of that ſect, who aimed at nothing more than the reſtoration of the Chriſtian church to its primitive purity. Accordingly, he condemned the plan of eccleſiaſtical diſcipline, that was founded on the proſpect of a new kingdom, to be miraculouſly eſtabliſhed by Jeſus Chriſt on the ruins of civil government and the deſtruction of human rulers, and which had been the fatal and peſtilential ſource of ſuch dreadful commotions, ſuch execrable rebellions, and ſuch enormous crimes. He declared, publicly, his diſlike of that doctrine which pointed out the approach of a marvellous reformation in the church by the means of a new and extraordinary effuſion of the Holy Spirit. He expreſſed his abhorrence of the licentious tenets which ſeveral of the Anabaptiſts had maintained, with reſpect to the lawfulneſs of polygamy and divorce, and, finally, conſidered as unworthy of toleration, thoſe fanatics who were of opinion that the Holy Ghoſt continued to deſcend into the minds of many choſen believers, in as extraordinary a manner as he did at the firſt eſtabliſhment of the Chriſtian church, and that he teſtified this peculiar preſence to ſeveral of the faithful, by miracles, predictions, dreams, and viſions of various kinds. He retained, indeed, the doctrines commonly received among the Anabaptiſts, in relation to the baptiſm of infants, the millenium, or thouſand years reign of Chriſt upon earth, the excluſion of magiſtrates from the Chriſtian church, the abolition of war, and the prohibition of oaths enjoined by our

Saviour, and the vanity as well as the pernicious effects of human ſcience. But while Menno retained theſe doctrines in a general ſenſe, he explained and modified them in ſuch a manner, as made them reſemble the religious tenets that were univerſally received in the Proteſtant churches; and this rendered them agreeable to many, and made them appear inoffenſive even to numbers who had no inclination to embrace them. It however ſo happened, that the nature of the doctrines conſidered in themſelves, the eloquence of Menno, which ſet them off to ſuch advantage, and the circumſtances of the times, gave a high degree of credit to the religious ſyſtem of this famous teacher among the Anabaptiſts, ſo that it made a rapid progreſs in that ſect. And thus it was in conſequence of the miniſtry of Menno, that the different ſorts of Anabaptiſts agreed together in excluding from their communion the fanatics that diſhonoured it, and in renouncing all tenets that were detrimental to the authority of civil government; and, by an unexpected coalition, formed themſelves into one community.

Though the Mennonites uſually paſs for a ſect of Anabaptiſts, yet M. Herman Schyn, a Mennonite miniſter, who has publiſhed their hiſtory and apology, maintains, that they are not Anabaptiſts, either in principle or by origin. However, nothing can be more certain than this fact, *viz.* that the firſt Mennonite congregations were compoſed of the different ſorts of Anabaptiſts, of thoſe who had been always inoffenſive and upright, and of thoſe who, before their converſion by the miniſtry of Menno, had been ſeditious fanatics: beſides, it is alleged that the Mennonites do actually retain, at this day, ſome of thoſe opinions and doctrines, which led the ſeditious and turbulent Anabaptiſts of old to the commiſſion of ſo many and ſuch enormous crimes: ſuch particularly is the doctrine concerning the nature of Chriſt's kingdom, or of the church of the New Teſtament, though modified in ſuch a manner as to have loſt its noxious qualities, and to be no longer pernicious in its influence.

The Mennonites are ſubdivided into ſeveral ſects; whereof the two principal are the Flandrians, or Flemingians, and the Waterlandians. The opinions, ſays Moſheim, that are held in common by the Mennonites, ſeem to be all derived from this fundamental principle, that the kingdom which Chriſt eſtabliſhed upon earth is a viſible church or community, into which the holy and juſt alone are to be admitted, and which is conſequently exempt from all thoſe inſtitutions and rules of diſcipline, that have been invented by human wiſdom, for the correction and reformation of the wicked. This principle, indeed, was avowed by the ancient Mennonites, but it is now almoſt wholly renounced; nevertheleſs, from this ancient doctrine, many of the religious opinions, that diſtinguiſh the Mennonites from all other Chriſtian communities, ſeem to be derived: in conſequence of this doctrine, they admit none to the ſacrament of baptiſm, but perſons that are come to the full uſe of their reaſon; they neither admit civil rulers into their communion, nor allow any other members to perform the functions of magiſtracy; they deny the lawfulneſs of repelling force by force, and conſider war, in all its ſhapes, as unchriſtian and unjuſt: they entertain the utmoſt averſion to the execution of juſtice, and more eſpecially to capital puniſhments; and they alſo refuſe to confirm their teſtimony by an oath. The particular ſentiments that divided the more conſiderable ſocieties of the Mennonites are the following; the rigid Mennonites, called the Flemingians, maintain with various degrees of rigour, the opinions of their founder Menno, as to the human nature of Chriſt, alleging that it was produced in the womb of the Virgin, by the creating power of the Holy Ghoſt; the obligation that binds us to waſh the feet of ſtrangers, in conſequence of our Saviour's command; the neceſſity of excommunicating and avoiding, as one would do the plague, not only avowed ſinners, but alſo all thoſe who depart, even in ſome light inſtances pertaining to dreſs, &c. from the ſimplicity of their anceſtors; the contempt due to human learning, and other matters of leſs moment. However, this auſtere ſyſtem declines, and the rigid Mennonites are gradually approaching towards the opinions and diſcipline of the more moderate Waterlandians.

The firſt ſettlement of the Mennonites, in the United Provinces, was granted them by William, prince of Orange, towards the cloſe of the ſixteenth century; but it was not before the following century, that their liberty and tranquillity were fixed upon ſolid foundations, when, by a confeſſion of faith, publiſhed in the year 1626, they cleared themſelves from the imputation of thoſe pernicious and deteſtable errors that had been laid to their charge. In order to appeaſe their inteſtine diſcords, a conſiderable part of the Anabaptiſts of Flanders, Germany, and Frieſland, concluded their debates in a conference held at Amſterdam, in the year 1630, and entered into the bonds of fraternal communion, each reſerving to themſelves a liberty of retaining certain opinions. This aſſociation was renewed and confirmed by new reſolutions, in the year 1649; in conſequence of which the rigorous laws of Menno and his ſucceſſors were, in various reſpects, mitigated and corrected. Moſheim's Eccl. Hiſt.

MENOCHIO, Jacopo, in *Biography*, a learned Italian juriſt, was born at Pavia, where he was probably educated, and was elected, in 1555, to the profeſſorſhip of civil law in its univerſity. Five years afterwards he accepted an invitation from Emanuel Philibert, duke of Savoy, to the newly erected univerſity of Mondovi. In 1566, he removed to Padua, and became profeſſor there, firſt of common law, and afterwards of civil law. In 1589, he was recalled by the ſenate of Milan to Pavia, and was, at length, elected a ſenator of Milan, and preſident of the extraordinary magiſtracy. He died in the city in 1607. He was a voluminous writer on ſubjects connected with his profeſſion, ſome of which are ſtill referred to by lawyers, particularly his treatiſes "De conjecturis ultimum Voluntatum," and "De tacitis et ambiguis conventionibus." Theſe are held in high eſtimation, and their author was unqueſtionably reckoned the firſt doctor in civil and canon law of the age in which he livid.

Menochio, John Stephen, a learned Jeſuit, who flouriſhed in the former part of the ſeventeenth century, ſon of the preceding, was born at Pavia in 1576. At the age of ſeventeen he entered the ſociety of Jeſus, where he diſtinguiſhed himſelf by his induſtry and talents, and was, at the cloſe of his academical courſe, ſelected to fill the chair of profeſſor: he was afterwards raiſed to the moſt honourable poſts belonging to the ſociety, in the colleges and provinces of Italy. He died at Rome in 1656. His principal works are, 1. "Hieropoliticon, ſeu Inſtitutiones Politicæ è Sacris Scripturis depromptæ;" 2. "De Republica Hebræorum;" 3. "Inſtitutiones Œconomicæ ex Sacris Literis depromptæ;" 4. "Brevis Explicatio ſenſus Literalis totius Scripturæ." The beſt edition of the laſt mentioned work was edited by father Tournemine in 1719, in 2 vols. folio: it was accompanied with a number of valuable treatiſes and diſſertations on biblical ſubjects. This father wrote "A Hiſtory of Chriſt," and ſix volumes of "Diſſertations," chiefly intended to elucidate the holy ſcriptures. Moreri.

MENOLOGY, Menologium, from μην, *month*, and λογος, *diſcourſe*, in the Greek church, is much the ſame with *martyrology*, or *calendar*, in the Latin.

The Greek menologium is divided into the ſeveral months in the year; and contains an abridgment of the lives of the ſaints, with a bare commemoration of the names of ſuch whoſe lives were never written. The Greeks have various menologies; and the Romans tax them with inſerting divers heretics, in their menologies, as ſaints. Baillet treats of them at large.

MENORRHAGIA, in *Medicine*, an exceſſive diſcharge of the menſes in women.

The flow of the menſes is conſidered as exceſſive, when it recurs more frequently, when it continues longer, or when, during the ordinary continuance, it is more abundant, than is uſual with the ſame perſon at other times, and more eſpecially when it gives riſe to a train of ſymptoms, indicative of a general diminution of the conſtitutional ſtrength. But as moſt women are liable to ſome inequality with reſpect to the period, the duration, and the quantity of the catamenia; ſo it is only when theſe deviations are exceſſive, or permanent, ſo as to induce a manifeſt deterioration of the health, that they are to be deemed morbid. The affections of the other functions of the body, therefore, are conſidered by Dr. Cullen as the chief teſt of the exceſſive diſcharge in individuals reſpectively. When a larger flow than uſual, he ſays, of the menſes has been preceded by head-ache, giddineſs, or dyſpnæa, and has been uſhered in by a cold ſtage, and is attended with much pain of the back and loins, with a frequent pulſe, heat and thirſt, it may then be conſidered as preternaturally large. (Cullen, Firſt Lines, par. 971.) The ſymptoms which inordinate menſtruation leaves behind, however, are the moſt decided proofs of its morbid influence. For after a repetition of the copious diſcharges, the patient exhibits many ſymptoms of debility: the face becomes pale, and, if the loſs of blood have been profuſe, of a remarkably ſallow or yellowiſh-white complexion, which has been aptly termed exſanguine, or bloodleſs; the pulſe is weak and ſmall, and rather more frequent than natural; an unuſual laſſitude is felt, and great debility on attempting to uſe exerciſe; the breathing is hurried by ſlight exertions; and the back becomes painful from continuance in an erect poſture, in conſequence of the feebleneſs of the muſcles which ſupport it: towards evening, likewiſe, the feet are ſomewhat enlarged by œdematous ſwelling. Other marks of debility, too, often appear; eſpecially loſs of appetite, with pain of the ſtomach, flatulence, and other ſymptoms of indigeſtion; frequent tendency to ſyncope or fainting; palpitation of the heart; and a weakneſs of mind, which becomes liable to ſtrong emotions from ſlight cauſes, particularly when ſuddenly applied. From the local debility, produced in the parts from which the exceſſive diſcharge proceeds, there is alſo frequently a mucous diſcharge, or leucorrhæa, ſucceeding the menorrhagia; and, in many caſes, when the debility has been much augmented by a recurrence of the diſorder, there is a regular alternation of the one and the other; the leucorrhæa always appearing on the ceſſation of the menorrhagia, and continuing until the latter again returns; or, in a word, becoming habitual. See LEUCORRHÆA.

We ſhall not here enter into any theoretical diſcuſſion of the nature of the menſtrual hæmorrhagy. It will be ſufficient to ſtate, that it is generally of what is called the active kind, and that it is accompanied by ſome degree of febrile *niſus* throughout the circulating ſyſtem. The menorrhagia has hence been conſidered as depending, either upon the preternatural increaſe of the hæmorrhagic effort of the veſſels of the uterus, or upon a preternatural laxity of the extremities of the uterine arteries, the hæmorrhagic effort remaining as in the natural ſtate. Cullen, loc. cit.

The *exciting cauſes* of menorrhagia may, therefore, be included under the following heads. 1ſt. Thoſe which increaſe the plethoric ſtate of the uterine veſſels; ſuch as a full nutritious diet, much ſtrong liquor, and eſpecially when taken to the length of frequent intoxication, or combined with a ſedentary life. There is much leſs of menorrhagia among the females of the lower claſs, in the country, who uſe a moderate diet, and take regular exerciſe, than among the ladies of the higher claſs, who live high, and uſe little active exerciſe, and particularly among thoſe who take wine freely, though not to exceſs. And when young women have been weakened by this hæmorrhage, their matron-friends have too often recourſe to more wine, and fuller diet, to reſtore the ſtrength. This is even done in the pregnant ſtate, to prevent abortions, when the oppoſite ſyſtem ſhould be adopted, with a view of diminiſhing both local and general plethora. 2dly. All cauſes which determine the blood more copiouſly and forcibly into the uterine veſſels, tend of courſe to bring on menorrhagia. Such are violent ſtrainings of the whole body, from particular exertions of the muſcular ſtrength; violent ſhocks from falls; ſevere blows or contuſions on the lower belly; violent paſſions of the mind; and violent exerciſe, eſpecially in dancing. For in the laſt mentioned inſtance, the combination of the muſcular exertion with the erect poſture tends materially to direct the current of blood to the uterus: and hence the exerciſe of dancing has ſometimes been found an effectual remedy for obſtructed menſtruation. 3dly. Whatever irritates particularly the veſſels of the uterus, may induce menorrhagia; as exceſs in venery, or the exerciſe of it during the time of menſtruation; a coſtive habit of body, giving occaſion to violent ſtraining at ſtool; cold applied to the feet. 4thly. Whatever may have forcibly overſtrained the extremities of the uterine veſſels, and left them conſequently in a weakened and relaxed ſtate: ſuch as frequent abortions, and tedious difficult labours, which give riſe to exceſſive diſcharge; likewiſe frequent pregnancy, without nurſing, which often not only deranges the general health, but occaſions ſuch a derangement of the uterine ſyſtem, as leads to the production of frequent abortion, terminating in the conſtant occurrence of menorrhagia and leucorrhæa in alternate ſucceſſion. And, laſtly, all cauſes inducing a general laxity of the habit, ſuch as living much in hot chambers, drinking much of warm relaxing liquors, as tea and coffee; or, on the other hand, the inability of procuring more ſubſtantial diet, combined with watching, fatigue, anxiety of mind, and other cauſes of conſtitutional debility, which often give riſe to the conſtant alternations of menorrhagia and leucorrhæa in women of the lower claſſes.

The *treatment* of menorrhagia muſt neceſſarily differ according to the different cauſes of the diſeaſe, and the different ſtates of conſtitution under which it occurs. In all inſtances, however, it is of the firſt importance to avoid the immediate cauſes of the malady, where theſe are obvious, and can be ſhunned; for in this way the returns of the diſeaſe may be often entirely warded off, and the health be fully reſtored, without recourſe to medicine.

When this has not been done, and a copious menſtrual diſcharge has come on, it will require the ſame kind of treatment as other active hæmorrhagies; eſpecially if the patient be of a moderately ſtrong habit; namely, ſuch means as tend to allay inordinate action of the blood-veſſels. One of the moſt important of theſe means is the application of *cold*, or, more correctly ſpeaking, the abſtraction of the ſtimulus of heat. With this view the apartment ſhould be kept cool, the bed clothes ſhould be light, and the beds not too ſoft; cold drink ſhould be taken, as freely as the former habits of the patient will allow; and even cold applications ſhould be made. as near to the bleeding veſſels as may be, by applying wet cloths to the pudendum and round the loins. At the ſame time it is extremely important for the patient to remain entirely at reſt, and that in the horizontal poſture; to avoid the quickened circulation, which exertion produces, and the influence of gravitation upon the unſupported veſſels in the erect poſition. The diet ſhould likewiſe be light and cooling, all ſtimulants being diſcarded; and the bowels ſhould be kept open by gentle laxatives, that occaſion little ſtimulus; ſuch as the neutral ſalts, caſtor oil, manna, ſulphur, &c. Or the lower bowels may be emptied by clyſters, which, if uſed cold, will have the double effect of removing the irritation of fæces, and alſo of refrigerating the uterus, by the contiguity of theſe parts.

It now and then happens that menorrhagia occurs in robuſt women, and is accompanied with quickneſs and ſome hardneſs of the pulſe, with ſevere pains in the back reſembling thoſe of parturition, and other febrile ſymptoms. In theſe caſes it is ſometimes adviſable to diminiſh the general action of the vaſcular ſyſtem by bleeding from the arm, ſuch a practice, however, is not often neceſſary; for there are few caſes, in which the refrigerating plan above mentioned, if purſued with attention and diligence, will not tend to moderate the diſcharge.

On the other hand, when the menorrhagia ariſes from an apparent relaxation of the veſſels of the uterus, although the practice of depletion muſt not be adopted, yet all the ſources of irritation muſt be ſhunned with equal care: for, under ſuch circumſtances, the general irritability, or ſuſceptibility of excitement, is uſually much increaſed, and leſs active ſtimuli produce a greater effect. The menorrhagia may be preſumed to ariſe from ſuch a relaxed ſtate of the uterine veſſels, from the general debility and laxity of the patient's habit, indicated by paleneſs of complexion, thin and flabby ſtate of the muſcular fleſh, languor, and incapability of exertion; as well as from a knowledge of her previous ſtate of indiſpoſition, of her mode of life, and of the immediate exciting cauſes; and particularly from the circumſtance, that, in the intervals of menſtruation, ſhe is ſubject to leucorrhæa. Quietneſs and the horizontal poſture are ſtill more requiſite in this than in the former caſe. And as there is often much general irritation combined with this condition of the habit, ſmall doſes of an opiate may be employed, with conſiderable benefit, in moderating the diſcharge. In the caſe of a plethoric habit, however, opiates would tend to produce an aggravation of the complaint by their ſtimulus, and therefore muſt be employed with caution. Aſtringent medicines muſt be reſorted to, in the caſe of menorrhagia from relaxation. ſuch as alum, the ſulphuric acid, and ſome of the preparations of iron. The aſtringent operation of theſe, however, when given internally, is not always very active: the chalybeates, eſpecially the muriated tincture of iron, are, on the whole, the moſt efficacious. The aſtringents may be employed externally, that is, may be applied locally, as waſhes, with advantage. Theſe aſtringent and tonic medicines, however, are adminiſtered perhaps with more decided benefit, in the intervals of menſtruation, when they act rather as preventives, than as directly curative, by ſtrengthening the whole ſyſtem; and tend alſo to remove the leucorrhæa, which ſo often exiſts at thoſe times. Cold bathing, chalybeate medicines, the metallic ſalts, cinchona and other bitters, together with exerciſe, eſpecially in a carriage, are all ſerviceable in this view, during the intervals: and all the remedies recommended in the caſe of *Leucorrhæa*, (ſee that article,) although ſome of them are too ſtimulant to be exhibited during the occurrence of menorrhagia from debility, may be reſorted to with benefit in the intervals. The patients ſhould alſo uſe a good nutritious diet at the ſame time. And it may be added, that theſe remedies ſhould be employed in menorrhagia, from whatever cauſes it may have been originally produced, if the diſeaſe have already induced a conſiderable degree of debility in the body. See Cullen, Firſt Lines, par. 966—974. Hamilton on Female Complaints.

MENOSTEY, in *Geography*, a town of France, in the department of the Jura; four miles E.S.E. of Auxerre.

MENOTTE, a river of Cambodia, which runs into the gulf of Siam, N. lat. 11° 32'. E. long. 101° 30'.

MENOUGAT, a town of Aſiatic Turkey, in Caramania; 20 miles N. of Alanieh.

MENOUX, St., a town of France, in the department of the Allier; ſeven miles W. of Moulins.

MENS, a town of France, in the department of the Iſere, and chief place of a canton, in the diſtrict of Grenoble; 22 miles S. of Grenoble. The place contains 1883, and the canton 6516 inhabitants, on a territory of 242½ kiliometres, in ten communes.

MENSA *et Thoro*, *Divorce à*. See Divorce.

MENSÆ Domesticus. See Domesticus.

MENSALIA, Mensals, ſuch parſonages or livings as were formerly united to the tables of religious houſes; and therefore by canoniſts called *menſal* benefices. See Parsonage and Benefice.

MENSARII, among the Romans, officers appointed to manage the public treaſury, being ſometimes three, and ſometimes five in number.

MENSES, in *Phyſiology*, the monthly diſcharge from the uterus of the female ſubject. See Generation, under the head of *Phyſiology of the Female Organs*.

Menses, *Suppreſſion of*, in *Medicine*, or *Amenorrhæa* in the language of the noſologiſts, an interruption to the monthly diſcharge of women.

The interruption of the menſtrual flux has been conſidered by phyſicians of two kinds; namely, the one, when the menſes do not begin to flow at that period of life at which they uſually appear, which has been called the *retention* (or *emanſio menſium*); and the other, when, at a ſubſequent age, and after they have repeatedly taken place, they ceaſe to return (independently of pregnancy) at their uſual periods, which has been called the *ſuppreſſion* of the menſes (*ſuppreſſio menſium*.) See Cullen, Noſol. Method. Gen. cxxvi.

The firſt of theſe ſpecies of amenorrhæa, the *retention* of the menſes, occurs of courſe in girls about the age of puberty, and is accompanied by a number of ſymptoms, indicative of great general languor of the whole habit; but it is moſt commonly marked eſpecially by an extraordinary paleneſs of the complexion, often with ſome degree of yellow, or even of a greeniſh hue, from which the appellation of *green-ſickneſs*, or technically *chloroſis*, has been given to the diſeaſe. It is true, indeed, that this appearance of the complexion is not always preſent, where there is a *retention* of the catamenia; but the general train of ſymptoms varies little, and the ſame plan of treatment is requiſite under moſt of the varieties of the complaint; we ſhall, therefore, not repeat here the detail of the ſymptoms, or of the methods of cure, which we have deſcribed at great length under the article Chlorosis; which ſee.

The *ſuppreſſion* of the menſtrual flux, then, after it has been for ſome time eſtabliſhed in its regular courſe, will be the ſubject of the few following obſervations. Every interruption of the diſcharge, after it has once taken place, is not to be conſidered as a caſe of ſuppreſſion; for, at its firſt appearance, it is not always immediately eſtabliſhed with perfect regularity; and, therefore, an early interruption, eſpecially when accompanied with the chlorotic ſymptoms, may be deemed a caſe of *retention*. On the other hand, the diſcharge may, at any period of life, be ſuppreſſed, when great general debility is induced by any cauſe; and it commonly is thus interrupted, when any great chronic affection occurs, to enfeeble the powers of life. In ſuch caſes, the ſuppreſſion is merely ſymptomatic of thoſe other affections, and does not itſelf become an object of medical treatment.

Moſt of the inſtances of idiopathic ſuppreſſion of the catamenia, in this country, are occaſioned by, or at leaſt are aſcribed to, the action of *cold*, which is believed to produce a conſtriction of the extreme veſſels of the uterus, and thus to occaſion a reſiſtance to the flow of blood through them. The influence of fear, and other depreſſing paſſions, is ſuppoſed to produce a ſimilar effect. The ſuppreſſion ſeldom continues long, before it is accompanied by various ſymptoms or diſorders in different parts of the body; partly, perhaps, originating from an irregular determination of blood into other organs, in conſequence of the plethoric condition occaſioned by the ſuppreſſion of the cuſtomary diſcharge; and partly from the great general ſympathy of the whole nervous ſyſtem, and of ſeveral organs in particular, with the condition of the uterus. From the firſt of theſe cauſes ariſe hæmorrhagies from various parts; as from the noſe, lungs, ſtomach, &c. when the menſes are ſuppreſſed; as well as violent head-ache, acute pains in the cheſt, &c.; and, at the ſame time, from the nervous ſympathy, various hyſterical and other nervous affections occur, often to a formidable extent. The convulſions of hyſteria, thus produced, are ſometimes indeed more violent even than thoſe of epilepſy; the colic pains, with coſtiveneſs, the *globus* in the throat, the violent flatulence, and other ſymptoms of dyſpepſia, become often exceedingly tormenting.

Where the ſuppreſſion of the catamenia is obviouſly idiopathic, and productive of theſe ſymptoms ſecondarily, the principal indication of cure appears to be to remove the obſtructed ſtate of the circulation in the veſſels of the uterus. In very ſtrong and robuſt habits, where, together with acute local pains, there is a great tendency to hæmorrhage, and a febrile or inflammatory diſpoſition alſo manifeſts itſelf, even blood-letting may be reſorted to with benefit in the commencement, to leſſen the conſtrictive action of the blood-veſſels in general; and in ſuch caſes, free purgation, together with the antiphlogiſtic regimen, will likewiſe be requiſite. In the great majority of inſtances, however, the detraction of blood is unneceſſary. A beneficial change is often produced upon the action of the uterine veſſels, by local remedies; ſuch eſpecially as warm bathing, directed to the region of the uterus, by means of the ſemicupium, or of fomentation; the pediluvium; or emollient glyſters, which, from the contiguity of the large inteſtine to the uterus, operate as an internal fomentation. In caſes where the ſuppreſſion is accompanied with great pain about the uterine region, but without fever, an anodyne glyſter, combining the effects of fomentation with thoſe of an opiate, is ſometimes extremely beneficial. Dr. Gregory uſed to mention, in his lectures at Edinburgh, that an anodyne enema, adminiſtered at night, had ſometimes brought back the catamenia before morning. Such applications, indeed, appear to be particularly efficacious, when there is an obvious attempt, as it were, in the conſtitution to effect the diſcharge. For, as Dr. Cullen has remarked, it commonly happens, in the caſes of ſuppreſſed catamenia, that though the diſcharge does not actually appear at the uſual periods, there are often, at thoſe periods, ſome marks of an effort, having a tendency to produce the diſcharge; it is, therefore, at thoſe times eſpecially, when the efforts of the ſyſtem concur, that we ought to reſort to the remedies for curing a ſuppreſſion. Theſe concurring efforts are indicated by the exiſtence of pains in the loins, with a ſenſe of fulneſs in the region of the uterus, and other ſymptoms which uſually indicate the approach, or accompany the flow of the catamenia in the healthy condition.

Thoſe caſes in which the menſes flow after longer intervals, and in leſs quantity than uſual, approximate to the caſes of actual ſuppreſſion; and when they are attended with any of the diſorders of the ſyſtem before alluded to, they are to be treated by the ſame remedies as the caſes of entire ſuppreſſion. See Cullen, Firſt Lines, par. 1007—1012.

The partial impediment to the flow of the menſes, which is accompanied with conſiderable pain, (the *Amenorrhœa difficilis*, ſpec. 3. of Cullen,) has been treated of under the more common appellation, *Dyſmenorrhœa*; which ſee.

MENSGUT, in *Geography*, a town of Pruſſia, in the province of Oberland; eight miles N. of Ortelſburg.

MENSHIE', or Medchié, a town of Egypt; five miles N. of Girgé. The markets of this town are always well ſupplied, becauſe the boats that are bound to the N. of Egypt, are accuſtomed to put in here for a ſtock of proviſions. A conſerve of wheat is ſold here, which is highly valued in the country. It is compoſed of corn ſteeped in water for two days, then dried in the ſun, and boiled to the thickneſs of a jelly: the paſte thus prepared is called "elnede" dew: it is ſweet and nutritive. Menſhié is decorated with a large moſque. "Ptolemais Hermei," or Hermes, ſo called becauſe the ſymbolical deity Mercury was worſhipped there, a large and populous city, formerly ſtood ſouth of this ſpot and near it. A few ſcattered ruins, and a ſtone-dike to confine the waters of the river, are the only remains which Menſhié preſerves of its ancient ſplendour. Sonnini.

MENSIS. See Month.

Mensis *Chymicus*. See Menstruum.

Mensis *Vetitus*. See Fence-*Month*.

MENSOORIA, in *Geography*, a caſtle of the empire of Morocco, eight leagues from Rabat, in the province of Temſena, or Tremecen, built in the 12th century, by Jacob Almanſor, to afford an aſylum to travellers during the night; the inhabitants of the ſurrounding country being a miſchievous and thieving people.

MENSORES, among the Romans, harbingers or officers, whoſe buſineſs it was to go and fix upon lodgings for the emperor, when he took a journey to any of the provinces. Their office was alſo to mark out encampments, and aſſign every regiment its poſt.

Mensores alſo ſignified land-ſurveyors, architects, or appraiſers of houſes and public buildings. Thoſe likewiſe who diſtributed the proviſions in the army, were called *menſores frumentarii*; and ſervants who waited at table had the appellation of menſores.

Mensores was likewiſe the title of officers among the Romans appointed to receive the proviſions brought to the city by ſea, and to ſee them carefully laid up and preſerved in public granaries, of which there were great numbers.

MENSTRUAL, or Menstruous, a term in *Medicine*, applied to the blood which flows from women in their ordinary monthly purgations. See Menses.

Menstrual *Epacts*. See Epact.

Menstrual *Longitude of the Moon*. See Argument.

MENSTRUATION, Excessive. See Menorrhagia.

Menstruation, *Painful.* See Dysmenorrhœa.

MENSTRUUM, Solvent, or Diſsolvent, in *Chemiſtry*, any liquor that will diſſolve, that is, ſeparate the parts of hard bodies

The term takes its riſe from this, that ſome chemiſts pretend the complete diſſolution of a mixed body cannot be effected in leſs than forty days; which period they call a *philoſophical month.* See Solvent, and alſo Solution.

Menstruum, *Univerſal.* See Alkahest.

Menstruum, in *Pharmacy*, chiefly denotes a body that will extract the virtues of ingredients by infuſion, decoction, or the like. See Extract, Infusion, and Decoction.

MENSURATION is that branch of mathematics which is employed in aſcertaining the extenſion, ſolidities, and capacities of bodies; and in conſequence of its very extenſive application to the various purpoſes of life, it may be conſidered as one of the moſt uſeful and important of all the mathematical ſciences: in fact, menſuration, or geometry, which were anciently nearly ſynonimous terms, ſeem to have been the root whence all the other exact ſciences, with the exception of arithmetic, have derived their origin.

As ſoon as men began to form themſelves into ſociety, and direct their attention towards the cultivation of the earth, it became neceſſary to have ſome means of diſtinguiſhing one perſon's allotment from another, both as to poſition and quantity; as it did to enumerate the number of their flocks and herds; and hence, in all probability, the former gave riſe to the ſcience of menſuration, as the latter did to that of arithmetic; and though we may eaſily imagine that each of them remained for ages in a rude uncultivated ſtate, yet it is from this period that we muſt date their commencement; and therefore, to ſtate the preciſe time when they were diſcovered, or by whom they were firſt introduced, would be to trace out the origin of ſociety itſelf: on this head, therefore, we ſhall barely obſerve that in all probability they firſt aroſe from the humbleſt efforts of unaſſiſted genius, called forth by the great mother of invention, Neceſſity; and that they have ſince grown up by ſlow and imperceptible degrees, till they have at length acquired the dignity of the moſt perfect ſciences; as the acorn which is firſt accidentally ſown in a field, is in due courſe of time converted into the majeſtic oak.

But notwithſtanding we cannot attribute the invention of the ſcience of menſuration to any particular perſon, or nation, yet we may diſcover it in an infant ſtate, riſing as it were into a ſcientific form amongſt the ancient Egyptians; and hence the honour of the diſcovery has frequently been given to this people, and to the circumſtance of the overflowing of the Nile.

It is, however, to the Greeks that we muſt conſider ourſelves indebted for having firſt embodied the leading principles of this art into a regular ſyſtem. Euclid's Elements of Geometry were probably firſt wholly directed to this ſubject, and many of thoſe beautiful and elegant geometrical properties, which are ſo much and ſo juſtly admired, it is not unlikely aroſe out of ſimple inveſtigations directed ſolely to the theory and practical application of menſuration. Theſe collateral properties, when once diſcovered, ſoon gave riſe to others of a ſimilar kind, and thus geometry, which was firſt inſtituted for a particular and limited purpoſe, became itſelf an independent and important ſcience, which has perhaps done more towards harmonizing and expanding the human faculties, than all the other ſciences united.

But notwithſtanding the perfection which Euclid attained in geometry, the theory of menſuration was not in his time advanced beyond what related to right-lined figures, and this, ſo far as regards ſurfaces, might all be reduced to that of meaſuring a triangle; for as all right-lined figures may be reduced to a number of trilaterals, it was only neceſſary to know how to meaſure theſe, in order to find the ſurface of any other figure whatever bounded only by right lines. The menſuration of ſolid bodies, however, was of a more varied and complex nature, and gave this celebrated geometrician a greater ſcope for the exerciſe of his ſuperior talents, and ſtill confining himſelf to bodies bounded by right-lined plane ſuperficies, he was able to perform all that can be done even at this day. With regard to curvilineal figures, he attempted only the circle and the ſphere, and if he did not ſucceed in thoſe, he failed only where there was no poſſibility of ſucceſs; but the ratio that ſuch ſurfaces and ſolids have to each other he accurately determined.

After Euclid, Archimedes took up the theory of menſuration, and carried it to a much greater extent. He firſt found the area of a curvilinear ſpace, unleſs indeed we except the lunules of Hippocrates, which required no other aid than that of the geometrical elements. Archimedes found the area of the parabola to be two-thirds of its circumſcribing rectangle, which, with the exception above ſtated, was the firſt inſtance of the quadrature of a curvilinear ſpace. The conic ſections were at this time but lately introduced into geometry, and they did not fail to attract the particular attention of this celebrated mathematician, who diſcovered many of their very curious properties and analogies. He likewiſe determined the ratio of ſpheres, ſpheroids, and conoids, to their circumſcribing cylinders, and has left us his attempt at the quadrature of the circle. He demonſtrated that the area of a circle is equal to the area of a right-angled triangle, of which one of its ſides about the right angle is equal to the radius, and the other equal to the circumference, and thus reduced the quadrature of the circle to that of determining the ratio of the circumference to the diameter, a problem which has engaged the particular attention of the moſt celebrated mathematicians of all ages, but which remains at preſent, and in all probability ever will remain, the deſideratum of geometricians, and at the ſame time a convincing and humiliating proof of the limited powers of the human mind.

But notwithſtanding Archimedes failed in eſtabliſhing the real quadrature of the circle, it is to him we are indebted for the firſt approximation towards it. He found the ratio between the diameter of a circle, and the periphery of a circumſcribed polygon of 96 ſides, to be leſs than 7 to 22, or leſs than 1 to $3\frac{10}{70}$; but the ratio between the diameter, and periphery of an inſcribed polygon of the ſame number of ſides, he found to be greater than 1 to $3\frac{10}{71}$; whence, *à fortiori*, the diameter of a circle is to its circumference in a leſs ratio than 1 to $3\frac{1}{7}$, or leſs than 7 to 22. Having thus eſtabliſhed this approximate ratio between the circumference and diameter, that of the area of the circle to its circumſcribed ſquare, is found to be nearly as 11 to 14. Archimedes, however, makes the latter the leading propoſition. Theſe, it is true, are but rude approximations, compared with thoſe that have been ſince diſcovered, but conſidering the ſtate of ſcience at this period, particularly of arithmetic, we cannot but admire the genius and perſeverance of the man, who, notwithſtanding the difficulties that were oppoſed to him, ſucceeded in deducing this reſult, which may be conſidered as having led the way to the other more accurate approximations which followed, moſt of which, till the invention of fluxions, were obtained upon ſimilar principles to thoſe employed by this eminent geometrician.

Archimedes alſo determined the relation between the circle and ellipſe, as well as that of their ſimilar parts; beſides which figures he has left us a treatiſe on the ſpiral, a deſcription of which will be given under that article. See SPIRAL.

Some advances were ſucceſſively made in geometry and menſuration, though but little novelty was introduced into the mode of inveſtigation till the time of Cavalerius. Till his time the regular figures circumſcribed about the circle, as well as thoſe inſcribed, were always conſidered as being limited both as to the number of their ſides, and the length of each. He firſt introduced the idea of a circle being a polygon of an infinite number of ſides, each of which was of courſe indefinitely ſmall; ſolids were ſuppoſed to be made up of an infinite number of ſections indefinitely thin, &c. This was called the doctrine of indiviſibles, which was very general in its application to a variety of difficult problems, and by means of it many new and intereſting properties were diſcovered; but it unfortunately wanted that diſtinguiſhing characteriſtic which places geometry ſo pre-eminent amongſt the other exact ſciences. In pure elementary geometry we proceed from ſtep to ſtep, with ſuch order and logical preciſion, that not the ſlighteſt doubt can reſt upon the mind with regard to any reſult deduced from thoſe principles; but in the new method of conſidering the ſubject, the greateſt poſſible care was neceſſary in order to avoid error, and frequently this was not ſufficient to guard againſt erroneous concluſions. But the facility and generality which it poſſeſſed, when compared with any other method then diſcovered, led many eminent mathematicians to adopt its principles, and of theſe Huygens, Dr. Wallis, and James Gregory, were the moſt conſpicuous, being all very fortunate in their application of the theory of indiviſibles. Huygens, in particular, muſt always be admired for his ſolid, accurate, and maſterly performances in this branch of geometry. The theory of indiviſibles was however diſapproved of by many mathematicians, and particularly by Newton, who, amongſt his numerous and brilliant diſcoveries, has given us that of the method of fluxions, the excellency and generality of which immediately ſuperſeded that of indiviſibles, and revived ſome hopes of ſquaring the circle, and accordingly its quadrature was again attempted with the greateſt eagerneſs. The quadrature of a ſpace and the rectification of a curve, was now reduced to that of finding the fluent of a given fluxion; but ſtill the problem was found to be incapable of a general ſolution in finite terms. The fluxion of every fluent was found to be always aſſignable, but the converſe propoſition, *viz.* of finding the fluent of a given fluxion, could only be effected in particular caſes, and amongſt theſe exceptions, to the great diſappointment and regret of geometricians, was included the caſe of the circle, with regard to all the forms of fluxions under which it could be obtained.

At length all hopes of accurately ſquaring the circle, and ſome other curves being abandoned, mathematicians began to apply themſelves to finding the moſt convenient ſeries for approximating towards their true lengths and quadratures; and the theory of menſuration now began to make rapid progreſs towards perfection. Many of the rules, however, were given in the Tranſactions of learned ſocieties, or in ſeparate and detached works, till at length Dr. Hutton formed them into a complete treatiſe, entitled "A Treatiſe on Menſuration," in which the ſeveral rules are all demonſtrated, and ſome new ones introduced. Mr. Bonnycaſtle alſo publiſhed a very complete work on this ſubject, entitled "An Introduction to Menſuration." Theſe may be conſidered as ſtandard works, and the only ones of importance in our language, though there are others on the ſame ſubject, as Hawney's and Robertſon's, the latter of which only requires the demonſtrations of the ſeveral rules, which are omitted, in order to render it alſo a very uſeful and valuable performance.

To the above ſlight ſketch of the hiſtory and progreſs of this ſcience, we ſhall annex a ſynopſis of the principal rules, drawn from the works above mentioned, which will be found very uſeful as a reference in a variety of caſes.

SYNOPSIS OF THE PRINCIPAL RULES OF MENSURATION.

TRIANGLES.

Let a, b, c repreſent the three ſides of the triangle, A, B, C the angles oppoſite to thoſe ſides reſpectively; p the perpendicular falling upon the baſe b; then,

1. The area $= \frac{1}{2} p\, b$

2. —— $= \frac{1}{2} a\, b$. ſin. C $= \frac{1}{2} a\, c$ ſin. B $= \frac{1}{2} b\, c$ ſin. A.

Make $a + b + c = s$; then,

3. The area $= \surd \left\{ \frac{1}{2} s \left(\frac{1}{2} s - a\right) \left(\frac{1}{2} s - b\right) \left(\frac{1}{2} s - c\right) \right\}$

4. Log. area $= \frac{1}{2} \left\{ \text{log. } \frac{1}{2} s + \text{log. } \left(\frac{1}{2} s - a\right) + \text{log. } \left(\frac{1}{2} s - b\right) + \text{log. } \left(\frac{1}{2} s - c\right) \right\}$.

TRAPEZIUMS.

Let a, b, c, d, repreſent the four ſides, a and c, b and d, being thoſe which are oppoſite to each other, δ and δ' the two diagonals, M the angle formed by their interſection, alſo p, p', the perpendiculars falling from two oppoſite angles on the diagonal δ; then,

1. The area $= \frac{1}{2} \delta \left(p + p'\right)$

2. —— $= \frac{1}{2} \delta \delta'$. ſin. M

3. The area $= \left\{ \left(a^2 + c^2\right) \backsim \left(b^2 + d\right) \right\}$ tan. M.

If the trapezium be inſcribable in a circle,

4. The area $= \surd \left\{ (s - a)\,(s - b)\,(s - c)\,(s - d) \right\}$

5. —— $= (a\, b + c\, d)$ ſin. N.

where N is the angle contained by a and b, or by c and d.

If a and c, or b and d, be parallel, and p their perpendicular diſtance, then,

6. The area $= \frac{1}{2} p\, (c + a)$, or $\frac{1}{2} p\, (b + d)$.

REGULAR POLYGONS.

Let s repreſent one of the equal ſides, n the number of ſides, p the perpendicular falling from the centre of the polygons upon one of the ſides; then,

1. The area $= \frac{1}{2} p\, s\, n$

2. —— $= n p^2$ tan. $\frac{360^\circ}{2\, n}$

3. —— $= \frac{1}{4} n\, s^2$ cotan. $\frac{360^\circ}{2\, n}$

This laſt general formula reſolves itſelf into the following particular ones, *viz.*

		Sides.		
4.	Trigon	3	Area	$s^2 \times 0{\cdot}4330127$
5.	Tetragon	4	——	$s^2 \times 1{\cdot}0000000$
6.	Pentagon	5	——	$s^2 \times 1{\cdot}7204774$
7.	Hexagon	6	——	$s^2 \times 2{\cdot}5980762$
8.	Heptagon	7	——	$s^2 \times 3{\cdot}6339124$
9.	Octagon	8	——	$s^2 \times 4{\cdot}8284271$
10.	Nonagon	9	——	$s^2 \times 6{\cdot}1818242$
11.	Decagon	10	——	$s^2 \times 7{\cdot}6942088$
12.	Undecagon	11	——	$s^2 \times 9{\cdot}3656399$
13.	Dodecagon	12	——	$s^2 \times 11{\cdot}1961524$

CIRCLE.

Let r repreſent the radius, d the diameter, c the circumference, and a the area; then,

1. The area $= \frac{1}{4}\, c\, d$
2. —— $= d^2 \times {\cdot}7854$
3. —— $= c^2 \times {\cdot}07958$
4. The circumference $= d \times 3{\cdot}14159$

If we make $3{\cdot}14159 = p$, we have the following relation of the above quantities; *viz.*

$$1. \quad —— \quad d = \frac{c}{p} = \frac{4a}{c} = 2\sqrt{\frac{a}{p}}$$

$$2. \quad —— \quad c = pd = \frac{4a}{d} = 2\sqrt{pa}$$

$$3. \quad —— \quad a = \frac{pd^2}{4} = \frac{c^2}{4p} = \frac{dc}{4}$$

$$4. \quad —— \quad p = \frac{c}{d} = \frac{4a}{d^2} = \frac{c^2}{4a}$$

CIRCULAR ARCS.

The former notation remaining, let s repreſent the ſine, and v the verſed ſine of the half arc; alſo let m repreſent the meaſure of the arc in degrees, minutes, &c. then,

1. The arc $= r\, m \times {\cdot}0174533$.

$$2. \text{ The arc} = \begin{cases} 2\sqrt{dv} \times \left\{1 + \dfrac{v}{2.3d} + \dfrac{3v^2}{2.4.5.d^2} + \dfrac{3.5v^3}{2.4.6.7d^3} + \text{\&c.}\right\} \text{ or,} \\[2ex] 2d\sqrt{q} + \dfrac{q}{2.3}\text{A} + \dfrac{3^2q}{4.5}\text{B} + \dfrac{5^2q}{6.7}\text{C} + \dfrac{7^2q}{8.9}\text{D} \end{cases}$$

where $q = \frac{v}{d}$; and A, B, C, &c are the 1ſt, 2d, 3d, &c. terms.

$$3. \text{ The arc} = \begin{cases} 2s \times \left\{1 + \dfrac{s^2}{3.3r^2} + \dfrac{3s^4}{5.2.4r^4} + \dfrac{3.5s^6}{7.2.4r^6}, \text{\&c.}\right\} \text{ or,} \\[2ex] 2s + \dfrac{q}{2.3}\text{A} + \dfrac{3^2q}{4.5}\text{B} + \dfrac{5^2q}{6.7}\text{C} + \dfrac{7^2q}{8.9}\text{D, \&c.} \end{cases}$$

where $q = \frac{s^2}{r^2}$; and A, B, C, D, &c. the preceding terms.

To which may be added the following approximations:

4. The arc $= 2d\sqrt{\frac{3v}{3d - v}}$ nearly.

5. —— $= \frac{2}{9} \times \left\{5d\sqrt{\frac{5v}{5d - 3v}} + 4\sqrt{dv}\right\}$ nearly.

6. —— $= \frac{8c' - C'}{3}$ nearly.

where C′ is the chord of the whole arc, and c' the chord of half the arc.

CIRCULAR SECTORS.

Let l repreſent the length of the arc of the ſector, and m its meaſure in degrees, minutes, &c.; then,

1. Area of ſector $= \frac{1}{2}\, r\, l$
2. —— $= {\cdot}7854\, d^2 \times \frac{m}{360}$

CIRCULAR SEGMENTS.

If A′ repreſent the area of the circular ſector, and C′ the chord of the arc; then,

1. Area of ſegment $= \text{A}' - \frac{1}{2}\text{C}'(r - v)$.

$$2. \text{ Area} = \begin{cases} 2v\sqrt{dv} \times \left\{\dfrac{2}{3} - \dfrac{v}{5d} - \dfrac{v^2}{28d^2} - \dfrac{v^3}{72d^3} - \text{\&c.}\right\} \text{ or,} \\[2ex] 2\sqrt{dv} \times \left\{\dfrac{2}{3} - \dfrac{3v}{5.2d}\text{A} - \dfrac{5v}{7.4d}\text{B} - \dfrac{7.3v}{9.6d}\text{C} - \dfrac{9.5v}{11.8d}\text{D}\right\} \end{cases}$$

A, B, C, &c. being the preceding terms.

$$3. \text{ Area} = \tfrac{4}{3}v\sqrt{v\text{V}} + \frac{5}{5\text{V}}\text{A} - \frac{1}{7\text{V}}\text{B} + \frac{3}{9\text{V}}\text{C} - \frac{5}{11\text{V}}\text{D, \&c. where V} = (d \quad v).$$

$$4. \text{ Area} = 2rc'' - \frac{1}{2.3}q^2\text{A} - \frac{1.3}{4.5}q^2\text{B} - \frac{3.5}{6.7}q^2\text{C, \&c.}$$

where c'' repreſents the coſine of half the arc, and $q = \frac{c''}{r}$, A, B, C, &c. being the preceding terms.

To which may be added the following approximations, *viz.*

5. Area $= \frac{4}{5}\left\{\sqrt{(dv - v^2)} + \frac{2}{3}\sqrt{dv}\right\}$ nearly.
6. Area $= \frac{4}{3}\, v\,(dv - \frac{3}{5}v^2)$ nearly.

If C′ be made to repreſent the chord of the whole arc, and c the chord of half the arc, then

7. Area $= \frac{4}{10}\, v\,(\text{C}' + \frac{4}{3}c)$ nearly.
8. Area $= \frac{4}{3}\, v\sqrt{(\frac{1}{4}\text{C}'^2 + \frac{2}{5}v^2)}$ nearly.
9. Area $= d^2 \times$ by tabular number anſwering to $\frac{v}{d}$ in the table of circular ſegments.

Note.—The area of circular zones will be found by finding the difference of the two ſegments: and the area of circular rings, by finding the difference of the areas of the two circles.

Or by making D and d the diameters, then

10. Area of the ring $= (D + d)\ (D - d) \times {\cdot}7854$.

Ellipse.

Let t repreſent the ſemi-tranſverſe axis, c the ſemi-conjugate, x any abſciſs, y the correſponding ordinate, and p the parameter; then will theſe quantities have the following relations, *viz.*

1. Ordinate $(y) = \frac{c}{t}\ \surd(2xt - x^2)$

2. Abſciſs $(x) = t \pm \frac{t}{c}\ \surd(c^2 - y^2)$

3. Conjugate $(c) = \frac{ty}{\surd(2tx - x^2)}$

4. Tranſverſe $(t) = \frac{cx}{y^2} \times \left\{ c \mp \surd(c^2 - y^2) \right\}$

5. Parameter $(p) = \frac{c^2}{t}$.

The ſame formulæ obtain for any pair of conjugate diameters.

Make $1 - \frac{c^2}{t^2} = m$; then,

1. Elliptic circum. $= C \times \left\{ 1 + \frac{m}{2^2} - \frac{3m^2}{2^2 . 4^2} - \frac{3^2 \cdot 5 m^3}{2^2 . 4^2 . 6^2} - \frac{3^2 \cdot 5^2 \cdot 7 m^2}{2^2 . 4^2 . 6^2 . 8^2}, \text{ \&c.} \right\}$ where C is the circumference of the circumſcribing circle.

2. Elliptic circum. $= (t + c) \times 3{\cdot}1416$ nearly.

3. ——— $= 3{\cdot}1416 \times \surd 2(t^2 + c^2)$ nearer.

4. ——— $= \frac{1}{2}\left\{3\surd 2(t^2 + c^2) - \frac{6t + p}{4}\right\} \times 3{\cdot}1416$ ſtill nearer.

5. Elliptic circum. $= \frac{1}{2}\left\{5\surd 2(t^2 + c^2) - \frac{35t + 7p}{8} + \frac{pc^2}{16t^2}\right\} \times 3{\cdot}1416$.

6. Elliptic circum. $= \frac{1}{2}\left\{t + c + \surd 2(t^2 + c^2)\right\} \times 3{\cdot}1416$.

7. Elliptic area $= 3{\cdot}14159 \times tc$.

8. ——— $= 3{\cdot}14159 \times tc \times$ ſin. angle of interſection, in which laſt expreſſion t and c are any pair of ſemi-conjugate diameters.

Elliptic Arcs.

Let t repreſent ſtill the ſemi-tranſverſe, c the ſemi-conjugate, and z the diſtance of the ordinate from the centre; then the arc bounded by the ordinate, and the parallel axis, will be

1. Elliptic arc $= z\left\{1 + \frac{c^2}{6t^4}z^2 + \frac{4t^2c^2 - c^4}{40t^8}z^4 + \frac{8t^4c^2 - 4t^2c^4 + c^6}{112t^{12}}z^6, \text{ \&c.}\right\}$

Make $\frac{t^2 - c^2}{t^2} = q$; then,

2. Elliptic arc $= z\sqrt{\frac{t^2 - \frac{1}{3}qz^2}{t^2 - \frac{1}{3}z^2}}$ nearly.

3. ——— $= \frac{1}{5}\left\{qz\sqrt{\frac{t^2 - \frac{1}{3}qz^2}{t^2 - \frac{1}{3}z^n}} - \left(1 + \frac{c^2z^2}{6t^4}\right)4z\right\}$

4. Elliptic arc $= \frac{15pC + (19C - 21p)y}{15pC + (9C - 21p)y} \times x$ nearly, C being the whole axe, where the arc begins; and p, x, and y the correſponding parameter, abſciſs, and ordinate.

Elliptic Segments.

Find the area of the circular ſegment deſcribed on that axe to which the baſe of the ſegment is perpendicular, and call it A; then,

1. As this axe : the other axe :: A : the elliptic ſegment, make the height of the ſegment $= h$, and vertical axe of the ellipſe $= v$, alſo put $\frac{h}{v} = q$; then,

2. Elliptic ſeg. $= tc \times$ tabular number anſwering to y in a table of circular ſegments.

Parabola.

Make any abſciſs $= x$, ordinate $= y$, parameter $= p$, and area $= a$; then will theſe quantities have the following relations, *viz.*

1. Parameter $(p) = \frac{y^2}{x}$

2. Abſciſs $(x) = \frac{y^2}{p}$

3. Ordinate $(y) = \surd px$

4. Area contained between x, y, and the curve $(a) = \frac{2}{3}xy$.

Parabolic Arcs.

Make $\frac{2y}{p} = q$, and $\surd(1 + q^2) = s$; then,

1. Parabolic arc $= \frac{1}{2}p\left\{qs + \text{hyp. log. } (q + s)\right\}$

2. Parabolic arc $= \begin{cases} 2y\left(1 + \frac{q^2}{2.3} - \frac{q^4}{2.4.5} + \frac{3q^6}{2.4.6.7} - \frac{3 \cdot 5q^8}{2.4.6.8.9}, \text{ \&c.}\right\} \\ 2y\left(1 + \frac{q^2}{2 \cdot 3}A - \frac{1 \cdot 3q^2}{4 \cdot 5}B + \frac{3 \cdot 5q^2}{6.7}C - \frac{5 \cdot 7q^2}{8.9}D, \text{ \&c.}\right\} \end{cases}$

where A, B, C, &c. repreſent the preceding terms. To which may be added the following approximations:

3. Parabolic arc $= 2\surd(y^2 + \frac{4}{3}x^2)$ nearly.

4. ——— $= \frac{2}{5}\left\{\surd(y^2 + \frac{4}{3}x^2) - \frac{y^2 + \frac{2}{3}x^2}{\frac{1}{4}y}\right\}$ nearly.

Parabolic Frustum, or Zone.

Let D and d repreſent the two ends, and a the perpendicular diſtance between them; then,

1. Area of zone $= \frac{2}{3}a \times \frac{D^3 - d^3}{D^2 - d^2}$

When $d = 0$, the area becomes $\frac{2}{3}aD$.

Hyperbola.

Let $t =$ the ſemi-tranſverſe diameter, $c =$ the ſemi-conjugate, x any abſciſs, and y its correſponding ordinate; then will theſe quantities have the following relations, *viz.*

1. Ordinate $(y) = \frac{c}{t}\ \surd(2tx + x^2)$

2. Abſciſs - $(x) = t \pm \frac{t}{2c} \sqrt{(c^2 + y^2)}$

3. Conjugate $(c) = \frac{ty}{\sqrt{(2tx + x^2)}}$

4. Diameter - $(t) = \frac{cx}{y} \left\{ \sqrt{(c^2 + y^2)} \pm c \right\}$

Hyperbolic Arcs.

Let t and c be any ſemi-diameter and its conjugate as before; and y the ordinate which limits the arc to be meaſured from the vertex; then,

Making $\frac{t^2 + c^2}{c^4} = q$, and hyp. log. $\frac{y + \sqrt{(c^2 + y^2)}}{c}$ $= \mathrm{A}$.

Alſo, $\frac{1}{2} \left\{ y \sqrt{(c^2 + y^2)} - c^2 \mathrm{A} \right\} = \mathrm{B}$.

$\frac{1}{4} \left\{ y^3 \sqrt{(c^2 + y^2)} - 3 c^2 \mathrm{B} \right\} = \mathrm{C}$.

$\frac{1}{6} \left\{ y^5 \sqrt{(c^2 + y^2)} - 5 c^2 \mathrm{C} \right\} = \mathrm{D}$.

&c. &c. &c.

The length of the arc contained between the vertex and ordinate will be,

$$1.\ \text{Arc} = c \times \left\{ \mathrm{A} + \frac{q}{2} \mathrm{B} - \frac{q^2}{2 \cdot 4} \mathrm{C} + \frac{3 q^3}{2 \cdot 4 \cdot 6} \mathrm{D} - \frac{3 \cdot 5 q^4}{2 \cdot 4 \cdot 6 \cdot 8} \mathrm{E}, \text{\&c.} \right\}$$

$$2\ \ \text{Arc} = y \times \left\{ \begin{array}{l} 1 + \frac{t^2 y^2}{6 c^4} - \frac{(t^4 + 4 t^2 c^2) y^4}{40 c^8} + \frac{(t^6 + 4 t^4 c^2 + 8 t^2 c^4) y^6}{112 c^{12}} \\ - \frac{(5 t^8 + 24 t^6 c^2 + 48 t^4 c^4 + 64 t^2 c^6) y^8}{1152 c^{16}}, \text{\&c.} \end{array} \right.$$

$$3.\ \text{Arc} = y \left\{ \begin{array}{l} 1 + \frac{t^2 y^2}{6 c^4} \mathrm{A} - \frac{t^2 + 4 c^2}{c^4} \cdot \frac{3 y^2}{20} \mathrm{B} + \frac{t^4 + 4 t^2 c^2 + 8 c^4}{t^2 + 4 c^2} \cdot \frac{5 y^2}{14 c^4} \mathrm{C} \\ - \frac{5 t^6 + 24 t^4 c^2 + 48 t^2 c^4 + 64 c^6}{t^4 + 4 t^2 c^2 + 8 c^4} \cdot \frac{7 y^2}{72 c^4} \mathrm{D}\ \text{\&c.} \end{array} \right.$$

To which may be added the following approximation:

$$4.\ \text{Arc} = \frac{120 c^2 t + (19 t^2 + 21 c^2) 4 x}{120 c^2 t + (9 t^2 + 21 c^2) 4 x} + y, \text{ nearly.}$$

Hyperbolic Segments.

Let t and c ſtill repreſent the ſemi-diameter and its conjugate, x an abſciſs, $2y$ the double ordinate, which cuts off the ſegment, and z its diſtance from the centre; then,

1. Hyp. area $= zy - tc \times$ hyp. log. of $\frac{ty + cz}{tc}$.

Making $\frac{x}{2t + x} = q$, we have

2. Hyp. area $= 2xy \left\{ \frac{1}{3} - \frac{q}{1 \cdot 3 \cdot 5} - \frac{q^2}{3 \cdot 5 \cdot 7} - \frac{q^3}{5 \cdot 7 \cdot 9} - \text{\&c.} \right\}$

3. Hyp. area $= 2xy \left\{ \frac{1}{3} - \frac{1}{5} \mathrm{A} q - \frac{1}{7} \mathrm{B} q - \frac{1}{9} \mathrm{C} q - \text{\&c} \right\}$

where A, B, C, &c. repreſent the preceding terms. To which may be added the following approximations, *viz.*

4. Hyp. area $= \frac{4cx}{15t} \left\{ 4 \sqrt{(2tx + \frac{3}{4} x^2)} + \sqrt{2tx} \right\}$ nearly.

5. Hyp. area $= \frac{4cx}{75t} \left\{ 21 \sqrt{(2tx + \frac{5}{7} x^2)} + 4 \sqrt{2tx} \right\}$, nearly.

Hyperbolic Frustum, or Zone.

The ſame notation remaining as above, let z be the diſtance of a ſecond double ordinate $2 \mathrm{Y}$; then,

1. The area of zone contained between $2y$ and $2\mathrm{Y}$ - $\left.\right\} = \left\{ \mathrm{ZY} - zy - tc \times \text{hyp. log. } \frac{t\mathrm{Y} + c\mathrm{Z}}{ty + cz} \right.$.

Prisms and Cylinders.

Let p repreſent the perimeter of the baſe, a its area, an, h the height or perpendicular altitude; then,

1. Surface $= ph + 2a$
2. Solidity $= ah$.

Pyramids and Cones.

Let p, a, and h, repreſent, as above, the perimeter, area and altitude; then,

1. Surface $= \frac{1}{2} ph + a$
2. Solidity $= \frac{1}{3} ah$.

The latter rule obtains alſo in oblique cones and pyramids.

Frustums of Cones and Pyramids.

Let A and a repreſent the areas of the two ends, P and p their perimeters, and h the altitude of the body; then,

1. Surface $= \frac{1}{2} h (\mathrm{P} + p) + (\mathrm{A} + a)$
2. Solidity $= \frac{1}{3} h (\mathrm{A} + a) + \frac{1}{3} h (\sqrt{\mathrm{A} a})$.

If the ends are circles, or regular polygons, by putting D and d for the diameters, and C and c for the circumferences in the former caſe; alſo S and s for the ſides of the polygon in the latter, and T for the tabular number anſwering to any particular polygon; then,

4. Solidity of fruſt. cone $= \frac{1}{3} h (\mathrm{D}^2 + \mathrm{D} d + d^2) \cdot 7854$.
5. —— fruſt. cone $= \frac{1}{3} h (\mathrm{C}^2 + \mathrm{C} c + c^2) \cdot 07958$.
6. —— fruſt. pyra. $= \frac{1}{3} h (\mathrm{S}^2 + \mathrm{S} s + s^2) \mathrm{T}$.

Prismoid.

Let A and a repreſent the areas of the two ends, a the area of the middle ſection, and l the length of the ſolid; then,

1. Solidity $= \frac{1}{6}\, l\,(A + 4\,a + a)$.

Wedge.

Make L the length of the baſe, l the length of the edge, b the breadth of the baſe, and h the height of the wedge; then,

1. Solidity $= \frac{1}{6}\, h\, b\,(2\,L + l)$.

Cylindric Ungula.

When the plane paſſes through the baſe of the cylinder.

Make the altitude $=$ H, the baſe $= b$, $\frac{1}{2}$ arc of baſe $= a$, the ſine, coſine, and verſed ſine of $\frac{1}{2}$ arc $= s$, c, and v, and diameter of cylindric baſe $= d$; then,

1. Curve ſurf. ungula $= \dfrac{(d\,s - a\,c)\,H}{v}$.
2. Solidity ungula $= \dfrac{(\frac{2}{3}\,s^3 - b\,c)\,H}{v}$.

When the cutting plane does not paſs through the baſe.

Put, in addition to the above notation, h for the leaſt height of the ungula, H ſtill repreſenting the greater height; then,

1. Curve ſurface $= \frac{1}{2}\,(H + h) \times 3{\cdot}1416\, d$
2. Solidity $= \frac{1}{2}\,(H + h) \times {\cdot}7854\, d^2$
3. ——— $= \frac{1}{2}\,(H + h) \times {\cdot}07958\, c^2$

where c is the circumference of the cylinder.

Conic Ungula.

When the cutting plane paſſes through the oppoſite ends of the fruſtum.

Make the diameter of the greater end $=$ D, of the leſs end $= d$, and altitude $= h$; then,

1. Solidity gt. hoof $= \dfrac{D^2 - d\,\sqrt{D\,d}}{D - d} \times {\cdot}2618\, D\, h$
2. ——— lt. hoof $= \dfrac{D\,\sqrt{D\,d} - d^2}{D - d} \times {\cdot}2618\, D\, h$
3. Differ. of hoofs $= \dfrac{(D^{\frac{3}{2}} - d^{\frac{3}{2}})^2}{D - d} \times {\cdot}2618\, h$.

Sphere, or Globe.

Let d repreſent the diameter, c the circumference, s the ſurface, and S the ſolidity of the ſphere; then,

1. Surface $(s) = c\,d$
2. ——— $(s) = 3{\cdot}1416\, d^2$
3. ——— $(s) = {\cdot}3183\, c^2$
4. Solidity $(S) = \frac{1}{6}\, s\, d$
5. ——— $(S) = {\cdot}01688\, c^3$
6. ——— $(S) = {\cdot}5236\, d^3$.

Spherical Segments and Zones.

The ſame notation remaining, let r repreſent the radius of the baſe of the ſegment, and h its height; then,

1. Surface of ſeg. $= 3{\cdot}1416\, d\, h$
2. Solidity of ſeg. $= {\cdot}5236\, h\,(3\,r^2 + h^2)$
3. ——— $= {\cdot}5236\, h\,(3\,d - 2\,h)$.

For the zone, put R and r for the two radii of its ends, and h its altitude; then,

4. Surface of zone $= 3{\cdot}1416\, d\, h$
5. Solidity - $= 1{\cdot}5708\, h\,(R^2 + r^2 + \frac{1}{3}\, h^2)$.

Circular Spindle.

Put $l = \frac{1}{2}$ length of the ſpindle, $m = \frac{1}{2}$ its middle diameter, a the length of the generating arc, and A the area of generating ſegment.

Make $\dfrac{l^2 + m^2}{2\,m} = r$; then,

1. Surface of ſpindle $= 2\left\{\, l\,r - a\,(r - m)\,\right\} \times 3{\cdot}1416$.
2. Solidity $= 4\left\{\frac{1}{3}\, l^3 - \frac{1}{2}\, A\,(r - m)\right\} \times 3{\cdot}1416$.

For the middle zone of a circular ſpindle, make L $= \frac{1}{2}$ the length of the ſpindle, $l = \frac{1}{2}$ the length of the zone, A the generating area, r and m being the ſame as above; then

3. Solidity of zone $= 2\left\{(L^2 - \frac{1}{3}\, l^2)\, l - A\,(r - m)\right\} \times 3{\cdot}1416$

The Regular Bodies.

Let S repreſent the ſide or edge of one of the equal faces; then,

1. Tetraedron $\begin{cases} \text{Surf.} = s^2 \times 1{\cdot}73205 = s^2\,\sqrt{3} \\ \text{Solid.} = s^3 \times 0{\cdot}11785 = \frac{1}{12}\, s^3\,\sqrt{2} \end{cases}$
2. Hexaedron $\begin{cases} \text{Surf.} = s^2 \times 6{\cdot}00000 = 6\, s^2 \\ \text{Solid.} = s^3 \times 1{\cdot}00000 = s^3 \end{cases}$
3. Octaedron $\begin{cases} \text{Surf.} = s^2 \times 3{\cdot}46410 = 2\, s^2\,\sqrt{3} \\ \text{Solid.} = s^3 \times 0{\cdot}47140 = \frac{1}{3}\, s^3\,\sqrt{2} \end{cases}$
4. Dodecaedron $\begin{cases} \text{Surf.} = s^2 \times 20{\cdot}64578 = 15\, s^2 \\ \quad \sqrt{(1 + \frac{2}{5}\sqrt{5})} \\ \text{Solid.} = s^3 \times 7{\cdot}66312 = 5\, s^3 \\ \quad \sqrt{\dfrac{47 + 21\,\sqrt{5}}{40}} \end{cases}$
5. Icoſaedron $\begin{cases} \text{Surf.} = s^2 \times 8{\cdot}66025 = 5\, s^2\,\sqrt{3} \\ \text{Solid.} = s^3 \times 2{\cdot}18169 = \frac{5}{6}\, s^3 \\ \quad \sqrt{\dfrac{7 + 3\,\sqrt{5}}{2}} \end{cases}$

Spheroid.

Let f denote the fixed axe, and r the revolving axe; then making $3{\cdot}1416 = p$, and $\dfrac{f^2 \backsim r^2}{f^2} = q$; we have

1. Solidity $= \frac{1}{6}\, f\, r^2\, p$
2. Surface $= f\,r\,p\left\{1 \mp \dfrac{A\,q}{2\cdot3} - \dfrac{3\,B\,q}{4\cdot5} \mp \dfrac{3\cdot5\,C\,q}{6\cdot7} - \dfrac{5\cdot7\,D\,q}{8\cdot9}, \text{\&c.}\right\}$ the upper ſign having place in the oblong ſphere, and the lower ſign in the oblate ſphere.

If, alſo, we make $\dfrac{r}{f} = z$, $\sqrt{1 \backsim z^2} = s$, $m =$ the meaſure in degrees of the arc whoſe ſign is s; likewiſe

P $= 01745329\, m$ in the oblong ſphere,
P $= 2{\cdot}30285$ log. $(s + z)$ in the oblate ſphere; then

3. Surface $= \dfrac{P\,f + r\,s}{2\,s} \times 3{\cdot}1416\, r$.

Frustums *of* Spheroids.

Let f repreſent the fixed axe, and r the revolving one; $3{\cdot}1416 = p$, $\dfrac{f^2 \backsim r^2}{f^2} = q$; h the height of the fruſtum, $\dfrac{4\,q\,h^2}{f^2} = z$; then the fruſtum being cut off by two planes perpendicular to the fixed axe, one of thoſe planes paſſing through the centre of the ſpheroid, we ſhall have

1. Surface $= p\,r\,h\left\{1 \pm \dfrac{A\,z}{2\cdot3} - \dfrac{3\,B\,z}{4\cdot5} \pm \dfrac{3\cdot5\,C\,z}{6\cdot7}\right.$

$\left.\frac{5.7Dz}{8.9}, \&c.\right\}$ where A, B, C, &c. are the preceding terms, and the upper or under ſign is to be uſed, according as it is the oblate or oblong ſpheroid.

For the ſolidity, make the diameter of the greater end = D, of the leſs end = d; then

2. Solidity $= \frac{1}{12}(2D^2 + d^2)\,h \times 3{\cdot}1416.$

If the fruſtum be cut off by planes, one of which paſſes through the fixed axe, and the other parallel to it; then putting T the tranſverſe axe, and C the conjugate of the greater end; and t and c for thoſe of the leſs end;

3. Solidity $= \frac{1}{12}(2TC + tc)\,h \times 3{\cdot}1416.$

Note.—For the whole middle fruſtum the above reſults muſt be doubled.

SEGMENTS *of* SPHEROIDS.

Let f denote the fixed axe; r the revolving axe; h the height of the ſegment; then

1. *When the baſe is parallel to the revolving axe.*

Solidity $= \frac{r^2}{f^2}(3f \backsim 2h)\,h^2 \times {\cdot}5236.$

2. *When the baſe is perpendicular to the revolving axe.*

Solidity $= \frac{r^2}{f^2}(3r \backsim 2h)\,h^2 \times {\cdot}5236$

ELLIPTIC SPINDLES.

Put the perpendicular axe of the ellipſe = a; the parallel axe = b; length of the ſpindle = l; diſtance of the centre of the ſpindle and ellipſe = C; and area of the generating ſegment = A; then

1. Solidity $= 1{\cdot}57078 \times \left\{\frac{a^2 l^3}{3b^2} - 4cA\right\}$

2. Solidity $= \frac{2}{3}l \times {\cdot}7854\left\{D^2 - 4c\left(\frac{3A}{l} - D\right)\right\}$

where D is the greateſt diameter of the ſpindle.

PARABOLOID.

Let y repreſent the ordinate or ſemi-diameter of the baſe; x the altitude of the ſolid; $3{\cdot}1416 = p$; then

1. Surface $= \frac{2py}{12x^2}\left\{(y^2 + 4x^2)^{\frac{3}{2}} - y^3\right\}$

2. Solidity $= \frac{1}{2}p\,y^2 x.$

FRUSTUMS *of* PARABOLOIDS.

Let D denote the greater diameter, d the leſs; P the parameter; and h the height of the fruſtum; then

1. Surface $= \frac{(P^2 + D^2)^{\frac{3}{2}} - (P^2 + d^2)^{\frac{3}{2}}}{P} \times \frac{1}{6}p$

where $p = 3{\cdot}1416.$

2. Solidity $= {\cdot}3927\,h\,(D^2 + d^2).$

Theſe formulæ only obtain when the baſe of the fruſtum is perpendicular to the axis of the ſolid. For an oblique ſegment, multiply the baſe by half the altitude for the content.

PARABOLIC SPINDLE.

Let m denote the middle diameter, and l the length of the ſpindle; then

1. Solidity $= {\cdot}418879\,l\,m^2$

For the ſolidity of the middle fruſtum.

Let d denote the diameter of the end, then the former notation remaining,

1. Solidity $= {\cdot}05236\,l\,(8m^2 + 3d^2 + 4dm).$

HYPERBOLOID.

Let a and c repreſent the ſemi-axes of the generating hyperbola; v the diſtance of its baſe from the centre.

Alſo let $A = \frac{a^2}{\sqrt{(a^2 + c^2)}}$ be the ſemi-tranſverſe of another hyperbola, whoſe ſemi-conjugate is c, the ſame with that of the former.

Then find by the proper formula, the area of the fruſtum of this latter hyperbola, whoſe ends are diſtant from the centre by v and a; multiply this area by 3·1416 for the ſurface; that is

1. Surface $= p \times \left\{vY - ay - AC \,.\, \text{hyp. log. of}\ \frac{A\gamma + cv}{Ay + ac}\right\}$, where $p = 3{\cdot}1416$, Y and y the ordinates of the latter hyperbola.

2. Solidity $= \frac{1}{2}\,\text{par.}^2 \times \frac{t + \frac{2}{3}a}{t + a}$

where a = altitude, r = radius of the baſe, t the tranſverſe axis, and $p = 3.1416$.

3. Solidity $= \frac{r^2 + d^2}{6} \times ap$

where d is the diameter, in the middle between the baſe and vertex.

FRUSTUMS *of* HYPERBOLOIDS.

Let D and d denote the ſemi-diameters of the two ends, a the altitude, t and c the tranſverſe and conjugate axes, $p = 3{\cdot}1416$; then

1. Solidity $= \frac{1}{2}pa\left\{D^2 + d^2 - \frac{c^2 a^2}{3t^2}\right\}$

2. Solidity $= \frac{1}{6}pa\left\{D^2 + 4\delta^2 + d^2\right\}$

where δ is the middle diameter.

HYPERBOLIC SPINDLE.

Let A = the generating area, D the greateſt diameter, L the length of the ſpindle, $p = 3{\cdot}1416$; then

1. Solidity $\frac{1}{2}p\left\{\frac{(L^2 + D^2)}{D}A - \frac{1}{3}L^3\right\}$

2. Solidity $\frac{1}{6}pL\left\{D^2 + \frac{(3A - LD)}{L}4C\right\}$

where C is the central diſtances.

To the preceding formulæ it will be proper to annex the following table of the area of circular ſegments, which will be found very convenient in various problems relating to the circle and ellipſe; and with this addition, the foregoing formulæ will be found to contain all that is eſſentially neceſſary for meaſuring any plane or ſolid, with the exception of ſome of the higher curves, which could not be conveniently reduced into a ſimilar form. In thoſe caſes where logarithms, ſines, tangents, &c. are neceſſary, ſee LOGARITHMS, SINES, &c.

TABLE of Circular Segments to Radius ½.

Versed Sine.	Area of Segment.	Versed Sine.	Area of Segment.	Versed Sine.	Area of Segment.	Versed Sine.	Area of Segment.	Versed Sine.	Area of Segment.	Versed Sine.	Area of Segment.	Versed Sine.	Area of Segment.	Versed Sine.	Area of Segment.	Versed Sine.	Area of Segment.	Versed Sine.	Area of Segment.
·001	·000042	·051	·015119	·101	·041476	·151	·074589	·201	·112624	·251	·154412	·301	·199085	·351	·245934	·401	·294349	·451	·343777
·002	·000119	·052	·015561	·102	·042080	·152	·075306	·202	·113426	·252	·155280	·302	·200003	·352	·246889	·402	·295330	·452	·344772
·003	·000219	·053	·016007	·103	·042687	·153	·076026	·203	·114230	·253	·156149	·303	·200922	·353	·247845	·403	·296311	·453	·345768
·004	·000337	·054	·016457	·104	·043296	·154	·076740	·204	·115035	·254	·157019	·304	·201841	·354	·248801	·404	·297292	·454	·346764
·005	·000470	·055	·016911	·105	·043908	·155	·077469	·205	·115842	·255	·157890	·305	·202761	·355	·249757	·405	·298273	·455	·347759
·006	·000618	·056	·017369	·106	·044522	·156	·078194	·206	·116650	·256	·158762	·306	·203863	·356	·250715	·406	·299255	·456	·348755
·007	·000779	·057	·017831	·107	·045139	·157	·078921	·207	·117460	·257	·159636	·307	·204605	·357	·251673	·407	·300238	·457	·349752
·008	·000951	·058	·018296	·108	·045789	·158	·079649	·208	·118271	·258	·160510	·308	·205527	·358	·252631	·408	·301220	·458	·350748
·009	·001135	·059	·018766	·109	·046381	·159	·080380	·209	·119083	·259	·161386	·309	·206451	·359	·253590	·409	·302203	·459	·351745
·010	·001329	·060	·019239	·110	·047005	·160	·081112	·210	·119897	·260	·162263	·310	·207376	·360	·254550	·410	·303187	·460	·352741
·011	·001533	·061	·019716	·111	·047632	·161	·081846	·211	·120712	·261	·163140	·311	·208301	·361	·255510	·411	·304171	·461	·353789
·012	·001746	·062	·020196	·112	·048262	·162	·082582	·212	·121529	·262	·164019	·312	·209227	·362	·256471	·412	·305155	·462	·354736
·013	·001968	·063	·020680	·113	·048894	·163	·083320	·213	·122347	·263	·164899	·313	·210154	·363	·257433	·413	·306140	·463	·355732
·014	·002199	·064	·021168	·114	·049528	·164	·084059	·214	·123167	·264	·165780	·314	·211082	·364	·258395	·414	·307125	·464	·356730
·015	·002438	·065	·021659	·115	·050165	·165	·084801	·215	·123988	·265	·166663	·315	·212011	·365	·259357	·415	·308110	·465	·357727
·016	·002685	·066	·022154	·116	·050804	·166	·085544	·216	·124810	·266	·167546	·316	·212940	·366	·260320	·416	·309095	·466	·358725
·017	·002940	·067	·022652	·117	·051046	·167	·086289	·217	·125634	·267	·168430	·317	·213871	·367	·261284	·417	·310081	·467	·359723
·018	·003202	·068	·023154	·118	·052090	·168	·087036	·218	·126459	·268	·169315	·318	·214802	·368	·262248	·418	·311068	·468	·360721
·019	·003471	·069	·023659	·119	·052736	·169	·087785	·219	·127285	·269	·170902	·319	·215733	·369	·263213	·419	·312054	·469	·361719
·020	·003748	·070	·024168	·120	·053380	·170	·088535	·220	·128113	·270	·171089	·320	·216666	·370	·264178	·120	·313041	·470	·362717
·021	·004031	·071	·024680	·121	·054036	·171	·089287	·221	·128942	·271	·171978	·321	·217599	·371	·265144	·421	·314029	·471	·363715
·022	·004322	·072	·025195	·122	·054689	·172	·090041	·222	·129773	·272	·172867	·322	·218533	·372	·266111	·422	·315016	·472	·364713
·023	·004618	·073	·025714	·123	·055345	·173	·090797	·223	·130605	·273	·173758	·323	·219468	·373	·267078	·423	·316004	·473	·365712
·024	·004921	·074	·026236	·124	·056003	·174	·091554	·224	·131438	·274	·174649	·324	·220404	·374	·268048	·424	·316992	·474	·366710
·025	·005230	·075	·026761	·125	·056663	·175	·092313	·225	·132272	·275	·175542	·325	·221340	·375	·269013	·425	·317981	·475	·367709
·026	·005546	·076	·027289	·126	·057326	·176	·093074	·226	·133108	·276	·176435	·326	·222277	·376	·269982	·426	·318970	·476	·368708
·027	·005867	·077	·027821	·127	·057991	·177	·093836	·227	·133945	·277	·177330	·327	·223215	·377	·270951	·427	·319959	·477	·369707
·028	·006194	·078	·028356	·128	·058658	·178	·094601	·228	·134784	·278	·178225	·328	·224154	·378	·271920	·428	·320948	·478	·370706
·029	·006527	·079	·028894	·129	·059327	·179	·095366	·229	·135624	·279	·179122	·329	·225093	·379	·272890	·429	·321938	·479	·371705
·030	·006865	·080	·029435	·130	·059999	·180	·096134	·230	·136465	·280	·180019	·330	·226033	·380	·273816	·430	·322928	·480	·372764
·031	·007209	·081	·029979	·131	·060672	·181	·096903	·231	·137307	·281	·180918	·331	·226974	·381	·274832	·431	·323918	·481	·873703
·032	·007558	·082	·030526	·132	·061348	·182	·096674	·232	·138150	·282	·181817	·332	·227915	·382	·275803	·432	·324909	·482	·374702
·033	·007913	·083	·031076	·133	·062026	·183	·098447	·233	·138995	·283	·182718	·333	·228858	·383	·276775	·433	·325900	·483	·375702
·034	·008273	·084	·031629	·134	·062707	·184	·099221	·234	·139841	·284	·183619	·334	·229801	·384	·277748	·434	·326892	·484	·376702
·035	·008638	·085	·032186	·135	·063389	·185	·099997	·235	·140688	·285	·184521	·335	·230745	·385	·278721	·435	·327882	·485	·377701
·036	·009008	·086	·032745	·136	·064074	·186	·100774	·236	·141537	·286	·185425	·336	·231689	·386	·279694	·436	·328874	·486	·378701
·037	·009383	·087	·033307	·137	·064760	·187	·101553	·237	·142387	·287	·186329	·337	·232684	·387	·280668	·437	·329866	·487	·379700
·038	·009763	·088	·033872	·138	·065449	·188	·102334	·238	·143238	·288	·187234	·338	·233580	·388	·281642	·438	·330858	·488	·380700
·039	·010148	·089	·034441	·139	·066149	·189	·103116	·239	·144091	·289	·188140	·339	·234526	·389	·282617	·439	·331850	·489	·381699
·040	·010537	·090	·035011	·140	·066833	·190	·103900	·240	·144944	·290	·189047	·340	·235473	·390	·283592	·440	·832843	·490	·382699
·041	·010931	·091	·035585	·141	·067528	·191	·104685	·241	·145799	·291	·189955	·341	·236421	·391	·284568	·441	·333836	·491	·383699
·042	·011330	·092	·036162	·142	·068225	·192	·105472	·242	·146655	·292	·190864	·342	·237369	·392	·285544	·442	·334829	·492	·384699
·043	·011734	·093	·036741	·143	·068924	·193	·106261	·243	·147512	·293	·191775	·343	·238318	·393	·286521	·443	·335822	·493	·385699
·044	·012142	·094	·037323	·144	·069625	·194	·[illegible]07051	·244	·148371	·294	·192684	·344	·239268	·394	·287498	·444	·336816	·494	·386699
·045	·012554	·095	·037909	·145	·070328	·195	·[illegible]842	·245	·149230	·295	·193596	·345	·240218	·395	·288476	·445	·337310	·495	·387699
·046	·012971	·096	·038196	·146	·070033	·196	·108636	·246	·150091	·296	·194509	·346	·241169	·396	·289453	·446	·338804	·496	·388699
·047	·013392	·097	·039087	·147	·071741	·197	·109430	·247	·150953	·297	·195422	·347	·242121	·397	·290432	·447	·339798	·497	·389699
·048	·013818	·098	·039680	·148	·072450	·198	·110226	·248	·151816	·298	·196337	·348	·243074	·398	·291411	·448	·340798	·498	·390699
·049	·014247	·099	·040276	·149	·073161	·199	·111024	·249	·152680	·299	·197252	·349	·244026	·399	·292390	·449	·341787	·499	·391699
·050	·014681	.000	·040875	·150	·073874	·200	·111823	·250	·153546	·300	·198168	·350	·244980	·400	·293396	·450	·342782	·500	·392699

Let us now, before we conclude this article, give a few examples in order to illuſtrate the uſe of the preceding formulæ; in doing which we ſhall only ſelect a few of the moſt difficult caſes, the others being ſo extremely obvious, that no heſitation or doubt can poſſibly ariſe in their application.

Example 1.—The three ſides of a triangle are 790, 1000, and 864: required the area.

By formula 4, *for triangles, we have*

$$\text{Log. area} = \tfrac{1}{2}\left\{\begin{array}{l}\text{log. } \tfrac{1}{2}s + \text{log. } (\tfrac{1}{2}s - a) + \text{log. } (\tfrac{1}{2}s - b) \\ \quad + \text{log. } (\tfrac{1}{2}s - a)\end{array}\right\}$$

$$\begin{array}{rl} \text{Now } 790 = & a \\ 1000 = & b \\ 864 = & c \\ \hline 2)\,2654 = & s \end{array}$$

$$\begin{array}{rcl|lcl} 1327 &=& \tfrac{1}{2}s & \text{log. } 1327 &=& 3{\cdot}122871 \\ 537 &=& (\tfrac{1}{2}s - a) & \text{log. } 537 &=& 2{\cdot}729974 \\ 327 &=& (\tfrac{1}{2}s - b) & \text{log. } 327 &=& 2{\cdot}514548 \\ 463 &=& (\tfrac{1}{2}s - c) & \text{log. } 463 &=& 2{\cdot}665581 \\ \hline &&&&& 2)\,11{\cdot}032974 \\ \hline &&& \text{The area} = 328474 &=& 5{\cdot}516487 \end{array}$$

Example 2.—The two diagonals of a trapezium are 30 and 40, and their angle of interſection 48°: required the area.

By formula 2, *the area* $= \frac{1}{2}\,\delta\,\delta'\,\textit{ſin.}\ M'$.

$$\begin{array}{rr} \text{ſin. } 48^\circ = & {\cdot}743145 \\ \tfrac{1}{2}\delta\delta = \tfrac{1}{2}(30 \times 40) = & 600 \\ \hline \text{The area} = & 445{\cdot}887000 \end{array}$$

Example 3.—Required the length of a circular arc, whoſe chord is 6, and radius 9.

By formula 2, *for circular arcs.*

$$\text{The area} = 2d\sqrt{q} + \frac{q}{2\cdot 3}\text{A} + \frac{3^2 q}{4\cdot 5}\text{B} + \frac{5^2 q}{6\cdot 7}\text{C, \&c.}$$

where $q = \frac{v}{d}$; v being the verſed ſine, and d the diameter.

By the property of the circle we readily find the verſed ſine, $v = 9 - 6\sqrt{2} = {\cdot}51471862$, and $\cdot51471862 \div 18 = {\cdot}02859548$.

$$\begin{array}{rcl} \text{Whence A} = 2d\sqrt{q} &=& 6{\cdot}087672 \\ \text{B} = \frac{q}{2\cdot 3}\text{A} &=& 29013 \\ \text{C} = \frac{3^2 q}{4\cdot 5}\text{B} &=& 373 \\ \text{D} = \frac{5^2 q}{6\cdot 7}\text{C} &=& 6 \\ \hline && 6{\cdot}117064 = \text{arc as required.} \end{array}$$

Or, by uſing formula 3, we have

$$\text{arc} = 2s + \frac{q}{2\cdot 3}\text{A} + \frac{3^2 q}{4\cdot 5}\text{B} + \frac{5^2 q}{6\cdot 7}\text{C} + \frac{7^2 q}{8\cdot 9}\text{D, \&c.}$$

where s is the ſine of the half arc $= 3$, and $q = \frac{s^2}{r^2} = \frac{9}{81} = \frac{1}{9} = 0{\cdot}1111111$, &c.

$$\begin{array}{rlcl} \text{Whence A} = & 2s &=& 6{\cdot}00000 \\ \text{B} = & \frac{q}{2\cdot 3}\text{A} &=& 0{\cdot}11111 \\ \text{C} = & \frac{3^2 q}{4\cdot 5}\text{B} &=& 0{\cdot}05555 \\ \text{D} = & \frac{5^2 q}{6\cdot 7}\text{C} &=& 0{\cdot}00367 \\ \text{E} = & \frac{7^2 q}{8\cdot 9}\text{D} &=& 0{\cdot}00028 \\ \text{F} = & \frac{9^2 q}{10\cdot 11} &=& 0{\cdot}00002 \\ \hline & \text{The required arc} &=& 6{\cdot}11063 \end{array}$$

Example 4.—Required the area of that circular ſegment, of which the diameter is 52, and the height or verſed ſine 2.

By formula 2, *for circular ſegments.*

$$\text{Area} = 2\sqrt{dv} \times \left\{\tfrac{2}{3} - \frac{3v}{5\cdot 2d}\text{A} - \frac{5v}{7\cdot 4d}\text{B} - \frac{7\cdot 3v}{9\cdot 6d}\text{C \&c.}\right\};$$

where v is the verſed ſine $= 2$, and the diameter $= 52$.

$$\begin{array}{rclcl} +\text{A} = \frac{4v\sqrt{dv}}{3} &=& \frac{1}{3}\sqrt{104} &=& 27{\cdot}1947707 \\ -\text{B} = \frac{3v}{5\cdot 2d}\text{A} &=& \frac{3}{10\cdot 26}\text{A} &=& 0{\cdot}3137858 \\ -\text{C} = \frac{5v}{7\cdot 4d}\text{B} &=& \frac{5}{7\cdot 4\cdot 29}\text{B} &=& 0{\cdot}0021551 \\ -\text{D} = \frac{7\cdot 3v}{9\cdot 6d}\text{C} &=& \frac{7}{3\cdot 6\cdot 26}\text{C} &=& 0{\cdot}0000322 \\ -\text{E} = \frac{9\cdot 5v}{11\cdot 8d}\text{D} &=& \frac{9\cdot 5}{11\cdot 8\cdot 26}\text{D} &=& 0{\cdot}0000007 \\ \hline && \text{Negative terms} &=& -\ 0.3159738 \\ && \text{Area of ſegment} &=& 26{\cdot}8787969 \end{array}$$

But the readieſt method of finding the area of circular ſegment is by formula 9; where the area $= d^2 \times$ by tabular number correſponding to $\frac{v}{d}$.

In the preſent examples $\frac{v}{d} = \frac{2}{52} = \frac{1}{26} = {\cdot}038\,\frac{6}{13}$, the correſponding tabular number by preceding table $= {\cdot}009940$, and $\cdot009940 \times 52^2 = 26{\cdot}878$, the area required.

This method, however, can only be practiſed in caſes where great accuracy is not required, unleſs the table of ſegments be very extenſive, ſuch as that given by Hutton in his Menſuration.

Note.—In thoſe caſes where the quotient is not found *exactly* in the column of heights, or verſed ſines, as in the example above, a proportional part muſt be found for the fractional part of the number; *viz.* as 1 is to the difference between the two areas correſponding to the two verſed ſines, between which the given number lies; ſo is the fractional part of that number to a fourth proportional, which muſt be added to the leaſt area, or ſubtracted from the greater.

Example 5.—Required the periphery of an ellipſe, the diameters of which are 24 and 18.

By formula 1, *for the ellipſe.*

$$\text{Periphery} = C \times \left\{ 1 + \frac{m}{2^2} - \frac{3\,m^2}{2^2 \cdot 4^2} - \frac{3^2 \cdot 5\,m^3}{2^2 \cdot 4^2 \cdot 6^2} - \frac{3^2 \cdot 5^2 \cdot 7\,m^4}{2^2 \cdot 4^2 \cdot 6^2 \cdot 8^2}\ \&\text{c.} \right\}$$

where $m = 1 - \frac{c^3}{t^2}$, t and c being the tranſverſe and conjugate diameters, and C the circumference of the circumſcribing circle $= t \times 3{\cdot}1416$.

Here, then, $1 - \frac{c^2}{t^2} = {\cdot}4375 = m$.

$$\begin{array}{llcccccc}
\text{1ſt term} & & 1 & = & & & & + 1{\cdot}00000 \\
\text{2d term A} & = & \frac{m}{2^2} & = & \frac{m}{4} & & = & - {\cdot}10938 \\
\text{3d term B} & = & \frac{3\,m^2}{2^2 \cdot 4^2} & = & \frac{3\,m}{4^2} & A & = & - {\cdot}00897 \\
\text{4th term C} & = & \frac{3^2 \cdot 5\,m^5}{2^2 \cdot 4^2 \cdot 6^2} & = & \frac{3 \cdot 5\,m}{6^2} & B & = & - {\cdot}00164 \\
\text{5th term D} & = & \frac{3^2 \cdot 5^2 \cdot 7\,m^5}{2^2 \cdot 4^2 \cdot 6^2 \cdot 8^2} & = & \frac{5 \cdot 7\,m}{8^2} & C & = & - {\cdot}00039 \\
\text{6th term E} & = & \frac{3^2 \cdot 5^2 \cdot 7^2 \cdot 9\,m^5}{2^2 \cdot 4^2 \cdot 6^2 \cdot 8^2 \cdot 10^2} & = & \frac{7 \cdot 9\,m}{10^2} & D & = & - {\cdot}00011 \\
\text{7th term F} & = & \frac{3^2 \cdot 5^2 \cdot 7^2 \cdot 9^2 \cdot 11\,m^6}{2^2 \cdot 4^2 \cdot 6^2 \cdot 8^2 \cdot 10^2 \cdot 12^2} & = & \frac{9 \cdot 11\,m}{12^2} & E & = & - {\cdot}00003 \\
\text{8th term G} & = & \frac{3^2 \cdot 5^2 \cdot 7^2 \cdot 9^2 \cdot 11^2 \cdot 13\,m^7}{2^2 \cdot 4^2 \cdot 6^2 \cdot 8^2 \cdot 10^2 \cdot 12^2 \cdot 14^2} & = & \frac{11 \cdot 13\,m}{14^2} & F & = & - {\cdot}00001 \\
\hline
 & & & & \text{Negative terms} & & = & {\cdot}12053 \\
 & & & & \text{Firſt term} & & = & 1{\cdot}00000 \\
\hline
 & & & & & & & {\cdot}87947
\end{array}$$

whence $.87947 \times 24 \times 3{\cdot}1416 = 66{\cdot}31056$, the length of the curve required.

Example 6.—Required the length of the curve of a parabola, cut off by a double ordinate to the arc, whoſe length is as 12, the abſciſs being 2.

By formula 1, *for parabolic arcs.*

$$\text{Parabolic arc} = \tfrac{1}{2}\,p \left\{ q\,s + \text{hyp. log.}\,(q + s) \right\}$$

where p is the parameter $= \frac{y^2}{x} = \frac{b^2}{2} = 18$, $q = \frac{2\,y}{p} = \frac{12}{18} = \frac{2}{3}$, and $s = \surd(1 = q^2) = \surd(1 + \frac{4}{9}) = 1{\cdot}2018504$, whence the required arc =

$$9 \times \left\{ \tfrac{2}{3} \times 1{\cdot}2018504 + \text{hyp. log. } 1{\cdot}8675170 \right\}.$$

$$\begin{array}{rr}
\text{Now hyp. log. } 1{\cdot}867517 = & {\cdot}6251449 \\
\tfrac{2}{3} \times 1{\cdot}2018504 = & {\cdot}8012336 \\
\hline
 & 1{\cdot}4263785 \\
\text{Multiplier} & 9 \\
\hline
\text{Parabolic arc} \quad - & 12{\cdot}8374065
\end{array}$$

Example 7.—Required the length of an hyperbolic arc, beginning at the vertex, the tranſverſe diameter being 80, conjugate 60, and ordinate 10.

By formula 1, *for hyperbolic arcs.*

$$\text{Arc} = c \times \left\{ A + \frac{q}{2}\,B - \frac{q^2}{2 \cdot 4}\,C + \frac{3\,q^3}{2 \cdot 4 \cdot 6}\,D - \frac{3 \cdot 5\,q^4}{2 \cdot 4 \cdot 6 \cdot 8}\,E +, \&\text{c.} \right\}$$

$$\text{where} \quad \frac{t^2 + c^2}{c^4} = q = \frac{80^2 + 60^2}{60^4} = \frac{1}{324}$$

$$A = \text{hyp. log. } \frac{y + \surd(c^2 + y^2)}{c} = {\cdot}3274501$$

$$B = \tfrac{1}{2} \left\{ y\,\surd(c^2 + y^2) - c^2\,A \right\} = 10.76133$$

$$C = \tfrac{1}{4} \left\{ y^3\,\surd(c^2 + y^2) - 3\,c^2\,B \right\} = 641{\cdot}796405$$

$$D = \tfrac{1}{6} \left\{ y^5\,\surd(c^2 + y^2) - 5\,c^2\,C \right\} = 45698{\cdot}7933$$

$$E = \tfrac{1}{8}\left\{ y^7 \sqrt{(c^2 + y^2)} - 7\, c^2 D \right\} = 3540529{\cdot}3125$$

$$\begin{array}{llcl|llcl}
\text{Hence} + & A & = & {\cdot}327450 & - \frac{q^2}{2\,.\,4} & C & = & {\cdot}000764 \\
+ \frac{q}{2} & B & = & {\cdot}016607 & - \frac{3\,.\,5\,q^4}{2\,.\,4\,.\,6\,.\,8} & E & = & {\cdot}000012 \\
+ \frac{3\,q^2}{2\,.\,4\,.\,6} & D & = & {\cdot}000084 & \&c. & & = & \&c. \\
\hline
 & \text{Sum} & + & {\cdot}344141 & & \text{Sum} & - & {\cdot}000776
\end{array}$$

therefore difference ·343365 × 30 = 10·30095, the arc required.

Example 8.—Required the ſolidity of a conic fruſtum of which the altitude is 16, and two diameters 20 and 30.

By formula 4, *for conic fruſtums.*

$$\text{Solidity} = \tfrac{1}{3} p \left\{ D^2 + D\,d + d^2 \right\} \times {\cdot}7854$$

where $D = 30$, $d = 20$, and $h = 16$.

Now $30^2 + 30\,.\,20 + 20^2 = 1900$

therefore $\frac{16}{3} \times 1900 \times {\cdot}7854 = 7625{\cdot}38$, the ſolidity required.

Example 9.—Required the ſurface and ſolidity of the five regular bodies, the linear ſide of each being 2.

By the formula for the regular bodies.

Tetraedron	Surface =	1·73205 × 4 =	6·92820
	Solidity =	0.11785 × 8 =	·94280
Hexaedron	Surface =	6·00000 × 4 =	24·00000
	Solidity =	1·00000 × 8 =	8·00000
Octaedron	Surface =	3·46410 × 4 =	14·65640
	Solidity =	0·47140 × 8 =	3·77120
Dodecaedron	Surface =	20·64578 × 4 =	82·58312
	Solidity =	7.66312 × 8 =	61·30496
Icoſaedron	Surface =	8·66025 × 4 =	34·64100
	Solidity =	2·18169 × 8 =	17.45352

Theſe examples will be ſufficient for illuſtrating the uſe of the preceding formulæ, and for rendering their application to any other problems perfectly ſimple and obvious. Neither the limits of this article, nor the nature of the work, would allow of our entering upon their inveſtigation; the reader, therefore, who is deſirous of information on this head, is referred to the works of Dr. Hutton and Mr. Bonnycaſtle, above-mentioned.

Mensuration *of Altitudes, Diſtances,* &c. See Altitude and Distance.

Mensuration *of Land.* See Surveying.

Mensuration *of Timber,* or *Timber Meaſure,* is the method employed by artificers in meaſuring trees, joiſts, beams, &c.: and as theſe always fall under one or other of the regular ſolids which have been already treated of in the preceding article, it would ſeem unneceſſary to repeat here any rules for the menſuration of timber: but the fact is, that an erroneous rule has been adopted by perſons concerned in this line of buſineſs, which common practice has ſo eſtabliſhed, that it is rather to be wiſhed than expected it ſhould be replaced by ſome other, either perfectly true, or approaching towards the truth; for, according to the preſent rule, a tree frequently contains ⅕th more or leſs timber than it is eſtimated at, which, at the modern price of that article, is a matter of ſome importance, and merits the attention of the timber grower, as well as the merchant. Government has, in ſome inſtances, come forward to fix a ſtandard of meaſure, as in corn, coals, land, &c.; and as old prejudices can never be ſo ſucceſsfully combated, as by the authority of enlightened legiſlators, it is to be hoped that we may ſome day find this, and other topics of a ſimilar nature, become the ſubject of parliamentary inveſtigation. We will, in the following pages, ſhew the great inaccuracy attending the preſent method, but, in the firſt place, it will be proper to ſtate the rule as it is at preſent employed by all perſons concerned in the buying or ſelling of timber.

General Rule.

Multiply the ſquare of the mean quarter girt, or quarter circumference, by the length of the tree, for the contents; which, when the dimenſions are taken in feet, will be alſo feet; and this divided by 50, *the number of feet in a load, will give the number of loads.*

Note—1. If the piece of timber is of the ſame girt throughout, the girt any where taken is the mean girt.

2. If the tree tapers regularly from one end to the other, the girt taken in the middle is accounted the mean girt; or take half the ſum of the girts at the two ends for the ſame.

3. But if the tree do not taper regularly, but is unequal, being thick in ſome places and ſmall in others; it is cuſtomary to take ſeveral different dimenſions, the ſum of which, divided by the number of them, is accounted the mean girt. But when the tree is very irregular, it is beſt to divide it into ſeveral lengths, and to find the content of each ſeparately.

4. That part of a tree, or of the branches, whoſe quarter girt is leſs than half a foot, is not accounted timber.

5. It is uſual to make a certain allowance in girting a tree for the thickneſs of the bark, which is generally one inch to every foot in the girt. This practice, however, is unreaſonable, and ought to be diſcouraged. Elm timber is the only kind in which any allowance is neceſſary, and even in this, one inch out of the whole girt is quite ſufficient.

As an example in the preceding rule: let it be required to find the content of a tree, the length of which is 9 feet 6 inches; and quarter girt 3 feet 6 inches.

By Decimals.	By Duodecimals.
3.5	3 – 6
3.5	3 – 6
175	10 – 6
105	1 – 9
Carry forward 12.25	12 – 3

Brought

	By Decimals.	By Duodecimals.
Brought forward	12·25	12—3
	95	9—6
	6125	110—3
	11025	$6—1\frac{1}{2}$
Feet	116·375 =Content = Feet	$116—4\frac{1}{2}$

Such is the rule commonly uſed by perſons concerned in buying and felling of timber, on which we intend to make a few remarks, in order to point out its inaccuracy, which is not ſo generally known as it ought to be. Suppoſe, for inſtance, we take a balk 24 feet long, and a foot ſquare throughout, and, conſequently, its ſolidity 24 feet. Now if this piece of timber be ſlit exactly in two, from end to end, making each piece 6 inches, or $\frac{1}{2}$ a foot broad, and 12 inches, or a foot thick, it is evident that the true ſolidity of each piece will be 12 feet. But by the quarter girt method they would amount to much more: for the falſe quarter girt being equal to half the ſum of the breadth and thickneſs, in this caſe will be 9 inches, or $\frac{3}{4}$ of a foot; the ſquare of which is $\frac{9}{16}$, and therefore $\frac{9}{16} \times 24 = 13\frac{1}{2}$ feet for the ſolidity of each part, making the two pieces together 27 feet, inſtead of 24, which is the true content.

Again, ſuppoſe this balk to be ſo cut, that the breadth of the one piece may be only 4 inches, or $\frac{1}{3}$ of a foot; and that of the other 8 inches, or $\frac{2}{3}$ of a foot. Here the true content of the leſs piece will be 8 feet, and that of the greater 16 feet. But proceeding by the other method, we have the quarter girt of the leſs piece $\frac{2}{3}$ of a foot, and of the other piece $\frac{5}{6}$ of a foot. Whence the content of the leſs piece will be found $= \frac{4}{9} \times 24 = 10\frac{2}{3}$ feet, inſtead of 8 feet; and the content of the greater piece will be $16\frac{2}{3}$ feet, inſtead of 16; making the ſum of the two $27\frac{1}{3}$ feet, inſtead of 24 feet. Farther, if the leſs piece be cut only two inches broad, and conſequently the greater 10 inches, the true content of the leſs piece would be 4 feet, and that of the greater 20 feet. Whereas by the other method, the quarter girt of the leſs piece would be 7 inches, or $\frac{7}{12}$ of a foot; and $\frac{49}{144} \times 24 = 8\frac{1}{2}$ feet, inſtead of 4 feet, for the content; and by the ſame method, the content of the greater piece would be $20\frac{1}{6}$ feet, inſtead of 20, and their ſum $28\frac{1}{6}$ feet, inſtead of 24.

Hence it is obvious, that the greater the proportion is between the breadth and the depth, the greater will be the error, by uſing the falſe method; and the ſum of the two parts, by the ſame method, is greater, as the difference of the ſame two parts is greater; and, conſequently, the ſum is leaſt when the two parts are equal to each other; or when the balk is cut equally in two; and finally, when the ſides of a piece of timber differ not above an inch or two from each other, the quarter girt may be uſed without any very ſenſible error. To avoid, therefore, this inconſiſtency in the reſult, the following method ſhould be employed, *viz. Multiply the length, breadth, and depth continually together, and the product will be the true content in all caſes of this kind.*

With regard to round timber the error is of a different kind. We have ſeen in the preceding article, that the area of a circle is found by ſquaring the circumference, and multiplying that ſquare by ·07958, and, therefore, if a quarter of the circumference is uſed, we muſt multiply its ſquare by ·07958 × 16 = 1·27328.

Hence, to find the true content of a piece of cylindrical timber, we ought to multiply the ſquare of the quarter girt by the conſtant number 1·27328, and that product by the length, inſtead of which the conſtant multiplier is omitted, and conſequently the ſolidity is returned about $\frac{27}{100}$ parts leſs than it is. But as the utmoſt accuracy is not neceſſary in thoſe caſes, the following rule might be uſed, which is as ſimple as can be deſired, *viz. Multiply the ſquare of $\frac{1}{5}$ of the mean girt by double the length for the content, which is not far from the truth.*

Another error to which timber meaſure is always ſubject, is the way in which the mean girt is aſſumed in tapering trees, which, as we have before ſtated, is done either by taking the girt in the middle, or half the ſum of the extreme girts, both of which are equally falſe, ſo obviouſly ſo, that a tree of certain dimenſions will meaſure more after a part of it has been cut off, than it did before. This being the caſe, it will not be amiſs to ſhew the extreme inaccuracy of the method, and the folly in perſiſting in it, by the ſolution of the following problems, which have been taken from Dr. Hutton's Menſuration.

PROBLEM I.

To find where a tapering timber muſt be cut, ſo that the two parts, meaſured ſeparately, ſhall meaſure the moſt poſſible, and be greater than if it were cut in any other two parts, and greater than the whole.

Put G = the greateſt girt, g = the leaſt girt, x = the girt at the ſection, z = the length of the part to be cut off, and L the whole length of the timber. Then by ſimilar figures $L : z :: G - g : x - g$; hence $x = \frac{Gz - gz}{L} + g$: but $(g + x)^2\, z + (G + x)^2\, (L - z)$ is to be a *maximum;* which being put into fluxions, and reduced, gives $z = \frac{1}{2} L$.

Therefore, a tree being cut exactly in the middle, the two parts will meaſure more than if it were cut in any other two parts, and more than the whole tree. If a tree, of which the greater girt is 12 feet, and leſs girt 2 feet, and length 32 feet, be thus cut in two parts, the meaſure of the two parts will exceed the meaſure of the whole tree by 18 feet.

PROBLEM II.

To find where a tree muſt be cut, ſo that the part next the greater end may meaſure the greateſt poſſible.

Here, by uſing the ſame notation as in the laſt problem, we have alſo $x = \frac{Gz - gz}{L} + g$, and $(G + x)^2\, (L - x)$ a *maximum;* which, put into fluxions as before, gives $z = \frac{G - 3g}{G - g} + \frac{1}{3} L$.

Therefore, from the greater girt ſubtract the leſs girt, and that difference divided by the difference of the girts, and multiplied by $\frac{1}{3}$ of the whole length, will be the length to be cut off.

PROBLEM III.

To find where a tree muſt be cut, ſo that the part next the greater end may meaſure the ſame as the whole tree before it was cut.

Uſing ſtill the ſame notation, and writing beſides s for the ſum of the two girts, and d for their difference; we ſhall have $s^2 L = (L - z)\,(G + x)^2$, or ſubſtituting, inſtead of x, its value $\frac{Gz - gz}{L} + g$, or $\frac{dz}{L} + g$, we obtain

$$z = \frac{L}{2d} + \left\{ \sqrt{(4s^2 + d)} - 2s + d \right\}$$

which length being cut off, the remaining part will meaſure the ſame as the whole tree.

Theſe reſults, which are the neceſſary conſequence of the preceding rules, are ſo obviouſly erroneous and inconſiſtent, that they ſpeak for themſelves, and therefore require no farther comment.

MENTAL, ſomething that relates, or is reſtrained, to the operation of the underſtanding.

Thus, a mental prayer is ſuch a one as is made merely in the mind, without pronouncing one word of it.

Mental reſervations are the refuge of hypocrites. See Reservation.

Mental *Derangement.* Under this head may be comprehended a variety of terms, which have been employed to deſignate certain affections of the mind, or, as they have been called, diſorders of the intellect. In the preliminary part of this inveſtigation, it is highly important to underſtand fully the force and meaning of the words, which are intended to eſtabliſh theſe different ſignifications; and alſo to diſcover the contrivances of language, which have ſerved to characterize the phenomena of diſordered underſtanding. That the mind has no language peculiar to itſelf, ſeems to be an admitted axiom; becauſe all the terms which are applied to it have their origin in the phyſical circumſtances which ſurround us. The mental operations, which are ſuppoſed to be extenſive, have not furniſhed any terms, (as the reſult of ſuch internal operations,) which we did not previouſly poſſeſs, and which we have been compelled to borrow from the objects and impreſſions of the material world.

Although authors have generally divided mental derangement into *mania* aand *melancholia*, according to the ſyſtem of the Greeks; yet moſt nations have adopted peculiar expreſſions, to ſignify the form or degree of derangement of intellect. The term *derangement*, which we have taken immediately from the French, and which means out of *rank*, or *order*, is metaphorically applied to the mind, to denote that its ideas are out of the rank, or order, generally preſerved by intelligent beings. *Delirium*, employed by the Romans, had its origin from the proceſs of ploughing: for when the oxen deviated from the line to be purſued, they were ſaid to be *de lira*, out of the track; and this figure was transferred to the deviations of the human intellect, when it erred from the eſtabliſhed courſe. *Inſane*, *inſanus*, means merely *unſound.* The Greek μανία was probably from their verb μαίνομαί, *I rage;* μελανχολια, from μελας, *black*, and χολὴ, *bile;* black bile being ſuppoſed the cauſe of this diſeaſe. In the opinion of Cicero, (Diſputat. Tuſculan. lib. iii. c. 5.) the Roman terms, which marked the diſorders of the intellect, were more appropriate than thoſe employed by the Greeks. "Multoque melius hæc notata ſunt verbis Latinis, quam Græcis: quod aliis quoque multis locis reperietur. Sed id alias: nunc, quod inſtat. Totum igitur id quod quærimus, quid et quale ſit, verbi vis ipſa declarat. Eos enim ſanos quoniam intelligi neceſſe eſt, quorum mens motu, quaſi morbo, perturbata nullo ſit; qui contra affecti ſunt, hos inſanos appellari neceſſe eſt. Itaque nihil melius, quam quod eſt in conſuetudine ſermonis Latini; cum *exiſſe ex poteſtate* dicimus eos, qui effrenati feruntur aut libidine aut iracundia: quamquam ipſa iracundia libidinis eſt pars: ſic enim definitur, *iracundia ulciſcendi libido.* Qui igitur *exiſſe ex poteſtate* dicuntur; idcirco dicuntur, quia non ſunt in poteſtate mentis: cui regnum totius animi a natura tributum eſt. Græci autem μανίαν unde appellant, non facile dixerim. Eam tamen ipſam diſtinguimus nos melius, quam illi; hanc enim inſaniam, quæ juncta ſtultitiæ patet latius, a furore disjungimus: Græci volunt illi quidem, ſed parum valent verbo: quem nos furorem, μελανχολίαν illi vocant. Quaſi vero atra bili ſolum mens, ac non ſæpe vel iracundia graviore, vel timore, vel dolore moveatur! quo genere Athamantem, Alcmæonem, Ajacem, Oreſtem furere dicimus. Qui ita ſit affectus, eum dominum eſſe rerum ſuarum vetant duodecim tabulæ." The ſuppoſed regulation of the intellect, in certain ſtates, by the influence of the moon, has produced the term *lunatic;* which word ſtill prevails in all legal proceedings relative to the inſane. The vulgar opinion, that in madneſs the mind was broken into fragments, has given riſe to the terms *crazy* (*ecraſé*, Fr.), *cracked*, and *ſhatter-brained.* The word *mad* has been derived by Mr. Haſlam ("Obſervations on Madneſs and Melancholy") from the Gothic *mod*, which ſignifies *rage.* He obſerves, "It is true, we have now converted the *o* into *a*, and write the word *mad;* but *mod* was anciently employed." Of the ſimilarity between violent anger and madneſs, the obſervation has been general. Cicero ſays, "An eſt quicquam ſimilius inſaniæ quam ira? quam bene Ennius initium dixit inſaniæ." (Diſp. Tuſc.) Dr. Beddoes (Hygeia, N° 12.) obſerves, that "*mad* is one of thoſe words which means almoſt every thing and nothing. At firſt, it was, I imagine, applied to the tranſports of rage; and when men were civilized enough to be capable of inſanity, their inſanity, I preſume, muſt have been of the frantic ſort; becauſe, in the untutored, intenſe feelings ſeem regularly to carry a boiſterous expreſſion."

Authors, who have treated on the ſubject of mental derangement, have commonly been deſirous of affording a definition: they have endeavoured to compreſs into a few words, or a ſhort ſentence, the prominent and diſcriminating phenomena of inſanity, and thus to eſtabliſh an eſſential character of the diſorder. However meritorious their labours, their ſucceſs has been by no means proportionate to their exertions. They have all fundamentally differed; and to enumerate their attempts is only to record their failures. Dr. Mead conjectures, "that this diſeaſe conſiſts entirely in the ſtrength of imagination." "Inſanity," ſays Dr. Cullen, "conſiſts in ſuch falſe conceptions of the relations of things as lead to irrational emotions or actions. Melancholy is partial inſanity, without indigeſtion; mania is univerſal inſanity." Dr. Ferriar, adopting the generally accepted diviſion of inſanity into mania and melancholia, conceives, in mania, *falſe perception*, and conſequently confuſion of ideas, to be a leading circumſtance. Melancholia he ſuppoſes to conſiſt in *intenſity of idea*, which is a contrary ſtate to falſe perception. Dr. Arnold obſerves, that "inſanity, as well as delirium, may be conſidered as diviſible into two kinds; one of which may be called *ideal*, and the other *notional inſanity.*

"*Ideal inſanity* is that ſtate of mind, in which a perſon imagines he ſees, hears, or otherwiſe perceives, or converſes with, perſons or things, which either have no external exiſtence to his ſenſes at the time; or have no ſuch external exiſtence, as they are then conceived to have; or if he perceives external objects as they really exiſt, has yet erroneous and abſurd ideas of his own form, and other ſenſible qualities:—ſuch a ſtate of mind continuing for a conſiderable time, and being unaccompanied with any violent or adequate degree of fever.

"*Notional inſanity* is that ſtate of mind, in which a perſon ſees, hears, or otherwiſe perceives external objects, as they really exiſt, as objects of ſenſe; yet conceives ſuch notions of the powers, properties, deſigns, ſtate, deſtination, importance, manner of exiſtence, or the like, of things and perſons, of himſelf and others, as appear obviouſly, and often groſsly erroneous, or unreaſonable to the common ſenſe of the ſober and judicious part of mankind. It is of conſiderable duration ; is never accompanied with any great degree of fever, and very often with no fever at all."

Mr. Haſlam, in the firſt edition of his work (Obſervations on Inſanity), defined inſanity to be "an incorrect aſſociation of familiar ideas, which is independent of the prejudices of education, and is always accompanied with implicit belief, and generally with either violent or depreſſing paſſions." But the ſame author, in his ſecond edition, has omitted this definition, and ſeems to be convinced that, inſtead of endeavouring to diſcover an infallible definition of madneſs, which he believes will be found impoſſible, (as it is an attempt to compriſe in a few words the wide range and mutable character of this Proteus-diſorder,) much greater advantage would be obtained, if the circumſtances could be preciſely defined, under which it is juſtifiable to deprive a human being of his liberty.

Symptoms.—The approaches of inſanity have been variouſly related by different writers. The late Dr. John Monro, in a pointed and elegant reply to Dr. Battie's Treatiſe on Madneſs, has remarked, that "high ſpirits, as they are generally termed, are the firſt ſymptoms of this kind of diſorder: theſe excite a man to take a larger quantity of wine than uſual; (for thoſe who have fallen under my obſervation, in this particular, have been naturally very ſober;) and the perſon thus affected, from being abſtemious, reſerved, and modeſt, ſhall become quite the contrary; drink freely, talk boldly, obſcenely, ſwear, ſit up till midnight, ſleep little, riſe ſuddenly from bed, go out a hunting, return again immediately, ſet all his ſervants to work, and employ five times the number that is neceſſary: in ſhort, every thing he ſays or does betrays the moſt violent agitation of mind, which it is not in his power to correct; and yet, in the midſt of all this hurry, he will not miſplace one word, or give the leaſt reaſon for any one to think he *imagines* things to exiſt that really do not, or that they appear to him different from what they do to other people. They who ſee him but ſeldom, admire his vivacity, are pleaſed with his ſallies of wit, and the ſagacity of his remarks: nay, his own family are with difficulty perſuaded to take proper care of him, until it becomes abſolutely neceſſary, from the apparent ruin of his health and fortune."

In many inſtances, pain of the head and throbbing of its arteries precede an attack of inſanity: ſometimes giddineſs and confuſed viſion are complained of, as precurſory ſymptoms. Thoſe who have been ſeveral times diſordered are now and then ſenſible of the return of their malady. Some have deſcribed the attack as highly delightful; and of this pleaſurable feeling, a curious inſtance is recorded in the Bibliotheque Britannique, by a recovered lunatic, who had been a patient of the late Dr. Willis. "I always expected with impatience the acceſſion of the paroxyſms, ſince I enjoyed, during their preſence, a high degree of pleaſure. They laſted ten or twelve hours. Every thing appeared eaſy to me. No obſtacles preſented themſelves either in theory or practice. My memory acquired, all of a ſudden, a ſingular degree of perfection: long paſſages of Latin authors occurred to my mind. In general, I have great difficulty in finding rhythmical terminations; but then I could write in verſe with as much facility as in proſe. I was cunning, malicious, and fertile in all kinds of expedients." Some have deſcribed a ſenſe of working in the head, and alſo in the inteſtines, as if they were in a ſtate of fermentation. Others obſerve that they do not ſeem to poſſeſs their natural feelings; and they all agree that they become confuſed, from the ſudden and rapid intruſion of unconnected thoughts.

Mr. Haſlam, whoſe ſituation in Bethlem Hoſpital affords abundant opportunities of obſerving this diſorder, has thus related the commencement of madneſs and melancholy. "On the approach of mania, they firſt become uneaſy, are incapable of confining their attention, and neglect any employment to which they have been accuſtomed. They get but little ſleep; they are loquacious, and diſpoſed to harangue, and decide promptly and poſitively upon every ſubject that may be ſtarted. Soon after, they are diveſted of all reſtraint, in the declaration of their opinions of thoſe with whom they are acquainted. Their friendſhips are expreſſed with fervency and extravagance; their enmities with intolerance and diſguſt. They now become impatient of contradiction, and ſcorn reproof. For ſuppoſed injuries, they are inclined to quarrel and fight with thoſe about them. They have all the appearance of perſons inebriated; and thoſe, who are unacquainted with the ſymptoms of approaching mania, generally ſuppoſe them to be in a ſtate of intoxication. At length ſuſpicion creeps upon the mind, they are aware of plots which had never been contrived, and detect motives that were never entertained. At laſt, the ſucceſſion of ideas is too rapid to be examined; the mind becomes crowded with thoughts, and confuſion enſues. Thoſe under the influence of the depreſſing paſſions will exhibit a different train of ſymptoms. The countenance wears an anxious and gloomy aſpect; and they are little diſpoſed to ſpeak. They retire from the company of thoſe with whom they formerly aſſociated; ſeclude themſelves in obſcure places, or lie in bed the greater part of their time. Frequently, they will keep their eyes fixed to ſome object for hours together, or continue them an equal time 'bent on vacuity.' They next become fearful, and conceive a thouſand fancies: often recur to ſome immoral act which they have committed, or imagine themſelves guilty of crimes which they never perpetrated; believe that God has abandoned them, and with trembling await his puniſhment. Frequently they become deſperate, and endeavour by their own hands to terminate an exiſtence, which appears to be an afflicting and hateful incumbrance."

The mental characteriſtics of this diſorder involve all thoſe aberrations from intellectual ſoundneſs, and moral rectitude, which render man a worthleſs, and frequently a dangerous aſſociate to the community. A degree of cunning, inſcrutable by ordinary perſons, and not always to be penetrated by thoſe who have acquired extenſive experience of the inſane, conſtitutes a leading feature in mental derangement. Whenever they have meditated their own deſtruction, or intended miſchief to others, the accompliſhment of the deed has often been the only notice of the intention; and the pride, which uſually accompanies this malady, has frequently induced theſe unhappy ſufferers to haunt the perſons of thoſe diſtinguiſhed by rank and elevated in office.

The bodily marks which diſtinguiſh the inſane, are, a peculiar caſt of countenance, familiar to, and recognizable by thoſe verſed in this diſeaſe; a quick, oftentimes protruded and gliſtening eye; coldneſs of the hands and feet; and a capability of ſuſtaining cold with impunity. But Dr. Pinel, phyſician to the Bicétre at Paris, conceives this exception from the effects of ſevere cold to be by no means general, and inſtances the frequent occurrence of mortified extremities during winter; and others of much experience are of the ſame opinion. Obſtinate conſtipation has been mentioned as an unvarying attendant on madneſs; but the beſt informed writers regard it merely as an occaſional ſymptom, prevailing only when general inſenſibility is the conſequence of preſſure on the brain. In deranged perſons, the ear is the organ of ſenſe moſt affected; *tinnitus aurium* and deafneſs being found very generally to prevail: whereas blindneſs, or deprivations of the ſmell and taſte, have been ſeldom noticed. Mr. Haſlam has excluſively obſerved, in ſome caſes, a relaxation of the ſcalp; by which it may be wrinkled, or rather gathered up by the hand to a conſiderable degree: it more generally occurs on the poſterior part; is not noticed in the early ſtages of the diſeaſe, but after a raving paroxyſm of ſome continuance.

Appearances on Diſſection.—From the teſtimonies of Chiarugi in Italy, Greding in Germany, and from Mr. Haſlam's work, diſeaſed appearances of the brain and its membranes have been detected in thoſe who have died inſane. But there may exiſt many alterations in the ſtructure of theſe parts, too minute for the eye to obſerve, and which can never be brought in view by the ſcalpel. Although Dr. Pinel denies the diſorganiſation of the brain in madneſs as peculiar to that diſeaſe; yet he admits, that the ſame appearances are found, as occur in thoſe who have died from epilepſy, apoplexy, fever, and convulſions. Theſe morbid appearances conſiſt in exceſſive determination of blood to the brain, with enlargement of its veſſels, and effuſion of fluids into its cavities. In many inſtances the ſubſtance of the brain has poſſeſſed an increaſed degree of firmneſs, and, according to the late Mr. John Hunter, has been found ſo tough, as to have ſome elaſticity. Dr. Baillie has alſo remarked, that "when theſe changes take place in the brain, the mind is at the ſame time deranged; there is either mania or lethargy; or the perſon is much ſubject to convulſive paroxyſms." In other caſes the brain was of a preternaturally ſoft conſiſtence. Gangrene of the brain has ſometimes occurred, but more frequently in the warmer climates, as may be ſeen by conſulting Chiarugi. The membranes of the brain have been found variouſly altered from their healthy ſtate: the tunica arachnoidea has become thickened, and rendered more or leſs opaque. The pia mater is often inflamed, and turgid with blood, and not unfrequently an extravaſated blotch appears on ſome part of this tunic. Effuſion of a watery fluid between the membranes of the brain is a very common occurrence, and likewiſe into its ventricles, which have been conſequently enlarged to a ſurpriſing extent. Oſſifications have been detected, but principally on the dura mater.

Cauſes.—In the inveſtigation of the cauſes of mental derangement, there is obviouſly much uncertainty; our knowledge of the human mind is too limited to affirm that particular ſtates of the intellect will be the neceſſary reſult of certain circumſtances preceding. Thoſe who have attentively conſidered this ſubject have divided the cauſes of inſanity into *phyſical* and *moral*. Under the head of *phyſical* cauſes, hereditary diſpoſition has been ſtated very generally to prevail; whereby the offspring of an inſane parent, or parents, will moſt probably become ſimilarly affected; but, whether this tranſmiſſion depend more eſpecially on the male, or female, has not yet been certainly determined. Injuries to the head from external violence; frequent intoxication, particularly when produced by fermented liquors which have undergone the proceſs of diſtillation; fever, during the courſe of which delirium has particularly prevailed; mercurial medicines, largely exhibited, and continued for a conſiderable time, without due precautions; paralytic affections (but theſe are very frequently the conſequence as well as the cauſe of mental derangement); the ſuppreſſion of periodical or occaſional diſcharges and ſecretions; and, in ſome inſtances, the retropulſion of cutaneous eruptions; are the ordinary phyſical cauſes to which inſanity has been aſcribed.

The *moral* cauſes include thoſe emotions which are conceived to originate from the mind itſelf, and which, from their exceſs, tend to diſtort the natural feelings, or, from their repeated acceſſions, and unreſtrained indulgence, at length overthrow the barriers of reaſon and eſtabliſhed opinion. Such are the guſts of violent anger, and the protracted indulgence of grief; the terror impreſſed by erroneous views of religion; the degradation of pride; diſappointment in love; and ſudden fright.

Although mental derangement has been obſerved in perſons of all habits and complexions, yet there is doubtleſs a temperament which particularly diſpoſes to inſanity: and there are alſo certain modes of education, and employment of the faculties, which conduce to their derangement. According to Mr. Haſlam's ſtatement, out of 265 patients in Bethlem Hoſpital, 205 were found to be of a ſwarthy complexion, with dark or black hair; the remaining 60 were of a fair ſkin; with light, brown, or red hair. Dr. Pinel, on examining the regiſters of the Bicêtre, ſays, that he found inſcribed a great many monks and prieſts, as alſo a conſiderable number of country people, who had been driven beſide themſelves by horrid pictures of futurity; ſeveral artiſts, as ſculptors, painters, and muſicians; ſome verſifiers, in extacies with their own productions; a pretty conſiderable number of advocates and attornies; but there does not appear the name of a ſingle perſon accuſtomed to the habitual exerciſe of his intellectual faculties; not one naturaliſt, or natural philoſopher of ability; no chemiſt nor geometrician.

The *prognoſis*, or means of aſcertaining the probable event of mental derangement, is founded on the experience of thoſe practitioners who have particularly attended to the treatment of this diſorder. It is, however, to be lamented, that very few of thoſe perſons, who have been beſt qualified to afford information, have tranſmitted to the world the reſult of their practice. Much valuable knowledge may therefore be preſumed to have periſhed. In the year 1758 Dr. Battie, the phyſician to St. Luke's Hoſpital, juſtly obſerved in his "Treatiſe on Madneſs," that "among the many good reaſons, offered to the public for eſtabliſhing another hoſpital for the reception of lunatics, one, and that not the leaſt conſiderable, was the introducing more gentlemen of the faculty to the ſtudy and practice of one of the moſt important branches of phyſic." In England, females are more ſubject to inſanity than men; but abroad, the caſe is believed to be reverſed. From 1748 to 1794, a period of 46 years, there were admitted into Bethlem Hoſpital 4832 women, and 4042 men. Dr. Chiarugi of Florence, who, during four years, ſaw in the hoſpitals of St. Dorothea and St. Bonifacio 1157 lunatics, ſtates the proportion of deranged males, as exceeding that of females by one-fifth. Females recover from mental derangement in a greater proportion than men: of the above mentioned 4832 women, 1402 were diſcharged cured; of the 4042 men, 1155 recovered.

As inſanity frequently ſupervenes on parturition, women, becoming deranged from ſuch cauſe, recover in a very large proportion. During ten years, 80 patients of this deſcription were admitted into Bethlem Hoſpital, 50 of whom perfectly recovered. When females become worſe at the period of menſtruation, or have their catamenia in profuſe or deficient quantities, ſuch occurrences may be conſidered unfavourable.

The chance of recovery is greater when the patient is attacked with mania, than when affected with melancholia. When the maniacal and melancholic ſtates alternate, the hope of recovery is diminiſhed. A greater number of patients are obſerved to recover, when the mental derangement has been produced from remote *phyſical* cauſes, than when it has ariſen from cauſes of a *moral* nature.

It appears from the united teſtimonies of Dr. Pinel and Mr. Haſlam, that a greater number of inſane patients have been admitted into the Bicêtre, and Bethlem Hoſpital, from the age of 30 to 40, than during any other equal period of life; and from the ſtatement of the latter, it may be inferred, that the diſeaſe is leſs frequently cured when it attacks perſons of an advanced age. The following ſtatement compriſes the number of patients admitted into Bethlem Hoſpital from 1784 to 1794. The firſt column marks the age: the ſecond the number admitted; the third notes the number cured; the fourth thoſe who were diſcharged not cured.

Age between.	Number admitted.	Number diſcharged cured.	Number diſcharged uncured.
10 and 20	113	78	35
20 — 30	488	200	283
30 — 40	527	180	347
40 — 50	362	87	275
50 — 60	143	25	118
60 — 70	31	4	27

It is alſo calculated, that the chance of cure is diminiſhed, in proportion to the length of time which the diſorder has continued.

Where mental derangement is complicated with palſy or epilepſy, or where the natural powers of the mind become enfeebled during its continuance, there is but little hope of the patient's recovery. The inſanity, which is often excited by the impreſſion of religious terror,—by thoſe gloomy views of futurity, and that conſtant dread of divine vengeance which falſe notions on this ſubject uſually inſpire,—has ſeldom a favourable termination. When the derangement has acquired a ſyſtematic character, it becomes very difficult to remove: in this ſtate, incidents the moſt unconnected are eaſily reconciled, and become fondly involved with the prevailing deluſion.

The *Cure* of mental derangement may properly be divided into *management* and *medicine:* for it appears to be the opinion of thoſe who have moſt ſucceſsfully treated this diſorder, that the proper controul and ſubjection of the patient to ſalutary and eſtabliſhed rules are of equal importance with the preſcription of remedies.

By the common conſent of foreigners, the Engliſh are ſuppoſed particularly to excel in the moral management of this diſorder. It is, however, to be regretted, that general directions only can be given on this ſubject: the preciſe adaptation of theſe principles to individual caſes, muſt depend on the ſkill, addreſs, and experience of the practitioner.

Inſane perſons are moſt advantageouſly treated when removed from home, and from the interference of their immediate relations and friends. While they remain in their own houſes, it is nearly impoſſible to diveſt them of the authority which they had been accuſtomed to maintain; and the ſalutary regulations of the ſuperintendant are frequently rendered uſeleſs, by the miſtaken indulgence of their family connections. A ſyſtem of regularity ſhould be eſtabliſhed in their actions; and reſtraint ſhould inſtantly be impoſed on diſobedience. As the deranged perſon ſhould be taught to view the ſuperintendant of his conduct with reſpect, the latter ſhould be careful to deſerve it by vigilant firmneſs, and ſteady decorum. The confidence of the maniac can never be repoſed in ignorance and miſmanagement, nor can his eſteem be imparted to unfeeling and tyrannical aſſumption. Although it is proper to curb the extravagant ſallies of the patient; yet no advantage appears to be derived from an endeavour to convince him by argument; the leſs frequently the ſubjects of his deluſion are referred to, the more eaſily he becomes managed. When the inſane are convaleſcent, the occaſional viſits of their friends are attended with manifeſt advantage: ſuch intercourſe brightens the proſpects of future life, and often acts as a ſtimulus to ſelf-reſtraint. But in certain ſtates of the diſorder, where pride, malevolence, and cunning, form the leading features of derangement, the ill-timed admiſſion of friends has been ſignally prejudicial: it has tended to unfix the authority of the ſuperintendant, and introduced a train of aſſociations which has aggravated the malady. Of the beneficial effects of mild and humane treatment in this diſorder, Mr. Haſlam ſays, "Speaking of the effects of management on an extenſive ſcale, I can truly declare, that by gentleneſs of manner, and kindneſs of treatment, I have ſeldom failed to obtain the confidence and conciliate the eſteem of inſane perſons; and have ſucceeded by theſe means in procuring from them reſpect and obedience. There are certainly ſome patients who are not to be truſted, and in whom malevolence forms the prominent feature of their character: ſuch perſons ſhould always be kept under a certain reſtraint, but this is not incompatible with kindneſs and humanity."

Deception on the part of the medical ſuperintendant ſhould never be reſorted to. The late Dr. John Monro emphatically obſerves, "The phyſician ſhould never deceive them in any thing, but more particularly with regard to their diſtemper; yet as they are generally conſcious of it themſelves, they acquire a kind of reverence for thoſe who know it, and by letting them ſee that he is thoroughly acquainted with their complaint, he may very often gain ſuch an aſcendant over them, that they will readily follow his directions." Formerly coercion was employed with a degree of ſeverity, that amounted to vindictive puniſhment: recourſe was had to the whip, and ſtripes were actually inflicted by medical direction. The more rational and humane treatment of modern practitioners, has induced them to employ coercion only as a protecting reſtraint; to guard the patient from doing miſchief to himſelf, or offering violence to others; and for this purpoſe the ſtraight-waiſtcoat is uſually ſufficient.

Medicine.—An enumeration of all the remedies which have been propoſed, and ſtrongly recommended for the cure of mental derangement, would extend this article to an unprofitable length. The ancient phyſicians principally confided in a ſpecies of hellebore, which was cultivated with the greateſt attention, prepared with the utmoſt care, and exhibited under particular cautions; but concerning theſe matters there was unfortunately much diverſity of opinion. Conſidering the various and oppoſite ſtates of mental derangement, a rational mind would ſcarcely expect any particular drug to poſſeſs powers adequate to the reſtoration of reaſon. If inſanity be a diſeaſe of the *mind itſelf*, corporeal remedies can be of little utility; if an affection of the brain, and nervous ſyſtem, no particular medicine can be ſuppoſed capable of reſtoring the various leſions, which anatomical inveſtigation has detected.

When the experience of eminent practitioners is at variance; when remedies, which have been extolled for their virtues and ſucceſsful operation by one medical writer, have been aſſerted by another to be impotent and unproſperous, the ſubject of cure becomes entangled with inſuperable difficulties. Modern practitioners are nearly agreed, that at the commencement of this diſorder, *bleeding* may be employed with advantage; and drawing blood by cupping-glaſſes has been uſually preferred. Little difference of opinion has prevailed

vailed concerning the utility of *cathartics:* ſome practitioners have, however, preferred particular articles of this tribe, as elaterium, calomel, jalap, &c.; while others have ſucceeded with the milder purgatives, as ſenna, and the ſolutions of neutral ſalts, with the addition of a ſmall quantity of the antimonium tartarizatum. As recovery is often preceded by a ſpontaneous diarrhœa, purgative medicines may be eſteemed, under a judicious exhibition, of ſignal utility in moſt caſes of mental derangement.

Emetics.—Practitioners are much divided in opinion reſpecting the propriety of adminiſtering vomits as a remedy for inſanity. The late Dr. John Monro thought "the evacuation by vomiting infinitely preferable to any other." Dr. Cox is equally partial to emetics as a cure for mental derangement. Mr. Haſlam, however, entertains an unfavourable opinion of them: he ſtates that, in ſome inſtances, paralytic affections have ſupervened within a few hours after the exhibition of an emetic; more eſpecially when the patient has been of a full habit, and has had the appearance of an increaſed determination to the head. Perhaps in melancholia, emetics may be more generally advantageous; and in furious mania, the ſame remedies may be employed merely in nauſeating doſes, to prevent the ſevere convulſion of vomiting.

Opium has ſeldom procured ſleep, when given in the furious ſtate of inſanity. Notwithſtanding the encomium of this remedy by Bernard Heute, the reſpectable teſtimonies of Dr. Ferriar and others have not induced any expectation of benefit from its employment. Dr. Chiarugi depoſes to the ſedative effect of a watery ſolution of opium, applied to the internal membrane of the noſe with a camel's-hair pencil. Of the remaining tribe of narcotic remedies we have little that is ſatisfactory on record.

Digitalis, though ſtrongly recommended by ſome, has produced no benefit in the hands of others. Dr. Ferriar expreſsly ſtates, "that he has given this remedy, even to nauſeating doſes; but with no advantage. It never ſuſpended the appearances of inſanity for a moment."

Camphor has been much extolled for its virtues in mental derangement; but Dr. Ferriar and Mr. Haſlam, who gave it in large doſes, did not experience any conſiderable benefit from the employment of this remedy. Dr. Laughter mentions nine caſes of inſanity cured by camphor; but in theſe inſtances it was combined with vinegar. Dr. Leopold Avenbrugger, in a curious tract entitled "Experimentum noſcens de remedio ſpecifico, ſub ſigno ſpecifico in mania virorum," Vienna, 1772, has ſpoken ſtill more highly of the ſpecific virtues of camphor in this diſeaſe. *Bliſters* have had their advocates; but it ſeems to be the opinion of thoſe whoſe experience has been moſt extenſive, that they ſucceed better when put to the lower extremities, than applied directly to the head. Iſſues and ſetons may in many caſes be uſed with advantage; but they ſhould be allowed to diſcharge for a conſiderable time; as their beneficial effects are not immediately apparent.

In ſome inſtances the *warm bath* has mitigated the fury of the patient, and in melancholia the uſe of the *cold bath* has been thought advantageous.

It appears to be a radical defect in almoſt all the inſtitutions for the inſane, that no plan for the *employment* of the patients has been hitherto adopted. Many difficulties certainly occur, as to the nature of the labour in which they ought to be engaged; but a judicious contrivance might ſurmount them, and appropriate a ſalutary exerciſe and amuſement to the different claſſes of the inſane.

MENTCHIKOF, Alexander, in *Biography*, a ſtateſman and general under the czar Peter I., was the ſon of peaſants who were the vaſſals of the monaſtery of Coſmopoli. At the age of thirteen he went to Moſcow to obtain the means of ſubſiſtence, and was taken into the ſervice of a paſtrycook, who employed him to vend his goods by crying them about the ſtreets of that then celebrated city, now, alas, [Oct. 1812,] deſolated by the madneſs of war. The czar happened one day to hear him, and being ſtruck with the pleaſant ſong which he annexed to his cry, entered into converſation, and, in the end, ordered him to come to court, where he was at firſt placed in a very low ſtation, but his talents were diſcoverable in the midſt of all diſadvantages, and it was ſeen he had a wonderful facility in acquiring ſeveral languages. The czar took him to ſerve about his perſon, and he was from that time gradually advanced to the higheſt employments, till at length he became one of the moſt ſucceſsful generals in the Ruſſian army. When Peter went on his travels for improvement, he took Mentchikof for his companion, and, in 1706, he was created a prince of the German empire, and was, after this, frequently employed on occaſions of ceremony to perſonate the czar, who choſe rather to appear as a private perſon in his train. He was victorious over the Swedes, in the war againſt Charles XII., and had the command of the left wing of the Ruſſians at the deciſive battle of Pultowa, in the year 1709. His ſituation enabled him to acquire great wealth, but in 1715 he was called to an account for certain abuſes of the adminiſtration, and fell under the cenſure of his ſovereign. He was afterwards reſtored to his favour, and even placed at the head of the council of regency, when Peter ſet out on his expedition to Perſia. He greatly contributed to the ſucceſſion of the empreſs Catherine at the death of Peter, and upon her demiſe he took meaſures to inſure the crown to Peter Alexievitch, on condition that he ſhould eſpouſe his eldeſt daughter. The acceſſion took place in 1727, and Peter was betrothed to his intended bride. Mentchikof now aſſumed all the arrogance of uncontrollable ſway, which in a very ſhort time occaſioned an order for his arreſt: this was followed by a decree of baniſhment. It was intended to confine him to his own eſtate; he imprudently left the capital with a ſplendid train, which his enemies conſtrued into marks of contempt for the emperor, who readily diſpatched an order to carry him priſoner to Siberia. The place of his confinement was Bereſof, on the rude and deſolate banks of the Oby. His wife, who had been delicately brought up, wept herſelf blind, and expired in the courſe of her journey. His own mind ſoon accommodated itſelf to his ſituation. He cultivated a ſmall farm, and, by induſtry and frugality, ſaved enough from his daily pittance, of ten rubles, to build a wooden church, in the erection of which he aſſiſted with his own hands. He died in November 1729, little more than two years from the time of his baniſhment. Univer. Hiſt.

MENTHA, in *Botany*, an ancient Latin word, moſtly written Menta, adopted from the Greeks, whoſe μινθη is ſynonimous with their ἡδυοσμος, the latter being moſt generally uſed; ſee Dioſcorides, book 3. chap. 41. The nymph Mintha, a favourite of Pluto, is fabled to have been changed by Proſerpine into this herb, as incidentally mentioned by Ovid; Metam. book 10. 729.—Mint.—Linn. Gen. 291. Schreb. 387. Willd. Sp. Pl. v. 3. 74. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 609. Tr. of Linn. Soc. v. 5. 171. Prodr. Fl. Græc. Sibth. v. 1. 402. Brown. Prod. Nov. Holl. v. 1. 505. Ait. Hort. Kew. ed. 2. v. 3. 387. Juſſ. 113. Tourn. t. 89. Lamarck Dict. v. 4. 102. Illuſtr. t. 503.—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, erect, with five nearly equal teeth, permanent. *Cor.* of one petal erect, tubular, ſomewhat longer than the calyx; limb in four deep, nearly equal, ſegments, the uppermoſt only being rather the broadeſt, and cloven. *Stam.* Filaments four, awl-ſhaped, erect, diſtant, the two neareſt ones longeſt; anthers roundiſh. *Piſt.* Germen ſuperior, four-cleft; ſtyle thread-ſhaped, erect, longer than the corolla; ſtigma in two divaricated diviſions. *Peric.* none, except the permanent ſtraight calyx. *Seeds* four, ſmall, generally abortive.

Eſſ. Ch. Calyx five-cleft, nearly equal. Corolla nearly equal, four-cleft; its broadeſt ſegment cloven. Stamens erect, diſtant.

This is one of the moſt natural genera poſſible; well marked in habit and characters. The herbage, and even the flowers, abound with reſinous dots, the ſeat of an eſſential oil, on which the warm and aromatic qualities of theſe plants depend. Their flavour is different in the different ſpecies, and variable in the ſame, but on the whole almoſt peculiar to the genus. The following characters apply to the ſpecies in general. *Root* creeping, perennial. *Stems* ſquare, branched, leafy. *Leaves* oppoſite, ſimple, undivided, generally ſerrated. *Flowers* in ſtalked many-flowered whorls, which are either axillary, capitate, or ſpiked. *Calyx* ſtriated, or ribbed, rather dilated upward, almoſt regular, either naked, or clothed more or leſs completely with ſimple hairs, whoſe direction differs in different ſpecies, but is very conſtant in the ſame. Very rarely this part is covered with ſoft downy pubeſcence. *Corolla* funnel-ſhaped, purpliſh. *Stamens* inſerted into its tube; when perfect generally longer than the limb. *Herbage* generally more or leſs hairy.

Mentha is principally an European and Britiſh genus. There are however ſome American and even Eaſt Indian ſpecies. Thoſe of our own country have always been found extremely difficult to determine. Neither the ſhape of the leaves, general pubeſcence, length of the ſtamens, nor even the infloreſcence, all which have been reſorted to by botaniſts, has been found conſtant or certain. The writer of this article firſt propoſed a mode of diſtinction, founded on the pubeſcence of the calyx and flower-ſtalks, and its various direction. By this clue all the Britiſh ſpecies are ſettled in the Tranſactions of the Linn. Soc. and Fl. Brit. above quoted, and we ſhall here apply it to the exotic ones. For want of having received information of this mode of diſcrimination, Willdenow has greatly failed in his view of the ſpecies. The ſame may, in ſome meaſure, be ſaid of Mr. Sole of Bath, who publiſhed, in 1798, a Botanical Arrangement of the Britiſh Mints, in folio, with 24 plates; a work nevertheleſs of much original obſervation, and more correct as to ſpecies than moſt that had preceded it; though no attention is paid by his draughtſman to the pubeſcence of the calyx, in which reſpect no dependence whatever can be placed on his figures.

1. M. *auricularia.* Ear Mint. Linn. Mant. 81. Mat. Med. ed. 4. 169. Dale Pharmac. 160. Stokes Mat. Med. v. 3. 310. (M. fœtida; Burm. Ind. 126. Majana fœtida; Rumph. Amboin. v. 6. 41. t. 16. f. 2.)—Spikes tapering, cloſe, hairy. Leaves ovate, coarſely ſerrated; hairy and green on both ſides. Bracteas ovate.—Native of the Eaſt Indies. We have it from China, as well as from Java. The *ſtem* is denſely clothed with long, ſhaggy, tawny, horizontal hairs. *Leaves* on very ſhort hairy ſtalks, ovate or ſomewhat oblong, bluntiſh, coarſely and unequally ſerrated, from one to two inches in length, various in breadth; bright green above, and clothed with numerous, ſcattered, ſilky hairs; a very little paler beneath, finely dotted, not at all hoary, the ribs and veins extremely hairy. *Spikes* ſolitary, terminal, an inch or two long, tapering, cloſe and uninterrupted; each whorl accompanied by a pair of oppoſite, ovate, fringed *bracteas,* each pair croſſing the next. *Flowers* crowded, ſmall, nearly ſeſſile. *Calyx* bell-ſhaped, ſpreading, with five broad blunt teeth, which are fringed with numerous hairs, the reſt of the calyx being ſmooth and even, beſprinkled with ſhining glandular dots. *Corolla* twice as long as the calyx, ſomewhat hairy. *Stamens* a little prominent.—This herb is celebrated as a powerful remedy for deafneſs. We have already mentioned, ſee Hedyotis, that Linnæus confounded it, at one time, with our ſecond ſpecies of that genus, than which few plants can be more diſtinct.

2. M. *quadrifolia.* Downy Four-leaved Mint. Rottl. MSS.—Leaves linear-lanceolate, ſerrated, downy on both ſides; thoſe of the ſtem four in a whorl. Spikes cylindrical, very long, cloſe, hairy. Bracteas linear-lanceolate.—Sent by Dr. Rottler from Madras. The whole *plant* is clothed with denſe velvet-like down. *Stem* nearly round, with whorled branches. The *leaves* on the latter are oppoſite only; thoſe of the ſtem four in each whorl; all narrow, bluntiſh, with ſhallow ſerratures. *Spikes* terminal, ſolitary, cylindrical, very cloſe, the principal one about ſix inches long, thoſe of the branches much ſmaller. *Bracteas* lanceolate, or linear, minutely hiſpid. *Flowers* innumerable, crowded. *Calyx* bell-ſhaped, even, moſt hairy in its upper part, eſpecially about the teeth. *Corolla* hairy. *Stamens* and *ſtyle* prominent.—We are much inclined to ſuſpect this may be the *Stoechado-mentha,* Linn. Zeyl. 194, Mentha zeylanica camphorata hirſuta, Burm. Zeyl. 157; but the deſcriptions of the infloreſcence, in theſe works, do not accord with our plant; the ſpikes or heads being there implied, if not poſitively ſaid, to be ſhort, whereas in our ſpecimen they are remarkably long.

3. M. *verticillata.* Smooth Whorl-leaved Mint. Rottl. MSS.—Leaves linear-lanceolate, ſerrated, ſmooth, all whorled. Spikes ſolitary, cylindrical, ſomewhat interrupted. Calyx longer than the bracteas, with blunt, ſpreading, very hairy teeth.—Sent by Dr. Rottler from Madras. The *herbage* is nearly ſmooth. *Stem* ſtriated, almoſt round, tumid above and below each joint, with whorled *branches* and *leaves.* The latter are linear, tapering at each end, furniſhed with ſhallow diſtant ſerratures. *Spikes* terminal, ſolitary, cylindrical, from one to two inches long; their whorls tumid and ſlightly interrupted, with ſhort concealed *bracteas.* *Calyx* funnel-ſhaped, clothed in its upper half with copious ſhort denſe hairs; the teeth obtuſe and widely ſpreading; the inſide ſmooth. *Corolla* very ſmall, whitiſh, hairy. Only one *ſeed* ſeems to come to perfection, and this is large, globoſe and ſmooth.

4. M. *ſtellata.* Stellated Cluſter-ſpiked Mint. Lour. Cochinch. 361. *Rau ngu hoang* of the Cochinchineſe.—Leaves oblong, obtuſe, ſerrated, ſmooth, four in a whorl. Spikes cluſtered, oblong.—Found by Loureiro in moiſt uncultivated ground in Cochinchina. *Stem* a foot high, with four furrows. *Leaves* ſtellated, four in a whorl. *Flowers* minute, pale violet. *Calyx* erect, with ſharp teeth. *Stamens* ſurrounded about the middle with long hairs. *Seeds* four, roundiſh.—We know nothing of this ſpecies but from the author quoted. The cluſtered *ſpikes* mark it as diſtinct from the laſt.

5. M. *incana.* Hoary Slender-ſpiked Mint. Sole MSS. Donn. Cant. ed. 5. 142. (M. chalepenſis; Mill. Dict. ed. 8. n. 10. Menthaſtrum chalepenſe anguſtifolium, raro florens; Boerh. Lugd-Bat. ed. 2. v. 1. 185.)—Leaves ovate-oblong, ſerrated, nearly ſeſſile, very ſoft and downy on both ſides. Spikes ſolitary, very ſlender.—Native of Aleppo.

Hardy in our gardens, but it rarely flowers, unleſs, as Miller ſays, it be confined in a pot. The *ſtem* is ſquare, a yard high, purpliſh, minutely hairy, roughiſh to the touch, leafy, with numerous oppoſite branches. *Leaves* from one to two inches long, nearly or quite ſeſſile, ovate-oblong, or ſomewhat elliptical, acute, finely and ſharply ſerrated, entirely clothed with fine, ſhort, denſe, hoary pubeſcence. The *flowers* we have never ſeen. This ſpecies ſeems neareſt akin to the *ſylveſtris*.

6. M. *ſylveſtris*. Horſe Mint. Linn. Sp. Pl. 804. Engl. Bot. t. 686. Fl. Dan. t. 484. (M. villoſa; Sole Menth. t. 1 and 2. M. rotundifolia; Sole Menth. t. 4. Menthaſtrum; Ger. em. 684. Riv. Monop. Irr. t. 51. f. 1. Camer. Epit. 479. Fuchſ. Hiſt. 292. M. hortenſis ſecunda; ibid. 298.)—Leaves acute, with tooth-like ſerratures, chiefly downy beneath. Spikes hairy, ſlightly interrupted. Bracteas awl-ſhaped.—Native of waſte ground, in rather moiſt ſituations, throughout Europe, flowering, like moſt of the genus, towards autumn. The *ſtem* is from two to four feet high, ſquare, ſhaggy with hairs pointing downwards. *Leaves* ſeſſile, of a grey and hoary aſpect, whitiſh underneath, with a ſtrong diſagreeable ſcent for the moſt part, though ſome German and Swiſs varieties are ſaid to be agreeably fragrant. Their ſhape varies greatly, from oblong, or ovate, to a very broad, almoſt orbicular, figure, as may be ſeen by the different figures above cited. The *ſpikes*, ſolitary at the end of every branch, are thick, various in length, conſiſting of crowded, many-flowered, hairy *whorls*, with long, linear, acute, hairy *bracteas*, the lowermoſt of which are broadeſt. *Flower-ſtalks* covered with cloſely deflexed hairs. *Calyx* all over hairy, with long ſharp teeth. *Corolla* pale lilac, hairy, twice as long as the calyx. *Stamens* occaſionally longer or ſhorter than the corolla, generally the latter.

We have from Switzerland, under the name of *M. ſuavis* of Hoffmann, a narrow ſharp-leaved variety of this; and from Pyrmont, one with broad ovate leaves, as *M. gratiſſima* of Ehrhart, ſee Hoffm. Germ. for 1791. 203; both have very hoary ſpikes. We preſume the latter is the identical *M. ſuaveolens*, Ehrh. Beitr. faſc. 7. 149, but the ſynonyms there given all belong to the real *rotundifolia*, than which nothing can leſs deſerve the name of *ſuaveolens*. Willdenow quotes Ehrhart, with doubt, but rightly, under his own *nemoroſa*, which is merely the ovate variety of *ſylveſtris*. The *gratiſſima* of Willdenow is a repetition of the ſame.

7. M. *niliaca*. Egyptian Mint. Jacq. Hort. Vind. v. 3. 46. t. 87.—Leaves ovate, acute, ſerrated, hairy on both ſides; paler beneath. Spikes cluſtered. Stamens much longer than the corolla, ſmooth.—Native of Egypt. As Vahl and Willdenow adopt this ſpecies, and we have ſeen no ſpecimen, we would not preſume to refer it abſolutely to the laſt, but we are much perſuaded that it is a mere variety. Jacquin deſcribes the *leaves* as villous, though green on both ſides; Vahl ſays they are, in the wild plant, ſoft and hoary. The length of the *ſtamens*, though ſtriking, is by no means to be relied on for a ſpecific character.

8. M. *glabrata*. Smooth Spiked Mint. Willd. n. 6. Vahl. Symb. v. 3. 75. (M. kahirina; Forſk. Ægypt-Arab; 2:3.)—"Leaves ſtalked, ovato-lanceolate, ſerrated, ſmooth. Flowers in whorled cluſters."—Found by Forſkall about Cairo in Egypt. The whole *plant* is ſaid to be ſmooth. *Leaves* half an inch (we preſume) in breadth, dotted beneath. *Cluſter*, or *ſpike*, terminal of courſe. *Whorls* with nine umbellate flowers at each ſide. *Bracteas* linear, the length of the whorls. *Stamens* ſhorter, and *ſtyle* longer, than the corolla.—Our account is taken from Willdenow, who copies Vahl. The latter examined Forſkall's ſpecimen.

9. M. *rotundifolia*. Round-leaved Mint. Linn. Sp. Pl. 805. Engl. Bot. t. 446. (M. criſpa; Linn. Sp. Pl. ed. 1. 576. M. ſylveſtris; Sole Menth. t. 3. Menthaſtrum anglicum; Riv. Monop. Irr. t. 51. f. 2. M. niveum anglicum; Ger. em. 684.)—Leaves elliptical, obtuſe, rugged, crenate, villous beneath. Spikes interrupted, ſomewhat hairy. Bracteas lanceolate.—Native of Germany, Switzerland, and England, in waſte marſhy ground. With us it is rather rare. In a variegated ſtate, as deſcribed by Gerarde, it often occurs in gardens, and is ſometimes almoſt entirely white, like blanched endive. This, which Mr. Sole unaccountably miſtook for the *ſylveſtris*, is totally diſtinct from every variety of that ſpecies. The invariably ſhort, roundiſh, convex, and obtuſe *leaves*, rugoſe, of a dark graſs green, (not grey or hoary,) above; ſtrongly reticulated with very hairy veins, but not hoary, beneath; and the very peculiar ſtrong ſmell, and viſcidity, of the whole plant, mark it with ſufficient preciſion. The *ſpikes* are often cluſtered or panicled, more or leſs interrupted. *Bracteas* ovate, ſharp-pointed, prominent. *Flower-ſtalks* clothed with deflexed hairs. *Calyx* ſhort, bell-ſhaped, hairy all over, with long, ſharp, coloured teeth. *Corolla* much like that of *ſylveſtris*. *Stamens*, as far as we have obſerved, always longer than the petal.

Mr. Sole greatly commends this mint for its ſtimulating refreſhing virtues, to which we can readily give credit, on account of its powerful ſcent, well compared by that writer to a mixture of volatile ſalt of amber, camphor, and mint. He found it of great uſe in *chloroſis*, and not without ſome effect in epilepſy. He miſtakes however in thinking it the "true *Menthaſtrum*, or Wild Horſe Mint, of the ſhops." That plant of Dale's *Pharmacologia*, 159, our beſt authority, is certainly the *ſylveſtris*; deſcribed above. The *Mentha ſylveſtris* of Dale, as well as of Sole, is our *rotundifolia* here deſcribed. This is the more important to be obſerved, as the plants are probably very different in qualities.

10. M. *viridis*. Spear Mint. Linn. Sp. Pl. 804. Engl. Bot. t. 2424. Woodv. Med. Bot. t. 170. Sole Menth. t. 5. (M. romana; Ger. em. 680.)—Leaves ſeſſile, lanceolate, acute, naked. Spikes interrupted. Bracteas briſtle-ſhaped, more or leſs hairy, as well as the teeth of the calyx.—Native of moiſt meadows, in various parts of Europe. In gardens it is ſufficiently well known, by the names of Spear Mint, and Mackerell Mint, and is the *Mentha*, ſimply ſo called, of the ſhops, the firſt ſpecies in Dale's *Pharmacologia*; being the only kind, except Peppermint next mentioned, retained in the moſt recent London *Pharmacopeia*.—There are however ſeveral remarkable varieties of this ſpecies, wild in England, whoſe flavours and qualities differ from the beſt or cultivated kind; though the latter is alſo a native of the ſouthern parts of our iſland. The *ſtems* are two or three feet high, erect, ſmooth, with ſharp angles, branched, often purpliſh. *Leaves* ſeſſile, lanceolate, acute, ſharply ſerrated, or in ſome caſes toothed, ſmooth, except an occaſional hairineſs beneath. They are ſtrongly veined, and in the varieties juſt alluded to, they are conſiderably rugoſe, as well as of a broader and ſhorter figure. In an exotic variety, whoſe hiſtory is given in Tranſ. of the Linn. Soc. v. 5. 187, 188, and from which the deſcription of Miller's *rubra*, n. 9, of his 8th edition, was made, the *leaves* are broadly ovate, with long wavy teeth, almoſt like *M. criſpa*, hereafter mentioned. The *ſpikes* are always more or leſs interrupted, tapering. *Bracteas* awl-ſhaped, very ſlender at the point, keeled, roughiſh, ſometimes three-cleft, the lower and larger ones moſtly aſſuming an ovate form. *Flower-ſtalks* always ſmooth, round and ſhining. *Calyx*

ribbed, tapering at the baſe, and equally ſmooth and naked in that part, but the teeth are fringed, more or leſs conſpicuouſly, even in the garden variety, and very copiouſly in the more common wild ones, with hoary hairs. The *corolla* is ſmooth. *Stamens* various in length.

This ſpecies may be known, in all caſes, from the *ſylveſtris*, with which ſome of its varieties have often been confounded, by the invariable ſmoothneſs of its *flower-ſtalks* and baſe of the *calyx*. The varieties with ſhorter rugoſe *leaves*, and moſt hairy *calyx-teeth*, have the moſt ſtrong and diſagreeable flavours, and are not fit for the uſes of the table. Another variety has been ſent us by the Rev. Dr. Muhlenberg, from Pennſylvania, of a diminutive ſtature, with ovate *leaves*, not an inch long at the utmoſt, but in every eſſential character agreeing with the above.

11. M. *piperita*. Pepper Mint. Sm. Fl. Brit. n. 4. Engl. Bot. t. 687. Hudſ. 251. Woodv. Med. Bot. t. 169. Sole Menth. t. 7, 8, and 24. Ehrh. Pl. Off. 216. Willd. n. 13. (M. ſpicis brevioribus et habitioribus, foliis Menthæ fuſcæ, ſapore fervido piperis; Raii Syn. 234. t. 10. f. 2.)—Leaves ſtalked, ovate, ſmoothiſh. Spikes obtuſe, interrupted in their lower part. Calyx very ſmooth at the baſe.—Native of watery places in various parts of England, but it ſeems not to have been found wild any where elſe. In gardens it is every where cultivated, for the ſake of its valuable medicinal properties, which are of a ſtimulating or ſtomachic kind, and exiſt in great perfection in the eſſential oil and diſtilled water. It appears by the Linnæan herbarium, and we think alſo by the Mat. Med. of Bergius, 516, though his deſcription unfortunately omits what would abſolutely decide the queſtion, that the Pepper Mint cultivated in Sweden is not our's, but a high-flavoured variety of *M. hirſuta*, which, even in the old Linnæan ſpecimen, ſtill retains the taſte of real Pepper Mint. Its *calyx* is entirely clothed with aſcending hairs, the *flower-ſtalks* with deflexed ones, the eſſential characters of *M. hirſuta*; whereas the *piperita* has the *calyx-teeth* only hairy, the lower part of the *calyx*, and that of the *ſtalks*, being always remarkably ſmooth and poliſhed. Hence it appears why Linnæus reckoned his *piperita* among the capitate ſpecies. Our's is truly ſpiked, though the ſpikes vary in length, and are uſually blunter than in the *ſylveſtris* and *rotundifolia*. Mr. Sole's plates well diſplay the two extremes, but we can eaſily trace one variety into the other.

The *ſtem* of *M. piperita* is generally two or three feet high, purpliſh, with ſome ſcattered deflexed hairs, and numerous oppoſite branches. *Leaves* on ſtalks of a moderate length, ovate, acute, more or leſs elongated, and varying from one to three inches in length, ſharply ſerrated; dark green and nearly ſmooth above; paler beneath, with many, parallel, whitiſh or purpliſh, hairy veins. The *ſpikes* are thick, with lanceolate, fringed, long-pointed *bracteas*; one or two of their lower whorls often very diſtant. *Flower-ſtalks* ſometimes a little hairy in their upper part. *Calyx* as above deſcribed, its teeth ſharp, moſtly purple. *Corolla* purpliſh, ſmooth, longer than the *ſtamens*.—The flavour of the whole herb is pungent, highly aromatic, leaving a coolneſs in the mouth, like camphor, and finally a diſagreeable bitterneſs. We have gathered, truly wild, in the romantic dale of Bonſall, near Matlock, the preciſe Pepper Mint of the gardens, in its higheſt perfection, with elongated ſpikes; which is of rare occurrence in a wild ſtate.

12. M. *criſpa*. Curled Mint. Linn. Sp. Pl. 805. Berg. Mat. Med. 513. Ehrh. Pl. Off. 206. Riv. Monop. Irr. t. 50. (M. n. 230; Hall. Hiſt. v. 1. 100. M. criſpa danica; Moriſ. ſect. 11. t. 6. f. 5.)—Leaves ſeſſile, heart-ſhaped, wavy, ſtrongly toothed. Spikes capitate, blunt. Teeth of the calyx, and top of the flower-ſtalks ſlightly hairy.—Native of Siberia, according to Linnæus. Haller conſidered it as merely the outcaſt of gardens in Switzerland. With us it is only ſeen in a cultivated ſtate, and that but rarely. The ſtems are three or four feet high, rather bluntly quadrangular, clothed with a few hairs curved downward, but little branched, leafy. *Leaves* numerous, nearly or quite ſeſſile, heart-ſhaped, ſomewhat pointed, ſhort and very broad, wavy and plaited, with very ſtrong, twiſted, crowded, acute, marginal teeth; nearly ſmooth above; ſlightly hairy beneath; the veins all radiating, as it were, from the lower part of the mid-rib. *Spikes* uſually ſhort, capitate, and very blunt; ſometimes more elongated and tapering, as in the plate of Rivinus. *Bracteas* broad, recurved. *Flower-ſtalks* ſmooth, except a roughneſs, or ſlight hairineſs, at the very ſummit. *Calyx* ribbed, tumid at the baſe, contracted a little higher up, ſmooth, except a few marginal hairs on the long and ſharp teeth. *Corolla* ſmooth, purpliſh, rather longer than the ſtamens.—This is moſt akin in foliage to the exotic variety of *M. viridis* above-mentioned; nor do their *calyces* or *flower-ſtalks* much differ. We are by no means certain that it ought not likewiſe to be conſidered as a form of *viridis*. The original *criſpa* of Sp. Pl. ed. 1, is no other than *rotundifolia*, which is alſo the *criſpa* of Jacquin. As the ſpecimen came from Siberia, it ſeems to have cauſed Linnæus to attribute that *habitat* to the ſpecies, which thus proves erroneous. Roth ſays the true *criſpa*, which by his deſcription he ſeems to underſtand, is found in watery places near Rübeland in Hercynia.—*M. dentata*, Willd. n. 15, ſeems by his own ſuggeſtion, as well as the deſcription, to be a whorled variety of this.

13. M. *odorata*. Bergamot Mint. Sm. Fl. Brit. n. 5. Engl. Bot. t. 1025. Sole Menth. t. 9. (M. citrata; Ehrh. Beitr. faſc. 7. 150. Willd. n. 13. M. rubra; Mill. Dict. ed. 8. n. 9, with a falſe deſcription, as mentioned under *M. viridis*.)—Leaves ſtalked, heart-ſhaped, naked on both ſides. Spikes capitate, very blunt. Calyx and flower-ſtalks perfectly ſmooth.—Native of watery places in Cheſhire and North Wales. *Sole*. Willdenow thinks it may poſſibly be wild in the Palatinate. In gardens it is often preſerved, for the ſake of its fine ſcent, reſembling that of the Bergamot Orange, being more powerful than *Monarda didyma*. The whole *herb* often aſſumes a dark purpliſh hue, in which it agrees with *piperita*; but it differs from all the Mints known to us, at leaſt all that otherwiſe approach it, in being perfectly deſtitute of hairineſs throughout. The *leaves* are broad, ſhort, and heart-ſhaped. *Inflореſcence* more truly capitate than in any variety of the Pepper Mint, and agreeing with the capitate ſtate of *M. hirſuta*, n. 14, from which the uniformly ſmooth *flower-ſtalks* and *calyx* always keep it very diſtinct.

14. M. *hirſuta*. Hairy Mint. Sm. Fl. Brit. 616.

α, with ſhort round terminal heads. M. hirſuta; Linn. Mant. 81. Sm. Tr. of L. Soc. v. 5. 193. Hudſ. ed. 1. 223. Engl. Bot. t. 447. (M. aquatica; Hudſ. 252, α and β. Sole Menth. t. 10, 11. M. aquatica, ſive Siſymbrium; Raii Syn. 233. Ger. em. 684. M. paluſtris ſpicata; Riv. Monop. Irr. t. 49. M. Siſymbrium dicta hirſuta, glomerulis ac foliis minoribus ac rotundioribus; Dill. in Raii Syn. 233. t. 10. f. 1. M. piperita; Linn. Sp. Pl. 805. Berg. Mat. Med. 516. Origanum vulgare; Fl. Dan. t. 638!)

β, with a more elongated terminal head, or blunt ſpike. M. hirſuta δ and ε. Fl. Brit. 617. (M. paluſtris; Sole Menth. t. 6. M. paludoſa; ibid. t. 22. Menthaſtri aquatici genus hirſutum, ſpicâ latiore; Bauh. Hiſt. v. 3. p. 2. 222. Raii Syn. 234. M. minus; Ger. em. 685.)

γ, with whorled flowers. M. hirſuta ζ—ϑ; Fl. Brit. 617. (M. ſativa; Linn. Sp. Pl. 805, excluding the ſynonyms. Sm. Tr. of L. Soc. v. 5. 199. Engl. Bot. t. 448. M. rivalis β, γ, and δ; Sole Menth. 45.)

Leaves ſtalked, ovate. Flowers capitate or whorled. Calyx entirely clothed with hairs curved upwards. Flower-ſtalks rough with deflexed hairs.—Common in watery places throughout Europe. This is the moſt variable ſpecies of the whole. It is often purpliſh; always more or leſs hairy, and in general remarkably ſo; the hairs of the *ſtem*, *branches*, and *flower-ſtalks* all curved downward, thoſe of the *foot-ſtalks*, *leaves*, and eſpecially thoſe which clothe the *calyx*, all turned forward or upward. The direction of the pubeſcence never varies, though its quantity is extremely variable. We have a wild ſpecimen, which to the naked eye looks nearly as ſmooth as the *odorata* laſt deſcribed, but which is, indeed, minutely hairy, eſpecially the *calyx* and *ſtalks*. The root that bore this, being tranſplanted into a neighbouring garden, produced, the following year, a plant as hairy as any variety we have ſeen. The ſmell of the preſent ſpecies is likewiſe changeable. In general it is pungent and aromatic, much like Spear Mint, but ſometimes acquires the flavour of Pepper Mint, or of Camphor, and occaſionally a very ſweet odour, like Frankincenſe Thyme, very laſting in ſpecimens ſeventy years old, and which is now and then found in the, uſually fetid, *M. arvenſis*. The *ſtems* are upright, moſtly branched, in the manner of *M. odorata*. *Leaves* ſtalked, ovate, rather acute, but ſometimes blunt, ſerrated, very variable in ſize; their veins ſtrong and parallel. *Flowers* purpliſh; in the firſt variety, α, capitate, like thoſe of *odorata*, with one or two denſe, diſtant, ſtalked, axillary whorls below; in β, ſo many whorls terminate the ſtem or branches as to form a bluntiſh ſpike, ſtill accompanied by a diſtant whorl, or rather a pair of ſtalked axillary heads, underneath; this has been made a ſpecies by moſt authors, but it has all the eſſential characters of α, into which we have obſerved it to change, even in a wild ſtate, according to changes in the moiſture of the ſoil; this is the *paluſtris* of Sole, t. 6; his *paludoſa*, t. 22, has the whorls ſeſſile, and more numerous, ſo as more nearly to reſemble a properly whorled mint, which plants of this kind, from Mr. Sole, have completely become in our garden; in γ, which like α varies in ſize, hairineſs, colour, and flavour, the infloreſcence is entirely whorled throughout. It is not without repeated obſervations on theſe plants in their wild ſtate, and long cultivation of them in two different gardens, one wet, the other dry, that we have been decided in conſidering theſe different forms of infloreſcence, in the *M. hirſuta*, as conſtituting no ſpecific diſtinction. We have indeed ſpecimens which ſhew the change from α to γ. This is a point nevertheleſs which theoretical botaniſts find difficult to allow, and which nothing but great experience can eſtabliſh. See a ſimilar inſtance mentioned at the end of our 12th ſpecies.

15. M. *acutifolia*. Fragrant Sharp-leaved Mint. Fl. Brit. n. 7. Engl. Bot. t. 2415. (M. verticillata; Mill. Dict. ed. 8. n. 17.)—Flowers whorled. Leaves ovato-lanceolate, tapering at each end. Calyx hairy all over. Hairs of the flower-ſtalks ſpreading.—The only ſpecimen we have ever ſeen, was gathered by Rand, at the ſide of the river Medway, in Kent. Miller ſays the plant grew between Rocheſter and Chatham, where Mr. Sowerby has ſought it in vain. We doubt its being diſtinct from *M. hirſuta*, but the much more ſpreading hairs of the *flower-ſtalks*, firſt induced us to think it more than a variety. The very ſweet ſcent, like frankincenſe thyme, agrees with a variety above-mentioned of *hirſuta*, nor perhaps can the tapering baſes of the *leaves* be thought of more importance, as the foliage of the latter ſpecies is acknowledged to vary much. The *whorls* are all quite ſeſſile. *Calyx* clothed with aſcending hairs, eſpecially at the baſe, by which this plant is eſſentially diſtinguiſhed from *rubra*, n. 17, while the hairy *flower-ſtalks* diſtinguiſh it from the following.

16. M. *canadenſis*. Canadian Mint. Linn. Sp. Pl. 806. Ait. Hort. Kew. n. 13.—Flowers whorled. Leaves ovato-lanceolate, tapering at each end. Footſtalks twice as long as the whorls. Calyx hairy all over. Flower-ſtalks quite ſmooth.—Gathered in Canada by Kalm. It was ſent in 1801, by the late Mr. Maſſon, to Kew garden, where it lives in the open air, flowering in July. No figure of this ſpecies has yet appeared. It is more nearly allied to our *acutifolia*, than to the *arvenſis*, with which Linnæus compares it. The long ſlender *footſtalks*, ſharply ſerrated and more lanceolate *leaves*, and the perfectly ſmooth and naked *flower-ſtalks*, are its diſcriminating characters. The *calyx* is hairy all over, with more erect hairs than in *arvenſis*. The *whorls* are accompanied by long linear *bracteas*.

This ſhould ſeem to be *M. borealis* of Michaux, Boreal-Amer. v. 2. 2; while his *tenuis* appears to be our ſmall American variety of *viridis*, mentioned under that ſpecies; but having ſeen no ſpecimens, we decline a poſitive reference to his work.

17. M. *rubra*. Tall Red Mint. Tr. of L. Soc. v. 5. 205. Engl. Bot. t. 1413. (M. ſativa; Sole Menth. t. 21. M. verticillata; Raii Syn. 232. Riv. Monop. Irr. t. 48. f. 1. M. ſativa rubra; Ger. em. 680. M. pratenſis; Sole Menth. t. 17. (See Tr. of L. Soc. v. 5. 275.)—Flowers whorled. Leaves ovate. Stem upright, zigzag. Flower-ſtalks and lower part of the calyx very ſmooth; teeth hairy. Found about ditches, wet hedges, and the borders of rivers, not unfrequently, in England. Foreign writers ſeem unacquainted with this, which is the talleſt and handſomeſt of our Mints, riſing to the height of four, five, or ſix feet, with a red, wavy, uſually ſmooth *ſtem*, bearing few and ſhort branches. *Leaves* ovate, ſtalked, of a dark ſhining green, often very broad, with ſtrong ſerratures; the upper ones ſmall and ſhort. *Whorls* numerous, ſtalked, of many large purpliſh-red *flowers*, with linear fringed *bracteas*. *Calyx* tubular, dotted with numerous reſinous points, quite ſmooth, like the *flower-ſtalks*, except the teeth, which are always more or leſs furniſhed with upright hairs. The whole plant has a ſtrong aromatic ſcent, eſpecially in a dry ſoil. We have ſeen it kept in country gardens, and called Heart Mint, from its ſuppoſed cordial qualities. The Rev. Mr. Williams has obſerved this ſpecies in Shropſhire, acquiring the peculiar ſcent of *M. arvenſis*, of which we know no other inſtance.

18. M. *gentilis*. Buſhy Red Mint. Linn. Sp. Pl. 805. Engl. Bot. t. 2118. (M. rubra; Sole Menth. t. 18. M. rivalis α; ibid. t. 20. M. variegata; ibid. t. 19. M. arvenſis verticillata verſicolor; Moriſ. ſect. 11. t. 7. f. 5.)—Flowers whorled. Leaves ovate. Stem very much branched and ſpreading. Flower-ſtalks and baſe of the calyx ſmooth.—In watery waſte places, but not common. We have it from North Wales, Shropſhire, and Somerſetſhire. Linnæus ſays it grows in the ſouth of Europe, and Dr. Sibthorp found what he took for this ſpecies, and judged to be the Ἡδυοσμος αγριος of Dioſcorides, frequent among ſtubble in Greece, at the end of autumn; but there being no ſpecimen in his herbarium, we cannot be certain of what he intended. This differs widely from the laſt in having a low, buſhy, much-branched *ſtem*. The whole plant is rather hairy, and on a dry ſoil pleaſantly aromatic. *Leaves* paler, leſs ſhining, and more elongated than in *rubra*, as well as more uniform in ſhape; their veins whitiſh underneath.

neath. *Whorls* not quite ſeſſile. *Bracteas* lanceolate, various in ſize. *Flower-ſtalks* round, purple, for the moſt part very ſmooth. Upper part of the *calyx* more or leſs rough, with aſcending hairs; baſe ſmooth; the whole ſprinkled with reſinous dots. *Corolla* pale purple, generally as long as the ſtamens.—The variety with blotches of yellow on the *leaves*, (Sole's t. 19, figured alſo in Moriſon,) when cultivated in a dry gravelly ſoil, is much improved in ſcent, and undergoes other changes; the *whorls* often become elevated on long leafy ſtalks, and the *flower-ſtalks* rough with deflexed hairs.

19. M. *gracilis*. Narrow-leaved Mint. Sole Menth. t. 16. Fl. Brit. n. 10. (M. gentilis; Engl. Bot. t. 449. Sole Menth. t. 15. M. hortenſis verticillata, ocymi odore; Moriſ. ſect. 11. t. 7. f. 1.)—Flowers whorled. Leaves lanceolate, nearly ſeſſile. Stem much branched, erect. Flower-ſtalks and baſe of the calyx very ſmooth.—On commons and waſte ground, chiefly in watery places. The variety ſmelling like Baſil, *gentilis* of Sole, is ſaid by that author to be "frequent in ditches and waſte places, near towns and villages, but ſcarcely wild." We have ſeen it in gardens only, where it is ſometimes kept for its ſcent, reſembling Baſil, or the perfume of the Muſcat Grape; but this ſavour is not ſo conſtant in the living plant, nor ſo permanent in the dry one, as many others met with in this genus. The ordinary *M. gracilis* has the ſtrong laſting ſcent of *viridis*, not of the fineſt kind. The whole *herb* is a little hairy. *Stem* erect, twelve or eighteen inches high, much branched about the middle, leafy, rough, and reddiſh. *Leaves* uniform, lanceolate, acute, ſharply ſerrated, tapering much at the baſe, but hardly ſtalked, bright green, ſlightly clothed with ſhort hairs. *Whorls* generally ſeſſile, with lanceolate hairy *bracteas*. *Flower-ſtalks* round, purple, uniformly and perfectly ſmooth. *Calyx* tubular, ſomewhat bell-ſhaped, purple, with reſinous dots; very ſmooth and naked at the baſe; furrowed upwards, and clothed towards the top, eſpecially its taper-teeth, with white upright hairs. *Corolla* purpliſh, bearded at the extremity, longer than the *ſtamens*.—The Baſil-ſcented variety has deflexed *leaves*; the lower ones ovate; the floral ones often ſo ſmall, that it aſſumes the aſpect of a ſpiked mint. Had we not found it by culture extremely variable in theſe characters, while the *flowers* conſtantly agree with the true *gracilis*, we might have been tempted to conſider this variety a diſtinct ſpecies.

20. M. *arvenſis*. Corn Mint. Linn. Sp. Pl. 806. Hudſ. 253. Fl. Brit. n. 11. Engl. Bot. t. 2119. Sole Menth. t. 12. Ehrh. Pl. Off. 416. Fl. Dan. t. 512. (M. arvenſis verticillata procumbens; Moriſ. ſect. 11. t. 7. f. 5. Calamintha aquatica; Ger. em. 684. M. præcox; Sole Menth. t. 13.)—Flowers whorled. Leaves ovate. Stem much branched, diffuſe. Calyx bell-ſhaped, clothed all over with horizontal hairs.—Frequent in corn-fields where water ſtagnates in winter, eſpecially on a ſandy or gravelly ſoil. It is often a troubleſome weed, becauſe of the widely-creeping nature of the *root*, and its turgid fleſhy ſhoots, well calculated to retain life in a ſoil that fluctuates as to humidity. The *ſtems* are moſtly diffuſe, and much branched. *Leaves* ovate, inclining to elliptical, obtuſe, pale, clothed with rather rigid prominent hairs. *Flower-ſtalks* ſhortiſh, round, generally ſmooth, ſometimes furniſhed with a few ſpreading, or ſlightly deflexed, hairs. *Calyx* ſhorter, more bell-ſhaped, and more broadly toothed than in any of the foregoing, and eſſentially characteriſed by being clothed all over with horizontally ſpreading hairs. *Flowers* reddiſh-lilac, externally hairy.

This ſpecies is readily known by its peculiar ſcent, juſtly compared to that of blue mouldy cheeſe, and which Haller ſays he could not endure. The dried ſpecimens ſtrongly retain it. The neat, elliptical, ſmoother *leaves* of Mr. Sole's *præcox*, and its earlier time of flowering, indicate ſomewhat of a ſpecific difference, but culture and repeated obſervations have not confirmed it. *M. auſtriaca*, Jacq. Auſtr. t. 530. Willd. n. 18, is with great probability ſuſpected by the latter author to be a variety of *arvenſis*. Mr. Winch has ſent us from Northumberland an aſcending unbranched ſpecimen of *arvenſis*, very like Jacquin's figure; but having ſeen no Auſtrian ſpecimen, we can decide nothing on the ſubject. The hairs of the *calyx* and *flower-ſtalks*, which nobody has properly deſcribed or figured, muſt ſettle the matter in diſpute. Jacquin's plate bears a great reſemblance to the *præcox*. A variety of *arvenſis*, with the flavour of Baſil, is the *gentilis* of Mill. Dict. ed. 8. n. 15.

21. M. *agreſtis*. Rugged Field Mint. Sole Menth. t. 14. Engl. Bot. t. 2120. (M. arvenſis ε; Fl. Brit. 624. Tr. of Linn. Soc. v. 5. 213. 216.)—Flowers whorled. Leaves ſomewhat heart-ſhaped, ſtrongly ſerrated, rugoſe. Stem erect. Calyx bell-ſhaped, clothed all over with horizontal hairs.—Obſerved by Mr. Sole in corn-fields and neglected gardens in Somerſetſhire. Mr. Borrer finds it very common in Suſſex. We have been induced, in the 30th vol. of Engl. Bot. to agree with Mr. Sole in ſeparating this plant from *arvenſis*, on account of its upright *ſtem*, and roundiſh-heart-ſhaped, rugged, dark, ſtrongly ſerrated *leaves*, which give it a peculiarly coarſe and harſh aſpect; all which marks our cultivated and abundantly increaſing ſpecimens have now retained for thirteen years without the leaſt variation. The parts of the *flower*, and the ſcent of the whole *herb*, accord entirely with the *arvenſis*.

22. M. *Pulegium*. Common Penny-royal. Linn. Sp. Pl. 807. Woodv. Med. Bot. t. 171. Sole Menth. t. 23. Engl. Bot. t. 1026. (Pulegium; Fuchſ. Hiſt. 198. Riv. Monop. Irr. t. 23. f. 1. Brunſ. Herb. v. 1. 227. P. regium; Ger. em. 671.)—Flowers whorled. Leaves ovate. Stem proſtrate. Flower-ſtalks downy. Calyx hairy all over, with fringed teeth.—Native of watery places in various parts of Europe. This is much ſmaller than any of the preceding, and is known by its proſtrate *ſtems*; ſmall, downy, ſtalked, ovate, reflexed *leaves*, ſparingly ſerrated; and numerous denſe whorls of purpliſh, ſometimes white, *flowers*, without *bracteas*. The *flower-ſtalks* are always denſely clothed with fine ſhort prominent hairs or down. *Calyx* leſs denſely clothed, either with hairs of the ſame length, or, as is moſt commonly the caſe, with longer and more briſtly hairs, a little aſcending: its teeth fringed with briſtles; its mouth cloſed with hairs. *Corolla* twice the length of the calyx, very hairy externally, ſhorter than the *ſtamens*. The broadeſt ſegment of the *corolla* is decidedly cloven, as it ought to be in *Mentha*. Some botaniſts thought they found it otherwiſe, and on that ground were diſpoſed to ſeparate *Pulegium* as a genus.

The flavour of Penny-royal is peculiarly ſtrong, reſembling *Thymus Nepeta*, Fl. Brit., but not confined to theſe plants. Some *Cunilæ* and *Saturejæ* have the ſame ſcent.

Some old authors diſtinguiſhed from this the Mentha aquatica, pulegium mas dicta; Tournef. Inſt. 190. Pulegium latifolium alterum; Bauh. Pin. 222. P. mas; Ger. em. 671.—This is ſaid to differ in having an erect ſtem. We have carefully examined a ſpecimen in Sherard's herbarium, and have been inclined to make it a diſtinct ſpecies, the *leaves* being broad and nearly ſmooth, and the hairs of the *calyx* rather more long and briſtly than in any Britiſh varieties of *Pulegium*. Still as we perceive gradations among the latter, we prefer leaving the matter as we find it, till living ſpecimens fall in our way. About the following we have leſs doubt.

23. M. *tomentoſa.* Downy Penny-royal. (M. aquatica tomentoſa minima; Tourn. Inſt. 190. Pulegium tomentoſum minimum; Bocc. Sic. 40. t. 41. f. 2.)—Flowers whorled. Leaves ovate, hairy. Stem aſcending. Flower-ſtalks denſely clothed with horizontal hairs. Calyx covered with long looſely-ſpreading hairs.—Native of Sicily. We have it from Algiers, ſent by the late Monſ. Brouſſonet. Its appearance is altogether much more hairy or ſhaggy than any variety of *Pulegium;* the mouth of the *calyx* is entirely cloſed with wool rather than hair, and the hairy covering of the *flower-ſtalks* is remarkable for its great length and denſity. If theſe marks be accidental, we know no other inſtance of the kind among *Menthæ,* yet we confeſs them rather differences in degree, than in direction, of the pubeſcence.

24. M. *cervina.* Hyſſop-leaved Mint. Linn. Sp. Pl. 807. Willd. n. 21. (M. n. 222; Hall. Hiſt. v. 1. 98. Pulegium anguſtifolium; Moriſ. ſect. 11. t. 7. f. 7. Riv. Monop. Irr. t. 23. f. 2. Ger. em. 672.)—Flowers whorled. Bracteas palmate. Leaves linear. Calyx and flower-ſtalks ſmooth. —Native of the ſouth of France. A moſt diſtinct and remarkable ſpecies. The whole *plant* is ſmooth, larger than *Pulegium,* with which it nearly agrees in flavour and qualities. *Stem* aſcending, ſlightly quadrangular, not much branched. *Leaves* ſeſſile, linear, keeled, nearly or quite entire; their under ſide copiouſly dotted. *Whorls* large, denſe, many-flowered, each accompanied by a pair of broad, rigid, ribbed, palmate *bracteas.* *Calyx* tubular, ribbed, with ſhort ſpinous teeth. *Corolla* twice as long as the calyx. *Stamens* prominent.

Two Linnæan ſpecies remain to be noticed. Theſe are—*M. exigua;* Linn. Sp. Pl. 806. Sm. Plant. Ic. ex Herb. Linn. t. 38. This is ſhewn in Tr. of Linn. Soc. v. 3. 18, to be the ſame plant as *Cunila pulegioides* of Linnæus, and is therefore ſtruck out of the preſent genus.

M. *perilloides.* Linn. Syſt. Veg. ed. 13. 445. (Ocymum fruteſcens; Linn. Sp. Pl. 832.)—This is indeed diſtinct from *Perilla ocymoides,* with which ſome have been diſpoſed to confound it; but ſo little like a *Mentha,* that it does not concern our preſent ſubject; neither is the original ſpecimen ſufficient to determine its genus. S.

MENTHA *canarienſis* and *plumoſa.* See BYSTROPOGON.

MENTHA, in *Gardening,* comprehends plants of the hardy herbaceous perennial kind, of which the ſpecies cultivated are, the ſpear-mint (M. viridis); the round-leaved mint (M. rotundifolia); the curled mint (M. criſpa); the pepper-mint (M. piperita); the red mint (M. gentilis); the penny-royal (M. pulegium); and the hyſſop-leaved mint, or upright penny-royal (M. cervina.)

From the firſt kind not being ſo hot to the taſte as peppermint, and having a more agreeable flavour than moſt of the other ſorts, it is generally preferred for culinary and other purpoſes. The leaves and tops are uſed in ſpring ſalads, and eaten as ſauce with lamb, and, when dried, in ſoups, &c.

There are ſeveral varieties of it, as, the broad-leafed; the narrow-leafed; the curled-leafed; the variegated-leafed; the ſilver-ſtriped-leafed; and the gold-ſtriped-leafed.

The fourth ſpecies, in its external appearance, correſponds with the firſt ſort, for which it may eaſily be miſtaken; but in that the ſtem is taller, the leaves have ſcarcely any petioles, and are narrower in proportion to their length, the ſpikes are longer and compoſed of more whorls.

In the fifth ſort there is a variety with the ſcent of baſil; the orange-ſcented mint; the gold-ſtriped orange mint; the yellow-orange mint; and the reddiſh-orange mint.

And the ſixth ſpecies varies with a white flower, and with the ſtems erect, nearly a foot high: the leaves longer and narrower: the whorls of flowers much larger, the ſtamens longer than the corolla: this is Spaniſh penny-royal, which has almoſt ſuperſeded the other ſort; the ſtems being more erect, it is eaſier to tie in bunches, and it comes earlier to flower, and has a brighter appearance,

In the ſeventh ſort there is a variety with white flowers, growing taller than the common one with purple flowers, which is by ſome preferred to the ſixth ſort for medicinal uſe, and called Hart's penny-royal.

Method of Culture in the Mint Kind.—All theſe plants may be increaſed with facility by young offset plants or ſhoots, or by parting their roots, and planting them out in the ſpring, or by planting cuttings during any of the ſummer months in a moiſt ſoil. After the cuttings are planted, when the ſeaſon is dry, they ſhould be often watered until they have taken root; when they require no further care, but to be kept clean from weeds. The beſt method is to plant them in beds about four feet wide, allowing a path about two feet broad between them, to water, weed, and cut the plants; being ſet four or five inches or more diſtant in the rows, as the plants ſpread much at their roots; on which account the beds ſhould not ſtand longer than three years before planting them again, as by that time the roots become ſo cloſely matted, as to rot and decay each other when they are ſuffered to ſtand longer.

With regard to the general culture it is that of clearing them from weeds in ſpring and ſummer, cutting down all the remaining ſtalks annually in autumn; removing all weeds; digging the alleys, and ſpreading a little of the earth over the beds. Plantations thus formed will afford ſeveral cuttings every ſummer, when only wanted young for uſe, for culinary purpoſes; but when for drying to keep in winter, or green for diſtilling or medicinal uſe, the plants ſhould generally be ſuffered to ſtand until nearly full grown, and they are juſt coming into flower; which being then cut down cloſe, the roots ſend up another crop fit for cutting again in the beginning of autumn, or towards Michaelmas; each general cutting being always made as cloſe to the ground as it poſſibly can be done.

Method of forcing Mint on Hot-beds.—Where it is much wanted for ſalads in the winter and early ſpring ſeaſons, a hot-bed ſhould be made for this purpoſe, any time after November till the ſpring, about two feet thick of dung, covering it with garden frames and glaſſes, or with mats on arched ſticks, which ſhould then be earthed over with rich mould, ſix inches thick; when a quantity of roots ſhould be taken up from a bed and planted pretty cloſe together upon the ſurface of the bed, moulding them over an inch deep with fine earth, putting on the lights, or other coverings, keeping them cloſe in the nights and in bad weather, but admitting freſh air in mild weather. The plants ſoon come up, when freſh air ſhould be admitted in fine weather, and moderate waterings ſhould be given, and they will ſoon be ready to have their young green tops gathered for uſe. When the plants are two or three inches high, they are ready for being cropped, after which they preſently break out again, and freſh ſhoots riſe from the bottom; ſo that the ſame bed furniſhes freſh ſupplies a long time; two beds, made at different times, being generally ſufficient for the whole winter uſe. In this way mint may be obtained young and green from the time that in the natural ground it goes off in autumn until it comes in again in the ſpring ſeaſon.

Young mint ſhoots may alſo be procured by planting ſome roots thick in large pots, and placing them in a hot-houſe, as they quickly ſhoot and furniſh plants of young green mint in ſuch ſituations.

Where this practice is much attended to, ſmall freſh plantations ſhould be made annually in the open ground for the purpoſe of furniſhing a ſufficiency of roots, proper for taking up at forcing time without diſturbing thoſe of the principal crops.

Method of Culture in the Pennyroyal Kinds.—Theſe may be increaſed in the ſame manner as above, and alſo by their creeping ſtems, which ſhould be cut off and planted out in freſh beds, allowing at leaſt a foot diſtance every way. The young ſhoots planted in the ſpring in the ſame way alſo take root like the other ſorts. The proper time for this work is in the early autumn, that the plants may be well rooted before winter.

It is found that in this way the plants are much ſtronger, and produce larger crops than when planted out in the ſpring. When the roots remain ſo cloſe as is generally the caſe, they are apt to rot in the winter ſeaſon. They ſucceed beſt in a moiſt ſtrong ſoil.

It may be noticed that ſome of the ſpecies and varieties may be introduced in the borders and other parts of pleaſure grounds, for ornament and variety with good effect.

Mentha, in the *Materia Medica*. Several ſpecies of this genus have ſome claims on our notice under this head. The *Mentha piperita*, or "pepper-mint," has a more penetrating ſmell than any of the other mints, and a much ſtronger and warmer taſte, pungent like pepper, ſinking as it were into the tongue, and followed by a ſenſation of coldneſs. By maceration, or infuſion, it readily and ſtrongly impregnates both water and ſpirit with its virtue. On diſtillation with water, it yields a conſiderable quantity of eſſential oil of a pale greeniſh-yellow colour, growing of a darker colour by age, very light, ſubtile, poſſeſſing in a high degree the ſpecific ſmell and penetrating pungency of pepper-mint. According to Dr. Cullen, rectification is particularly neceſſary and proper for this eſſential oil. What has been called eſſence of pepper-mint is, in his opinion, no other than the rectified oil, diſſolved in ſpirit of wine. Rectified ſpirit, drawn with a gentle heat from the tincture made in that menſtruum, brings over little of the virtue of the herb, nearly all its pungency and warmth remaining concentrated in the extract. This plant, it is obſerved, yields camphor. Its ſtomachic, antiſpaſmodic, and carminative qualities render it uſeful in flatulent colics, hyſterical affections, retchings, and other dyſpeptic ſymptoms, acting as a cordial, and often producing immediate relief. Its officinal preparations are an eſſential oil, a ſimple water, and a ſpirit. The water is prepared by pouring on, *e.g.* a pound and half of pepper-mint, ſo much water, that, after the diſtillation, a ſufficiency may remain to prevent empyreuma; and diſtilling over a gallon. The ſpirit of pepper-mint is obtained by macerating, for 24 hours, a pound and half of pepper-mint dried in a gallon of proof ſpirit, with water ſufficient to prevent empyreuma, and diſtilling a gallon by a gentle fire.

Mentha viridis, or *ſativa*, "ſpear-mint," is not ſo warm to the taſte as pepper-mint, but having a more agreeable flavour, it is preferred for culinary uſes, and more generally cultivated in our gardens. Many virtues are aſcribed by the ancients to mint, but the particular ſpecies is not aſcertained. This, however, is of no great importance in a medical view, as the virtues of all reſide in the aromatic flavour, which is common to the whole genus. On drying, the leaves loſe about three-fourths of their weight, without ſuffering much loſs of their ſmell or taſte; nor is the ſmell ſoon diſſipated by moderate warmth, or impaired on keeping. Cold water, by maceration for ſix or eight hours on the dry herb, and warm water in a ſhorter time, become richly impregnated with its flavour. By diſtillation, a pound and a half of the dry leaves communicate a ſtrong impregnation to a gallon of water: the diſtilled water proves rather more elegant, if drawn from the freſh plant in the proportion of ten pints from three pounds. Along with the aqueous fluid an eſſential oil diſtils, of a pale yellowiſh colour, changing to a red, in quantity near one ounce from ten pounds of the freſh herb in flower, ſmelling and taſting ſtrongly of the mint, but ſomewhat leſs agreeable than the herb itſelf. Dry mint, digeſted in rectified ſpirit, either in the cold or with a gentle warmth, gives out readily its peculiar taſte and ſmell, without imparting the groſſer and more ungrateful matter, though the digeſtion be long continued. The tincture appears by day-light of a fine dark green, by candle-light of a dark red colour: a tincture extracted from the remaining mint by freſh ſpirit, appears in both lights green: the colour of both tinctures changes, in keeping, to a brown. On gentle diſtillation, with proof ſpirit, the ſpirituous portion which riſes at firſt diſcovers little flavour of the mint; but as ſoon as the watery part begins to diſtil, the virtues of the mint come over plentifully with it. Hence the ſpiritus menthæ ſativæ, P. L., which is prepared by drawing off a gallon of proof ſpirit from a pound and a half of the dried plant, proves ſtrongly impregnated with the mint.

To ſpear-mint are to be aſcribed the ſame medicinal qualities which we have noticed of pepper-mint; but the different preparations of the former, though more pleaſant, are perhaps leſs efficacious. It contains much eſſential oil, but of an odour ſomewhat leſs agreeable than that of lavender or marjoram. It is therefore leſs employed as a cephalic; but it acts very powerfully on the parts to which it is immediately applied, and therefore conſiderably on the ſtomach, invigorating all its functions. It acts eſpecially as an antiſpaſmodic, and therefore relieves pains and cholic depending upon ſpaſm. It will alſo ſtop vomiting, depending upon ſuch a cauſe; but there are many caſes of vomiting in which it is of no ſervice: and in theſe caſes, anywiſe depending upon inflammatory irritation in the ſtomach itſelf, or in other parts of the body, it aggravates the diſeaſe, and increaſes the vomiting. Practitioners have thought, and we think juſtly, that the infuſion of mint in warm water agrees better with the ſtomach than the diſtilled water, which is often ſomewhat empyreumatic.

Lewis obſerves, that it is ſaid by ſome to prevent the coagulation of milk; and hence it has been recommended to be uſed along with milk diets, and even in cataplaſms and fomentations for reſolving coagulated milk in the breaſts. Upon experiment, the curd of milk, digeſted in a ſtrong infuſion of mint, could not be perceived to be any otherwiſe affected than by common water; but milk, in which mint leaves were ſet to macerate, did not coagulate near ſo ſoon as an equal quantity of the ſame milk kept by itſelf.

The officinal preparations of ſpear-mint are an eſſential oil, a conſerve, a ſimple water, and a ſpirit. Lewis M. M. Cullen M. M. Woodville Med. Bot.

The ſpear-mint water, aqua menthæ viridis of the London Pharmacopeia, is prepared by pouring on a pound and half of ſpear-mint ſo much water, that, after the diſtillation, enough may remain to prevent empyreuma; and diſtilling over a gallon. The ſpirit, ſpiritus menthæ viridis, is obtained by macerating, for 24 hours, a pound and half of dried ſpear-mint in a gallon of proof ſpirit, with water ſufficient to prevent empyreuma, and diſtilling a gallon by a gentle fire.

Mentha Pulegium, "Penny-royal mint," has a warm pungent flavour, ſomewhat ſimilar to mint, but more acrid, and leſs agreeable both in ſmell and taſte. Its active principle is an eſſential oil, of a more volatile nature than that of mint, coming over haſtily with water at the beginning of the diſtillation, and riſing alſo in great part with highly-rectified ſpirit; in taſte very pungent, and of a ſtrong ſmell; when newly drawn, of a yellowiſh colour, with a caſt of green; by age turning browniſh.

The pulegium certainly poſſeſſes the general properties of the other mints: it is ſuppoſed, however, to be of leſs efficacy as a ſtomachic, but more uſeful as a carminative and emmenagogue, and is more commonly employed in hyſterical affections. We are told by Boyle, and others, that it has been ſucceſsfully uſed in the hooping-cough; but the chief purpoſe to which it has long been adminiſtered is promoting the uterine evacuation. With this intention, Haller recommends an infuſion of the herb with ſteel, in white wine, which he never knew to fail of ſucceſs. However, in the opinion of Dr. Cullen, mint is in every reſpect a more effectual remedy than penny-royal; and nothing but the neglect of all attempts to eſtabliſh principles could have made phyſicians think of this as a peculiar medicine different from the other ſpecies: and conformably to this remark, it may be obſerved, that this plant is leſs frequently uſed now than formerly.

Its officinal preparations are a ſimple water, a ſpirit, and an eſſential oil. Lewis M. M. Cullen M. M. Woodville Med. Bot.

Aqua pulegii, "Penny-royal water," is prepared by pouring on a pound and half of penny-royal ſo much water, that, after diſtillation, enough may remain to prevent empyreuma, and diſtilling over a gallon. The "ſpirit of penny-royal" is obtained by macerating, for 24 hours, a pound and half of dried penny-royal in a gallon of proof ſpirit, with water ſufficient to prevent empyreuma, and diſtilling a gallon by a gentle fire. The water which diſtils over with the oils of pepper-mint, ſpear-mint, and penny-royal, is to be kept for uſe. Lond. Pharmac. 1809.

MENTI LEVATOR, in *Anatomy*, a ſmall muſcle in the chin. It is deſcribed with the muſcles of the lower lip, in the article DEGLUTITION.

MENTOLE, in *Geography*, a town of the iſland of Ceylon, on the weſt coaſt; 80 miles W.N.W. of Trincomaly. N. lat. 9° 1'. E. long. 80° 3'.

MENTON, a town of France, in the department of the Maritime Alps, and chief place of a canton, in the diſtrict of Monaco; 6 miles N.E. of Monaco. The place contains 3289, and the canton 4383 inhabitants, on a territory of 60 kiliometres, in 4 communes.

MENTOS, a town of Louiſiana, on the Akanſas; 150 miles S.W. of New Madrid. N. lat. 35° 27'. W. long. 92° 40'.

MENTUM, in *Anatomy*, the lower part of the face, beneath the mouth; which we otherwiſe diſtinguiſh by the name of *chin*.

MENTZ, or MAYENCE, *Archbiſhopric of*, in *Geography*, formerly an electoral principality of Germany, in which, beſides corn, are breeds of cattle, fine garden fruits, and excellent wines, particularly thoſe Rheniſh wines that are furniſhed by the Rheingau: good ſalt is alſo manufactured here, and it has here and there iron mines. In the Mentz portion of the Berg-Strazza is found plenty of almonds, cheſnuts, and filberds. The lower part of the Eichsfeld yields corn in ſufficient abundance, together with large quantities of flax and tobacco. The principal rivers are the Rhine, the Maine, the Jaxt, and the Lahn. In the whole of the electoral countries of Mentz, comprehended within this circle, were 41 cities and 21 boroughs. Eichsfeld is now annexed to the kingdom of Weſtphalia. In the upper Eichsfeld are manufactures of ſerge and linen; and in the lower, tobacco and flax are cultivated. In the archbiſhopric are ſome woollen and other manufactures; and a conſiderable trade is carried on in wines. From Berg-Strazza are exported almonds, cheſnuts, nuts, and nut-wood. The countries lying on the Rhine and on the Maine have, ever ſince the Reformation, been ſubject to the elector of Mentz, and maintained their attachment to the Roman Catholic faith. It was in the year 751 that the biſhopric of Mentz was fully eſtabliſhed as an archbiſhopric, which was firſt adminiſtered by S. Boniface; and with the archbiſhopric, the firſt in Germany, the dignity of elector was inſeparably connected. In 1802, at the ſettlement of the indemnities, in conſequence of the aſcendency gained by the French in Germany, all that part of the dioceſe which lay on the right of the Maine, was given to the prince of Naſſau-Uſingen, except the bailiwick of Aſchaffenburg. It was then determined that the electoral title ſhould from that time be elector of Aſchaffenburg, and count of Wetzlar; that he ſhould ſtill continue arch-chancellor of the empire, and hold his office at Ratiſbon, with ſome abbies, and other indemnities, ſo as to yield an annual revenue of a million of florins. His juriſdiction, as metropolitan of the German church, was to extend all over Germany, except the Pruſſian ſtates.

MENTZ, or *Mayence*, formerly capital of the above-mentioned electorate and archbiſhopric of Germany, but by the treaty of Campo Formio, 1797, a city of France, chief place of a diſtrict, and capital of the department of Mont-Tonnerre, ſituated at the conflux of the Rhine and Maine; bearing in Latin the appellation of "Moguntium." It was conſidered as a barrier fortreſs of the empire. The city is large and populous, but conſiſts, for the moſt part, of narrow ſtreets and old-faſhioned houſes, intermixed with ſome fine buildings, a conſiderable palace, and a magnificent cathedral. Before the revolution, it contained ſeven pariſh churches, ſix monaſteries, and five nunneries, with a charter-houſe and two other nunneries near the city, and alſo ſix hoſpitals. The univerſity was founded by Charlemagne in 800, and eſtabliſhed in 1482 by the archbiſhop Diether. It has undergone many revolutions, and frequently changed its maſters, until in 1792 it was taken by the French; but in the following year it was retaken. By the peace between the emperor and the French it was ſurrendered to the latter, who took poſſeſſion of it. The number of inhabitants is reckoned at 21,400, and thoſe of its canton 21,615, in two communes. N. lat. 49° 58'. E. long. 8° 14'.

MENTZELIA, in *Botany*, named by Plumier in honour of Dr. Chriſtian Mentzel, Counſellor and Phyſician to the Elector of Brandenburg, who publiſhed, in 1682, in folio, an Index of the names of plants in various languages, accompanied by a ſmall catalogue of rare plants, with plates. He wrote alſo ſome papers in the Ephemerides Acad. Nat. Curioſ. on geological ſubjects, and died in 1701, aged 79. Plum. Gen. 40. Linn. Gen. 270. Schreb. 360. Willd. Sp. Pl. v. 2. 1175. Mart. Mill. Dict. v. 3. Jacq. Amer. 164. Ait. Hort. Kew. ed. 2. v. 3. 302. Juſſ. 321. Lamarck Illuſtr. t. 425.—Claſs and order, *Polyandria Monogynia*. Nat. Ord. *Calycanthemæ*, Linn. *Onagræ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, ſpreading, deciduous, of five, lanceolate, concave, pointed leaves. *Cor.* Petals five, obovate, pointed, ſpreading, a little longer than the calyx. *Stam.* Filaments numerous (about thirty), the length of the calyx, erect, the outer ones membranous in the upper part; anthers roundiſh. *Piſt.* Germen inferior, cylindrical, long; ſtyle thread-ſhaped, as long as the ſtamens; ſtigma ſimple, obtuſe. *Peric.* Capſule cylindrical, long, of one cell, three-valved at top. *Seeds* about ſix, oblong, angulated.

Eſſ. Ch. Calyx of five leaves. Petals five. Capſule inferior, cylindrical, many-ſeeded.

1. M. *aſpera.* Linn. Sp. Pl. 735. (M. foliis et fructibus aſperis; Plum. Ic. 167. t. 174. f. 1.)—Stem branched. Flowers axillary. Petals notched, obtuſe.—A native of South America, and the Weſt Indies, very common among the buſhes in all the dry ſavannahs about Kingſton, Jamaica. It flowers in the gardens during July and Auguſt. *Root* annual. Whole herb clothed with rigid, partly hooked briſtles. *Stem* round, branched, leafy. *Leaves* on longiſh ſtalks, oblong, ſomewhat haſtate, acute, unequally and coarſely ſerrated *Flowers* axillary, ſolitary, nearly ſeſſile, yellow. The germen and calyx very briſtly.

2. M. *hiſpida.* Willd. n. 2. (M. aſpera; Cavan. Ic. v. 1. 51. t. 70.)—Stem forked. Flowers ſolitary, at the forks of the ſtem. Petals entire, acutely pointed.—A native of Mexico. This differs from the laſt in having the *leaves* more ovate, *flowers* principally from the forks of the ſtem, with a much ſhorter and ovate *germen*, and longer leaves of the *calyx*. Willdenow alſo points out the above difference of the petals.

This genus is very nearly allied in habit as well as character to Loosa (ſee that article); indeed ſo much are they alike, that we greatly ſuſpect they muſt be one genus, for which *Mentzelia*, being the oldeſt name, ought to remain, and the other ambiguous appellation would be happily ſuperſeded.

MENU, in *Biography*, is the name of a very celebrated law-giver among the Hindoos. Sir William Jones tranſlated his code from the original Sanſcrit; and it is in the hands of the public, under the title of "Inſtitutes of Hindoo Law, or the Ordinances of Menu." The work compriſes, in 12 chapters and 2685 verſes, the Indian ſyſtem of duties, religious and civil, and is held in the greateſt reverence by all claſſes of Hindoos; ſo much ſo, that ſhould a ſeries of Brahmans omit, for three generations, the reading of Menu, their ſacerdotal claſs would, as they aſſert, be forfeited. They muſt, however, explain it only to their pupils of the three higheſt claſſes: and to enſure a greater degree of reverence for its ſanctity, it is underſtood that a Brahman, duly pious, would not, on any conſideration, read it on a forbidden day of the moon, or until after the performance of certain ceremonies preſcribed in the code. The learned tranſlator, from internal evidence, aſcribes the date of the Inſtitutes, in their preſent form, to a period ſo far back as 880 years before Chriſt. Whether Menu, or Menus in the nominative, and Menos in an oblique caſe, was the ſame perſonage with Minos, he leaves others to determine; but he evidently inclines to that opinion, though, with his characteriſtic modeſty, he forbears any pointed expreſſion of it. He recogniſes a ſtrong reſemblance, though obſcured and faded by time, between the Menu of the Hindoos, with his divine bull, or the emblem of abſtract juſtice, and the Mneues of Egypt, with his companion or ſymbol Apis: and though he duly guards himſelf and his readers againſt the deluſions of etymological conjecture, he ſtates Minos and Mneues, or Mneuis, to be merely Greek terminations, and that the crude noun is compoſed of the ſame radical letters in Greek and Sanſcrit. "And if," he continues in his preface, "Minos, the ſon of Jupiter, whom the Cretans, from national vanity, might have made a native of their own iſland, was really the ſame perſon with Menu, the ſon of Brahma, we have the good fortune to reſtore, by means of Indian literature, the moſt celebrated ſyſtem of heathen juriſprudence." The fables of the Hindoos, as to the antiquity and origin of the laws of Menu, are in their uſual ſtyle of extravagance. They firmly believe them to have been promulgated in the beginning of time by Menu, ſon or grandſon of Brahma, or, in plain language, the firſt of created beings; and not the oldeſt only, but the holieſt of legiſlators.

Menu is highly honoured by name in the Véda itſelf, where it is declared, that "whatever Menu pronounced was a medicine for the ſoul itſelf;" and it is aſſerted by a high authority among the Hindoos, "that Menu held the firſt rank among legiſlators, becauſe he had expreſſed in his code the whole ſenſe of the Véda; that no code was approved, which contradicted Menu; that other ſaſtras, and treatiſes on grammar or logic, retained ſplendour only ſo long as Menu, who taught the way to juſt wealth, to virtue, and to final happineſs, was not ſeen in competition with them." It has been alſo authoritatively aſſerted, that "the *Véda*, with its *Angas*, or the ſix compoſitions deduced from it, the revealed ſyſtem of medicine, the *Puranas*, or ſacred hiſtories, and the code of Menu, were four works of ſupreme authority, which ought never to be ſhaken by arguments merely human." It is the general opinion of the Pandits, that Brahma taught his laws to Menu in 100,000 verſes, which Menu explained to the world in the very words of the book tranſlated by ſir William Jones. It was afterwards abridged to 12,000 verſes, and ſubſequently to 4000; but at preſent they conſiſt only of 2685 verſes. Of the numerous gloſſes or comments on Menu, that of Cullucá Bhatta is moſt highly commended by ſir William Jones, who has implicitly followed his text and interpretation.

The work, as preſented to the European reader by ſir William Jones, contains abundance of curious matter, extremely intereſting both to ſpeculative lawyers and to antiquaries; with many beauties, and with many blemiſhes, which cannot be juſtified or palliated. It is a ſyſtem of deſpotiſm and prieſtcraft, both indeed limited by law, but artfully conſpiring to give mutual ſupport, though with mutual checks: it abounds with ſtrange conceits in metaphyſics and natural philoſophy, with idle ſuperſtitions, and with a ſcheme of theology moſt obſcurely figurative, and conſequently liable to dangerous miſconceptions; with minute and childiſh formalities; with ceremonies generally abſurd, and often ridiculous. The puniſhments denounced are partial and fanciful; for ſome crimes dreadfully cruel, for others reprehenſibly ſlight: and the morals even, though rigid enough on the whole, are, in one or two inſtances, (as in the caſe of light oaths and of pious perjury,) unaccountably relaxed. Nevertheleſs, a ſpirit of ſublime devotion, of benevolence to mankind, and of amiable tenderneſs to all ſentient creatures, pervades the whole work. Some doubt, however, has been entertained with regard to the ſublimity of the devotion, and the amiable tenderneſs of feeling, aſcribed by ſir William Jones to this ſpecimen of the Hindoo writings; and it has been alleged, that the general character of the devotion of the Hindoos is that of a debaſing ſuperſtition, and that their tenderneſs for animals is chiefly ſuperſtition and weakneſs, derived from their doctrine of tranſmigration. The ſtyle of it has a certain auſtere majeſty that ſounds like the language of legiſlation, and extorts a reſpectful awe. The ſentiments of independence on all beings but God, and the harſh admonitions, even to kings, are truly noble. Whatever opinion, in ſhort, may be formed of Menu and his laws, in a country happily enlightened by ſound philoſophy and the only true revelation, it ought to be remembered that thoſe laws are actually revered as the word of the Moſt High, by nations of great importance to the political and commercial intereſts of Europe, and particularly by many millions of Hindoo ſubjects, whoſe well directed induſtry adds largely to the wealth of Britain, and who aſk no more in return than protection for their perſons and places of abode, juſtice in their temporal concerns, indulgence to the prejudices of their old religion, and the benefit of thoſe laws which they have been taught to believe ſacred, and which alone they can poſſibly comprehend. See Preface to ſir William Jones's tranſlation of the "Inſtitutes of Menu," in his Works, vol. vii. p. 75, &c. 8vo. (See Gentoos.) For an extended account of its incomparable tranſlator, ſee our article Jones, *Sir* William.

The Hindoos have, however, ſeven holy perſons diſtinguiſhed by the common denomination of Menu, whoſe names we ſhall preſently give; but the firſt and laſt only demand any particular notice. The name is derived from the Sanſcrit root *men*, or *man*, to underſtand or think; and it ſignifies, as all the Pandits agree, *intelligent*, particularly in the doctrines of the Veda, or a thinking being: hence *menes*, *mens*, and *mind*, alſo *man*, both in Gothic and Engliſh. If in the firſt Menu we recogniſe Adam, our great progenitor; ſo in the ſeventh we find Noah, the great reſtorer of our ſpecies. Here follow their names: 1. Swayambhuva, meaning the ſon of the Self-exiſtent; a name applied by different ſects to the peculiar object of their adoration. 2. Swarochcſha. 3. Uttama. 4. Tamaſa. 5. Raivata. 6. Chakſuſha. 7. Satyavrata. In the time of the laſt, the general deluge occurred. See Matsyavatara and Ila, alſo Swayambhuva and Satyavrata.

Although *ſeven* Menus are uſually referred to in Hindoo books, that preciſe number is not always given. In the tenth lecture of the Gita, (ſee Mahabarat,) "the four Menus" are mentioned; and fourteen are ſpoken of in the Siva-purana. It ſeems, indeed, a generic term for *wiſdom*. Mr. Wilford (Aſ. Reſ. vol. v.) thinks it likely that the ſeven Menus, the ſeven Brahmadicas, and the ſeven Riſhis, (ſee Rishi,) are the ſame, and make only ſo many individuals, firſt called Brahmadicas, or children of Brahma, created for the purpoſe of ſupplying the world with inhabitants. Having fulfilled this miſſion, they became ſovereigns, or Menus, who, when far advanced in years, withdrew from the world to ſolitary places to prepare for death; as, according to the Puranas, was the general practice of mankind in the early ages; and became Riſhis, or holy penitents, who, by their ſalutary counſels and the example of their auſterities, pointed out the paths of virtue and rectitude to mankind. There are ſtill much confuſion and contradiction in the accounts of the perſon and characters of theſe holy perſons, of whom many particulars occur in Moor's Hindoo Pantheon.

MENUET, Fr., Minuet, Engl., the name of a muſical movement in triple time of three crotchets or three quavers in a bar, which is the guide to a graceful dance in the ſloweſt time of any movement that is danced off the ſtage at public or private balls, ſince the louvre has totally loſt its favour.

The minuet, according to Broſſard, had its origin in Poitou. The melody of the minuet is uſually divided into two parts, or ſtrains, conſiſting of eight bars each, of which the firſt ends on the fifth of the key, and the ſecond on the key note.

There is ſo much dignity and grace in this dance, that it is to be lamented it has ceaſed to be a part of education, and to be diſcontinued at private balls and aſſemblies where elegance and decorum uſed to be obſerved. In learning the ſteps and figure of the minuet, other things neceſſary in poliſhed ſociety uſed to be taught; ſuch as the bow, the curtſey, the entrance into a room and departure from it with eaſe and grace, the preſenting to or receiving from a ſuperior; indeed the whole carriage of the perſon uſed to be regulated in learning the minuet, in a manner not, as we can diſcover, included in the Scotch ſtep or Iriſh jilt, the cotillon, or the waltz. Thoſe who never had the courage or intention to exhibit their perſons in a ball-room, public or private, have been diſcovered to have learned to dance by ſtanding ſtill or walking in the ſtreet, as a peaſant diſcovers himſelf to have been drilled in the ſame ſituations.

MENUF, or Menouf, in *Geography*, a town of Egypt, and chief place of a diſtrict, ſeated near a canal, which was formerly navigable, but has ceaſed to be ſo in conſequence of a dyke raiſed for reſtraining the inundations of the Nile in that branch of it which runs to Damietta. The canal ſurrounds the walls of the town from S. to W. The houſes are mean and the ſtreets narrow and crooked; nor has it many remains of antiquity. In its vicinity are no gardens, ſo that it is ſupplied with fruit and vegetables from a diſtance; but the land is well cultivated and produces wheat, barley, maize, lentils and lupines. The cultivation of maize from ſeed-time to harveſt occupies 70 or 80 days. The animals employed in huſbandry are oxen, buffaloes, camels, aſſes, and a few horſes. Menuf, during the inundation, is ſurrounded with water, but it does not long continue. It is ſheltered from the S., and being open to the N. and N.W., it is kept moderately cool. The number of inhabitants is about 5000; 22 miles N.N.W. of Cairo.

MENUFIE, or Menoufie, the diſtrict of which Menuf is the capital, on the S. part of the Delta, between the E. and W. branches of the Nile.

MENUGAT, a town of Aſiatic Turkey, in the province of Caramania, on a river of the ſame name, which runs into the gulf of Satalia; 21 miles W. of Alanieh.

MENYANTHES, in *Botany*, according to Linnæus, is derived from μην, *a month*, and ανθος, *a flower*, becauſe the plant continues in bloſſom about that period of time. *M. trifoliata* is undoubtedly the μινυανθες of Theophraſtus and *Minyanthes* of Pliny, becauſe thoſe authors deſcribe it as having ternate leaves and ornamental flowers. Buckbean. Linn. Gen. 82. Schreb. 107. Willd. Sp. Pl. v. 1. 810. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 225. Prod. Fl. Græc. p. 1. 128. Ait. Hort. Kew. ed. 2. v. 1. 312. Tournef. t. 15. Juſſ. 98. Lamarck Illuſtr. t. 100. Gærtn. t. 114. Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Preciæ*, Linn. *Lyſimachiæ*, Juſſ. *Gentianæ*, Ventenat.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, five-cleft, erect, permanent. *Cor.* of one petal, funnel-ſhaped; tube cylindrically funnel-ſhaped, ſhort; limb cloven below the middle into five, ſpreading, recurved, obtuſe, more or leſs hairy ſegments. *Stam.* Filaments five, awl-ſhaped, ſhort; anthers acute, cloven at the baſe, erect. *Piſt.* Germen ſuperior, conical; ſtyle cylindrical, exactly as long as the corolla; ſtigma cloven, compreſſed. *Peric.* Capſule ovate, enveloped by the calyx, of one cell. *Seeds* numerous, ovate, ſmall.

Eſſ. Ch. Corolla hairy. Stigma cloven. Capſule of one cell.

1. M. *nymphæoides*. Fringed Buckbean. Leſſer Yellow Water Lily. Linn. Sp. Pl. 207. Engl. Bot. t. 217. Fl. Dan. t. 339.—Leaves heart-ſhaped, entire, waved. Corolla ciliated. Found occaſionally in rivers and lakes, though by no means ſo common a plant with us as in the ſtill canals of Holland. It flowers from June to Auguſt. *Root* perennial, long and ſtringy. *Stems* very long, round, bearing leaves and flowers towards their ſummits. *Leaves* oppoſite,

ſimple, on ſtalks, floating, heart-ſhaped or roundiſh, wavy, ſmooth. *Flowers* axillary, crowded together, on ſtalks, expanding at noon, of a golden colour, fringed at the margin. Dr. Smith obſerves, that the leaves of this plant, like thoſe of the *Nymphæa*, perſpire ſo quickly as to become dry in a few hours, though at firſt ſo ſucculent. Some authors have thought from the corolla being ciliated, not hairy, that *M. nymphæoides* ſhould be referred to another genus. But as Juſſieu, whoſe authority upon ſuch a point is very great, has not ſeparated this from *M. trifoliata*, and as *M. indica* and *ovata* ſeem to connect the two, we think with Dr. Smith they may ſafely remain as they are.

2. M. *ovata*. Oval-leaved Buckbean. Linn. Suppl. 133. Willd. n. 2. (M. capenſis; Thunb. Prod. 34. Villarſia ovata; Vent. Choix de Plantes, t. 9.)—Leaves ovate, on long ſtalks. Stem panicled. An aquatic of the Cape, flowering in May and June. Linnæus obſerves that this ſpecies has the habit of an *Aliſma*, but the flower of a *Menyanthes*. *Root* fibrous. *Stems* few, about two feet high and the thickneſs of a quill, ſtraight, cylindrical, ſometimes naked and like ſtraws, more frequently furniſhed with three or four leaves, ſimple, ſmooth, bright green. *Leaves* obtuſe, generally quite entire, nerved, ſmooth, of a bright green colour and bitter flavour. *Flowers* on ſtalks, bracteated, of a fine yellow or citron colour, without ſmell.

3. M. *indica*. Indian Buckbean. Linn. Sp. Pl. 207. Bot. Mag. t. 658.—Leaves heart-ſhaped, ſomewhat notched. Flowers on ſimple ſtalks. Corolla internally hairy. Native of the Cape, flowering nearly through the ſummer. *Root* fibrous. *Stems* floating, branched. *Leaves* peltate, bright green on one ſide, dark ruſſet on the other. *Flowers* forming a lax umbel, placed on the ſtem juſt below the leaf, of a bright yellow colour, looking as if covered with ſilver froſt.

4. M. *criſtata*. Creſted Buckbean, or Antara-Jamara of the Telingas. Roxb. Coromandel. v. 2. 3. t. 105.—Leaves heart-ſhaped, wavy. Flowers on ſimple ſtalks. Corolla with an elevated creſted rib.—A native of banks, or pools of freſh water, in the Eaſt Indies, where it floats, often not reaching the bottom with its roots. Flowering time the wet and cold ſeaſon.—*Roots* annual, fibrous. *Stems* numerous, much ſpreading. *Leaves* on ſhort ſtalks, ſmooth; green above with a purpliſh tinge. *Flowers* in a looſe umbel, not hairy, of a pure white colour, about an inch in diameter. Rheede deſcribes the laſt ſpecies as having ten ſtamens. We ſuſpect the preſent, which has alſo ten, though five are imperfect, is what ſir William Jones deſcribed in his ſelect Indian plants, calling it *Cumuda*, or delight of the water, which ſeems to be a general name for beautiful aquatic flowers.

5. M. *exaltata*. Tall Buckbean. Soland. MSS. and Herb. Banks. Ait. Hort. Kew. ed. 2. v. 1. 312. Bot. Mag. t. 1029.—Leaves roundiſh-heart-ſhaped, ſomewhat peltate, ſlightly crenate. *Stem* panicled. A native of New South Wales, where it was diſcovered by ſir Joſeph Banks. It flowers from November to February, being kept in a ciſtern near the glaſs in a bark-ſtove. This is a larger plant than any of the preceding, with a tall, panicled, many-flowered *ſtem*. The *leaves* are heart-ſhaped, veiny and wavy. *Flowers* deep yellow, their petals toothed at the edge, and bearded on the upper ſide at the baſe. Dr. Sims remarks that it is nearly allied to *M. ovata*, and ſhould immediately precede that ſpecies.

6. M. *trifoliata*. Common Buckbean, or Marſh Trefoil. Linn. Sp. Pl. 208. Engl. Bot. t. 495. Curt. Lond. faſc. 4. t. 17—Leaves ternate. Corolla extremely hairy on the upper ſide. This elegant plant is common in boggy, marſhy ſituations, and flowers in June or July. *Root* perennial, formed of ſpreading ſcyons, black. *Stem* leafy, ſpreading horizontally, branched. *Leaves* ternate, on ſtalks, toothed and ſlightly folded at the edge. *Flowers* in ſpikes, bracteated, on ſtalks, of a beautiful fleſh-colour, hairy and very thickly ſet on the upper ſide with fleſhy obtuſe fibres. *Style* prominent. The whole herb is bitter, powerfully inducing perſpiration. Dr. Smith remarks that "an infuſion of it was long ago recommended for the rheumatiſm, and has been a popular medicine in England. It has alſo been given for the gout, ſcurvy, ague, catarrh and dropſy, a formidable liſt of diſorders: if it has any right to ſuch celebrity, it muſt act as a powerful tonic."

7. M. *hydrophyllum*. Water-leaf Buckbean. Loureir. Cochinch. 105. Mart. Mill. Dict. v. 3.—Leaves heart-ſhaped, entire. Flowers axillary, crowded together. A native of ſwamps in Cochinchina. This plant is conſidered by the authors above quoted as forming a connecting link between *Menyanthes* and *Hydrophyllum*. The *ſtem* is thread-ſhaped and creeping. *Leaves* ſmooth, on ſtalks, ſcattered, few in number. *Flowers* white, on long ſtalks.

MENYANTHES *Trifoliata*, *Water-trefoil*, or *Buck-bean*, in the *Materia Medica*. The whole plant is ſo extremely bitter, that in ſome countries it is uſed for hops in the preparation of malt-liquor; and yet Linnæus obſerves, that the poorer people in Lapland make a bread of the powdered roots mixed with meal, acknowledging at the ſame time that it is a very unpalatable food. The blackneſs manifeſted by adding a ſolution of green vitriol to the juice, or to a ſtrong infuſion of the leaves of buckbean, is a ſufficient teſt of its aſtringency; while a drachm of the powdered leaves ſeldom fails to open the body, or produce vomiting; ſo that in common with the tonic properties of a bitter, it ſeems farther to poſſeſs a conſiderable ſhare of medicinal activity: we can therefore more eaſily credit the reports of its ſucceſs in a great number of chronic diſeaſes mentioned by various authors, as ſcurvy, dropſy, jaundice, aſthma, periodical headaches, intermittents, hypochondriaſis, cachexia, obſtructio menſium, rheumatiſm, ſcrophula, worms, gout. Dr. Boerhaave was relieved in the laſt mentioned complaint by drinking the juice mixed with whey; and Dr. Alſton tells us, that "this plant had remarkable effects in the gout, in keeping off 'the paroxyſms;' but adds, "though not to the patient's advantage."

In confirmation of the good effects of water trefoil in dropſies, we are told that ſheep, when forced to eat it, are cured of the rot (oves tabidæ); yet as we have but few and imperfect proofs of its diuretic powers, this fact will be conſidered of little weight.

Bergius confines the uſes of this plant to ſcorbutus, leucophlegmatia, arthritis, rheumatiſmus, cacoethes, and this ſpecification is ſtill farther contracted by later writers on the materia medica. In Lewis's Mat. Med. (by Mr. Aikin) it is ſaid, that the leaves of buckbean "have of late years come into common uſe as an alterative and aperient, in impurities of the humours, and ſome hydropic and rheumatic caſes;" and as an active and eccoprotic bitter, we ſhould ſuppoſe them not ill adapted to ſupply the want of bile in the *primæ viæ*, and thus infer their uſe in protracted jaundice, and other biliary obſtructions. Dr. Cullen has "had ſeveral inſtances of their good effects in ſome cutaneous diſeaſes of the herpetic and ſeemingly cancerous kind."

The leaves may be given in powder from ℈i to ℈ij for a doſe two or three times a day, but a ſtrong infuſion of them is perhaps preferable, and with delicate ſtomachs it may be neceſſary to conjoin a grateful aromatic: they impart their properties both to watery and ſpirituous menſtrua, and an extract is ordered to be prepared from them in the Ph. Dan. p. 171. "Efficax et frequentis commodique uſus." Murray. Lewis Mat. Med. Cullen Mat. Med. Woodville Med. Bot.

MENZABANO, in *Geography*, a town of Italy, on the river Mincio, famous for a battle fought here between the French and the Auſtrians, on the 28th of December 1801, in which, after a very obſtinate and ſanguinary conteſt, the former were victorious, and took 8000 priſoners.

MENZALE', called by Strabo (lib. xvii.) and the Arabian authors *Tanis* (which ſee), a large lake, ſeparated from the Mediterranean, to which it is parallel, by a ſlip of land, about 60 miles in length and from 2 to 12 in breadth; filled and occaſionally overflowed by the waters of the Nile. During the inundation the water is freſh, and becomes ſalt as the river returns into its bed; a circumſtance which was obſerved in the time of the caliphs. The Nile, ſays the geographer of Nubia, overflowing its banks at the ſummer ſolſtice, the canals which diſcharge themſelves into lake Tanis, render its waters freſh; and the ſea, flowing into it, in its turn, makes them ſalt. In this lake are iſlands with buildings in them like barns; but they are only acceſſible in boats. About 1200 boats, each of which pays annually 40 livres to the Pacha's renter, are conſtantly employed in fiſhing on the lake. The quality of the water gives to the fiſh a white fleſh and a fine delicate flavour. They ſupply Damietta at a cheap rate. As the lake has ſeveral communications with the Nile and the Mediterranean, and being full of iſlands, reeds, herbs, and inſects, it is abundantly ſtocked with fiſh. Two thouſand perſons are annually employed in the fiſhery, and thouſands of birds conſtantly feed upon the fiſh without occaſioning any perceptible diminution. The waters are covered with wild geeſe, ducks, teals, plovers, and ibiſes; and various other birds of large ſize and beautiful plumage. The iſlands in this lake are for the moſt part uninhabited, except Matarieh; and of courſe are uncultivated. Menzalé communicates with the ſea by two mouths, *viz.* Dibé and Eumené Fareggi, which are the Mendeſian and Tanitic mouths of the ancients; each mouth is ſhut towards the ſea with a bar or bank, forming the part of a circle. The tongue of land, ſeparating the lake from the ſea, extends, with only four interruptions in its whole length, from Damietta to Tineh. The length of the lake from N.W. to S.E. is 43,000 fathoms, and its breadth from 12,000 to 26,000.—Alſo, a town of Egypt, ſituated near the lake to which it gives name; 20 miles S.S.E. of Damietta. N. lat. 31° 3'. E. long. 32°.

MENZALINSK, a town of Ruſſia, in the government of Upha; 132 miles W.N.W. of Upha. N. lat. 55° 16'. E. long. 52° 14'.

MENZIESIA, in *Botany*, ſo named many years ago, by the writer of this, in the *Plantarum Icones ex Herb. Linn. faſc.* 3, in honour of his much-valued friend Mr. Archibald Menzies, F. L. S. This gentleman, in his voyage round the world with captain Vancouver, collected many rare and nondeſcript plants, particularly on the weſtern coaſts of New Holland and of North America. He alſo diſcovered, near Duſky bay in New Zeeland, the richeſt collection of *Jungermanniæ* that was ever, perhaps, made by any one perſon.—Sm. Plant. Ic. 56. Willd. Sp. Pl. v. 2. 355. Michaux Boreal-Amer. v. 1. 235. Juſſ. in Annal. du Muſ. v. 1. 55. Ait. Hort. Kew. ed. 2. v. 2. 360. Swartz Tr. of Linn. Soc. v. 10. 375. Engl. Bot. v. 35. 2469. Lamarck Dict. v. 4. 115. Illuſtr. t. 285. Claſs and order, *Octandria Monogynia*. Nat. Ord. *Bicornes*, Linn. *Rhododendra*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, more or leſs deeply four or five-cleft, permanent. *Cor.* of one petal, inflated, nearly ovate, deciduous; its limb ſpreading, in four or five ſmall, ſpreading, equal ſegments. *Stam.* Filaments eight or ten, thread-ſhaped, equal, ſhorter than the corolla, inſerted into the receptacle; anthers erect, oblong, ſimple, two-lobed at the baſe, opening by two pores at the top. *Piſt.* Germen ſuperior, roundiſh-oblong, furrowed; ſtyle angular, erect, rather longer than the ſtamens; ſtigma obtuſe, with four or five ſmall lobes. *Peric.* Capſules elliptic-oblong, with four or five furrows, and as many valves and cells, opening from the top downward, the partitions double, formed of the inflexed margins of the valves. *Seeds* numerous, ſmall, oblong, more or leſs pointed, affixed to the ribs of the large central column.

Eſſ. Ch. Calyx of one leaf, four or five-cleft. Corolla of one petal, inflated. Filaments inſerted into the receptacle. Capſule ſuperior, of four or five cells, the partitions from the inflexed margins of the valves.

1. M. *ferruginea.* Ruſty-flowered Menzieſia. Sm. Plant. Ic. t. 56.—Calyx very ſlightly four-lobed. Leaves obovato-lanceolate, finely ſerrated; ſmooth beneath.—Gathered by Mr. Menzies, very copiouſly, in 1787 and 1788, on the weſt coaſt of North America. The *ſtem* is ſhrubby, two or three feet high, determinately branched, ſpreading, round, ſmooth, the pale *bark* ſcaling off in long ſtrips; *branches* leafy, hairy when young, ſpringing from the ſame buds as the flowers, the ſcales compoſing which are ovate and fringed. *Leaves* alternate, crowded towards the tops of the branches, ſtalked, ſpreading, obovate, inclining to lanceolate, one and a half or two inches long, three-fourths of an inch broad, obtuſe, tipped with a gland, finely ſerrated, fringed, membranous, flat, veiny; green and beſprinkled with white depreſſed hairs above; pale and ſmooth beneath, except a few hairs, or flat narrow ſcales, on the ribs; deciduous. *Footſtalks* ſhort, winged. *Stipulas* none. *Flowers* from the buds of the laſt ſeaſon, five or more together, on ſimple ſtalks, about an inch long, covered with viſcid hairs, and drooping. *Calyx* ſmall and flat, very ſlightly four-lobed, or rather waved at the edge, fringed. *Corolla* ovate, one-third of an inch long, the border four-cleft, ſlightly expanded, altogether (as appears by Mr. Menzies's drawing and deſcription) of a ruſty hue. *Stamens* eight. *Capſule* ſmooth, dark brown externally, pale within.

2. M. *globularis.* Pale-flowered Menzieſia. Saliſ. Parad. t. 44. Ait. Hort. Kew. n. 1. (M. Smithii; Michaux Boreal-Amer. v. 1. 235.)—Calyx in four rounded lobes. Leaves obovate, nearly entire; glaucous and downy beneath.—Native of South Carolina, according to Saliſbury and Lyon. Of this we know nothing but from the works quoted, by which it appears to differ from the foregoing, beſides the above ſpecific characters, in having a more globoſe *corolla*, pale yellow with red ſtreaks. The *flowers* are octandrous and four-cleft, as in *M. ferruginea.* Michaux miſtook this for the original ſpecies; and having no information of the ſpecific name, gave one of his own. The above writers copy his error of the preſs.

3. M. *polifolia.* Iriſh Menzieſia. Juſſ. in Ann. du Muſ. v. 1. 55. Ait. n. 2. (Erica Dabeoci; Sm. Fl. Brit. 420. Engl. Bot. t. 35. Willd. Sp. Pl. v. 2. 383. Andromeda Daboecia; Linn. Syſt. Veg. ed. 13. 338.)—Calyx in four deep ſegments. Flowers racemoſe. Leaves ovate; very denſely downy and ſnow-white beneath.—Native of hills in Spain and Ireland, on a boggy ſoil. Mr. Lambert found it abundant on Croagh Patrick in the county of Mayo, and Dr. Wade in the diſtrict of Cunnemara, county of Galway. In gardens it is often cultivated for ornament, amongſt American and other flowering ſhrubs which thrive in bog

earth, flowering from June to September. The *ſtems* are ſhrubby, buſhy, a foot and a half high, with many upright, ſimple, leaſy branches, at length decumbent and ſpreading. *Leaves* numerous, ſtalked, generally alternate, now and then oppoſite, or three together, ovate, entire, ſlightly revolute; dark green, ſhining, and ſomewhat hairy above; ſnow-white, with denſe cottony down beneath, their ſmooth red rib vaniſhing about the middle. There are axillary tufts of numerous ſmall leaves beſides. *Flowers* four-cleft, octandrous, large, purpliſh-red, ovate, with four obtuſe angles, drooping in a long, looſe, inclining, bracteated cluſter; the ſtalks and calyx red, hairy, and viſcid. *Capſule* ſmall and roundiſh, with partitions from the inflexed margin of the valves, which is never the caſe with a real *Andromeda*. Hence this plant was retained in *Erica* in Fl. Brit. according to the original opinion of Linnæus, who was chiefly led by number in the parts of fructification. M. de Juſſieu however, who always much approved this genus of *Menzieſia*, has reinforced it with the preſent ſpecies, as Dr. Swartz has done with the two following.

4. M. *cærulea*. Scottiſh Menzieſia. Swartz Tr. of Linn. Soc. v. 10. 377. t. 30. f. A. Engl. Bot. t. 2469. (Andromeda cærulea; Linn. Sp. Pl. 563. Fl. Lapp. ed. 2. 133. t. 1. f. 5. Lapl. Tour. v. 1. 272. Fl. Dan. t. 57. A. taxifolia; Pall. Roſſ. v. 1. p. 2. 54. t. 72. f. 2. Erica cærulea; Willd. Sp. Pl. v. 2. 393.)—Calyx in five deep acute ſegments. Corolla ovate. Flower-ſtalks terminal, aggregate, ſimple. Leaves ſcattered, numerous, linear, obtuſe, finely ſerrated.—Native of turfy ſtony mountainous heaths in Lapland, Norway, ſome part of Siberia, and alſo in the moſt northern parts of America. It has lately been diſcovered at Aviemore in Strathſpey, as well as in the remote weſtern iſles of Shiant. This is a more humble *ſhrub* than the laſt, with the habit of an *Empetrum*, and diſtinguiſhed from all the foregoing ſpecies, by its narrow crowded *leaves*, like thoſe of a heath, moderately ſpreading in every direction. They are almoſt linear, about half an inch long, rather ſhining above, finely toothed at the edge; their rib downy underneath. *Flower-ſtalks* four or five at the top of ſome of the branches, at firſt perfectly terminal, but the branch gradually ſhoots beyond them; each is about an inch and a half long, ſimple, rough with red glandular hairs, drooping gracefully at the top, and bearing one large ovate *flower* of a pale blueiſh or livid red; the *calyx* in five deep acute ſegments. On turning to Pallas's *Flora Roſſica*, we find he did not alter the ſpecific name to *taxifolia*, from want of underſtanding the true meaning of *cærulea*, but becauſe the *corolla* occaſionally varies to fleſh-colour or to white; but theſe changes are frequent, and do not authorize ſuch a meaſure.

5. M. *empetriformis*. Bell-flowered Menzieſia. Sm. Tr. of Linn. Soc. v. 10. 380.—Calyx in five deep obtuſe ſegments. Corolla bell-ſhaped. Flower-ſtalks terminal, aggregate, ſimple. Leaves ſcattered, linear, obtuſe, finely ſerrated; concave beneath.—Gathered by Mr. Menzies on the weſt coaſt of North America, near Nootka Sound. A much taller plant than the laſt, with leſs crowded *leaves*, which are concave beneath, with a ſmooth rib; their upper ſurface ſhining; the margin fringed with briſtly ſerratures. The *flower-ſtalks* are crowded in like manner about the tops of the branches, but in greater number. *Calyx* not above half ſo long, with five blunt, thin-edged, deep, convex ſegments. *Corolla* ſmaller, bell-ſhaped, with five ſpreading, ovate, marginal ſegments, and not contracted at the mouth. *Capſule* almoſt globular, dark brown, beſprinkled with reſinous dots.

6. M. *Bryantha*. Moſſy Menzieſia. Swartz Tr. of Linn. Soc. v. 10. 378. t. 30. f. B. (Andromeda Bryantha; Linn. Mant. 238. A. Bryanthus; Pall. Roſſ. v. 1. p. 2. 57. t. 73. f. 1. Bryanthus; Gmel. Sib. v. 4. 133. t. 57. f. 3. Erica Bryantha; Willd. Sp. Pl. v. 2. 386.)—Calyx in four deep acute ſegments. Corolla bell-ſhaped, in four deep ſegments. Flower-ſtalks terminal, corymboſe. Leaves ſcattered, elliptic-oblong, toothed; convex beneath.—Gathered by Steller, on moſſy rocks in Kamtſchatka, flowering in July. This elegant little *ſhrub* is much ſmaller than any of the reſt, clothing the ground with its long trailing branching *ſtems*; and the ſmall, oblong, numerous *leaves* give it a moſs-like aſpect. The *flowers* grow four or five together in a ſmall, corymboſe, bracteated cluſter, on a long terminal ſtalk. The *calyx* and *ſtamens* are red. *Corolla* white, divided below the middle into four ſegments. Pallas ſays it has ſometimes five or ſix diviſions, and that the *ſtamens* are equal to them in number; but he muſt mean that they are twice as numerous, which indeed his figure expreſſes, and which is the caſe in the whole genus. The *capſule* is nearly globular, with four furrows. We have ſeen no ſpecimen.

Theſe are all the ſpecies of *Menzieſia* hitherto eſtabliſhed. Willdenow ſuggeſts, Sp. Pl. v. 2. 610, that the *Andromeda octandra*, Swartz Ind. Occ. 840, may belong to this genus; but Swartz deſcribes the corolla as permanent, and though he does not deſcribe the fruit, in a manner to aſſiſt us in this enquiry, we muſt preſume he did not overlook this plant of his own, while ſeeking for *Menzieſiæ* amongſt *Andromedæ*.

MENZIL, in *Geography*, a town of Africa, in the kingdom of Tunis, anciently called "Zæta;" 4 miles S.S.W. of Suſa.

MENZINI, Benedetto, in *Biography*, an eminent Italian poet, was born at Florence of indigent parents in 1646. He was taken at an early period into the houſe of Gianvincenzo Salviati, who gave him the means of cultivating his talents. He was ſoon diſtinguiſhed for eloquence, and opened a ſchool of rhetoric. By the advice of the celebrated Redi he turned his efforts to Italian poetry, and in 1674 publiſhed a volume of poems, dedicated to the grand duke Coſmo III., and in 1679 he publiſhed a treatiſe, entitled "Conſtruzione irregolare della Lingua Toſcana," and in the following year he appeared before the public with a volume of lyric poems, by which he obtained great reputation. In 1685 he accepted an invitation from queen Chriſtina of Sweden, then reſident at Rome, who gave him a very favourable reception, and admitted him into her academy. He had now leiſure to purſue his ſtudies, but the death of the queen in 1689 obliged him to ſeek a maintenance by writing for other perſons, particularly ſermons for the clergy who were unable to compoſe their own diſcourſes. He at length received from pope Innocent XII. an office in the church of St. Angelo, in Peſchiera; and in 1701 he was nominated coadjutor in the chair of eloquence at the college of the Sapienza at Rome. He died, according to one account, in 1704, but according to another in 1708. He wrote almoſt every kind of Italian poetry, but in anacreontic ſongs, in paſtoral ſonnets, elegies, and ſacred hymns, he has few equals, and perhaps no ſuperior; and in Italian ſatires none can compare with him. All the works of Menzini were collected and publiſhed at Florence, in four volumes, in the year 1731. Of theſe the firſt contains his lyric poems: the ſecond his miſcellaneous pieces: the third his Italian proſe; and the fourth his Latin compoſitions. He was a member of the academy Della Cruſca, and his works have been conſidered as belonging to the golden age of the language.

MEOLA, in *Geography*, a town of Italy, in the Treviſan; 11 miles E. of Trevigio.

MEPHITIS, or Mephitical *Exhalation*, denotes a poiſonous and noxious ſteam iſſuing out of the earth. See DAMP, *Mephitic* AIR, and AZOTE. See alſo EFFLUVIA, and GROTTO *del Cani*.

MEPHITIS, in *Mythology*, is a name given to Juno, becauſe ſhe is ſuppoſed to preſide over ſtinking exhalations, or corrupted and noxious air; and hence it was uſed to ſignify ſuch noxious air itſelf. Servius, upon the paſſage in Virgil (Æn. vii) "Sævamque exhalat opaca Mephitim," ſays, that this goddeſs may poſſibly be Juno taken for the air, becauſe it is by means of the air that bad ſmells are communicated. According to Scaliger, the word is Etruſcan, and derived from the Syrians, with whom it ſignified any ſtinking ſmell. Juno had a temple among the Hirpines under this appellation.

MEPPEL, in *Geography*, a town of Holland, in the department of Overiſſel, ſeated on the Walt Aa; 24 miles W. of Covorden.

MEPPEN, a town and fortreſs of Germany, in the biſhopric of Munſter, at the conflux of the Haſe and Embs; 52 miles N. of Munſter. N. lat. 52° 43'. E. long. 7° 26'.

MEQUINENZA, a town of Spain, in the kingdom of Aragon, at the conflux of the Segre, the Cînea, and the Ebro; anciently called "Octogeſa" and "Ictoſa;" defended by a caſtle, and once the ſee of a biſhop; 16 miles S.S.W. of Lerida.

MEQUINEZ, an imperial city of Morocco, greatly embelliſhed and enlarged by Muley Iſhmael, and the metropolis of the north. It is ſituated at the extremity of Beni-Haſſen, 80 leagues N. of Morocco, and 20 leagues E. of Sallee and the ſea. Maknaſſa, the founder of this city, built it at the bottom of a valley, but Muley Iſhmael made it much larger, by building on the plain to the weſt. The city is ſurrounded by vallies and eminences highly cultivated, ornamented with gardens, and plantations of olive-trees, and watered by a variety of ſtreams, ſo that the fruits and vegetables are of an excellent flavour. The winter is diſagreeable on account of the quantity of mud which then accumulates in the city and its environs, becauſe the ſtreets are not paved, and the ſoil is clay. Mequinez is encompaſſed with walls: and the palace is fortified with two baſtions, in which was formerly ſome ſmall artillery. The Brebes have often conſpired againſt the tyranny of its rulers; and on the weſtern ſide are ſtill ſeen ſome walls of circumvallation, ſix feet in height, which were probably only intrenchments for the infantry, as the attacks of the Brebes were ſudden and momentary incurſions, which did not require any long defence. In Mequinez, as well as in Morocco, there is a quarter walled in and guarded for the Jews. The houſes are handſomer here than in that of Morocco; the Jews are more numerous, and derive greater profit from their induſtry, becauſe the Moors of Mequinez are richer, and as they are nearer, they have greater intercourſe with Europe than thoſe of the Southern provinces. Contiguous to the quarter of the Jews, is another, incloſed with walls, but now in ruins, called the Negro town, built by Muley Iſhmael for the families of his black ſoldiers; but of this the walls only remain. At the extremity of the city, on the S.E. ſide, is the emperor's palace, which is a very extenſive building, including ſeveral gardens, well laid out and watered by abundant ſtreams. In the centre is a large garden, ſurrounded by a ſpacious gallery ſupported by columns, which maintains a communication between the apartments. Thoſe of the women are large, and terminate in a common chamber, built on a cauſeway that divides the great garden, where the women may look out at the window through an iron lattice. In paſſing from one apartment to another, we meet at intervals with regular courts, paved with ſquares of black and white marble. In the middle of theſe courts is a marble baſon, on which is raiſed a round ſhell; in the centre of this is a fountain that plays into the baſon. There are many other fountains that ſupply water for the numerous ablutions of the Mahometans. At Mequinez, as well as at Fez, they make a kind of glazed tiles, ſimilar to what we call Dutch tiles, of various colours; which are uſed to pave their rooms and face their walls, and give to their houſes an air of neatneſs and coolneſs, not occurring in other towns of the empire. The Moors of Mequinez are much more affable and engaging than thoſe of the ſouthern provinces; and the women are extremely handſome, being very fair, with fine black eyes, and beautiful teeth. They are ſometimes ſeen walking on the terrace; but when a Moor appears, they immediately retire. At Mequinez, as well as at Morocco, there is a hoſpitium, or convent, of Spaniſh Recollects, founded more than 100 years ago by the munificence of the kings of Spain, for the benefit and ſpiritual comfort of the Chriſtian captives. Theſe convents are much reſpected in the country, both for the exemplary lives of the fathers, and the ſervice they render to the poor, whom they ſupply with medicines gratis; 35 miles S.W. of Fez. N. lat. 33° 56'. W. long. 5° 50'.

MER, a town of France, in the department of the Loir and Cher, and chief place of a canton, in the diſtrict of Blois; 9 miles N.E. of Blois. The place contains 4300, and the canton 10,623 inhabitants, on a territory of 172½ kiliometres, in 12 communes. N. lat. 47° 42'. E. long. 1° 35'.

MER.—*Ouſter le Mer*. See OUSTER.

MERA, in *Geography*, a town of Spain, in Galicia, near the ſea-coaſt; 3 miles E. of Corunna.

MERA, in *Hindoo Mythology*, is the fabled wife of Haimavat and mother of Uma, a name and form of Parvati, thus incarnated to become the wife of Siva, and parent, or reputed parent, of Kartikya. (See KARTIKYA.) The ſtories connected with this fable are very numerous, filling many books in great eſteem among the Hindoos. In the thirtieth and following ſections of the firſt kanda, or book, of the Ramayana, it is detailed in a very poetical ſtyle how the "great Haimavat, ſovereign of mountains, the grand magazine of metallic ſubſtances, had two daughters of incomparable beauty, by his wife Mera." Their names were Ganga and Uma. The firſt (the river Ganges) was yielded in marriage to all the celeſtials, at their earneſt ſolicitation. Her younger ſiſter, remaining a virgin, became a devotee of extraordinary rigidity, and was at length eſpouſed by Siva, whoſe frigidity was, however, ſuch as to require much addreſs, on the part of the celeſtials, to animate him to the due pitch of paſſion; his nuptials and the conſequent production of Kartikya being of great moment. On this occaſion it was that Kama, the god of love, artfully placing the beauteous Uma before Siva, while in the graceful act of gathering flowers wherewith to decorate his emblem, the Linga had the audacity to launch an arrow at the dreaded deity. Siva, enraged, reduced Kama to aſhes (or, according to ſome legends, to a mental eſſence) by a beam of fire, darted from his central eye. This fable is noticed in the article KAMA, and is as often alluded to in Hindoo books as any perhaps in the whole range of their mythological extravagance. In the Siva-purana, the parents of Parvati in this incarnation are named Himachala and Mahina, in other works Himalaya and Mena. (See MENA.) The name of the father, in all caſes, being derived from a Sanſcrit word meaning ſnow. Mera is ſaid to be daughter of the mountain Meru; a moſt fruitful ſource of mythological tales of wonder and extravagance. See MERU.

MERAB, in *Geography*, a town of Arabia, in the province of Nedsjed; 100 miles N. of Jamama.—Alſo, a town of Perſia, in Khoraſan; 45 miles N.E. of Meſchid.

MERA-COBIN, a town of Africa, in the kingdom of Adel, on the coaſt of the Indian ſea. N. lat. 8° 10′. E. long. 49° 14′.

MERAN, a town of the Tyrol, of which it was formerly the capital, at the conflux of the Adige and Paſſer, containing ſix churches and convents; two miles S.S.E. of Tyrol. N. lat. 46° 38′. E. long. 11° 24′.

MERAT, a town of Hindooſtan, in the country of Delhi; 40 miles N. of Delhi. N. lat. 29° 20′. E. long. 78° 6′.

MERATE, a town of Italy, in the department of the Serio; 9 miles W. of Bergamo.

MERATTE, a town of Algiers; 15 miles N. of Tagademt.

MERAUDABAD, or Mooradabad, a town of Hindooſtan, in Oude, once large with a mint, but now decayed; 20 miles N.E. of Sumbul.

MERBAT, a town of Arabia, in the province of Hadramaut, which, as well as Haſch, is only known for the traffic which the inhabitants carry on in incenſe produced in that neighbourhood; 32 miles N. of Dafar.

MERBES-le-Chateau, a town of France, in the department of Jemappe, and chief place of a canton, in the diſtrict of Charleroy. The place contains 661, and the canton 6382 inhabitants, on a territory of 122½ kiliometres, in 17 communes.

MERCADAL, the chief town of the Terminos Mercadal in the iſland of Minorca, ſituated nearly in the middle of the iſland on the great road between Mahon and Ciudadella. Its ſtreets are narrow, winding, ill paved and worſe repaired. The public edifices conſiſt of the old pariſh church, which is decaying, and a new one. Its ſituation is the leaſt ſalubrious in the whole iſland. During the extreme heats, the inhabitants are afflicted with obſtinate fevers; water is ſcarce, as the great public ciſtern is often dry during the ſummer. The territory of this place is about 5½ leagues in length, and 4½ in breadth. In the ſame diſtrict, about four leagues from Mercadal, is Ferarias, where the Engliſh have conſtructed barracks for 200 ſoldiers. The territory of Ferarias is five leagues in length and two in breadth. Few of the occupiers are huſbandmen, the greater number being employed in hunting, as game is very abundant.

MERCARA, a city of Hindooſtan, and reſidence of the rajah of Coorga; 55 miles W. of Seringapatam.

MERCATI, Michael, in *Biography*, a phyſician and naturaliſt, the ſon of Peter Mercati, a phyſician of St. Miniato, in Tuſcany, was born in April, 1541. After having finiſhed his ſcholaſtic education at his native place, he was ſent to Piſa, and placed under the tuition of Ceſalpini, from whom he derived his taſte for the ſtudy of nature. Having received his degree of doctor in philoſophy and medicine in that univerſity, he went to Rome, where he ſoon became known to the pope, Pius V., who appointed him ſuperintendant of the botanical garden of the Vatican, at the age of twenty-ſix. In the following year he obtained the eſteem of Ferdinand I., the grand duke of Tuſcany, who raiſed him to the rank of nobility; and ſoon afterwards the ſame dignity was conferred upon him by the ſenate of Rome. He was in great favour with pope Gregory XIII., who honoured him with an appointment about his perſon, and with his full confidence, as did alſo his ſucceſſor Sixtus V., who conferred upon him the honourable office of apoſtolical prothonotary, and ſent him into Poland with cardinal Aldobrandini, that he might enjoy the opportunity of increaſing his collections in natural hiſtory. During this journey he greatly enriched his mineralogical cabinet, which he had already commenced at Rome. The ſame cardinal, when elected pope in 1592, under the title of Clement VIII., nominated Mercati his firſt phyſician, and had in contemplation higher honours to beſtow upon him, when this able phyſician died, in 1593, in the fifty-third year of his age. His character in private life was univerſally eſteemed, and the regret of the moſt diſtinguiſhed perſons of Rome followed him to his grave.

Mercati wrote in Italian, at the requeſt of his patron pope Gregory, a work “On the Plague, on the Corruption of the Air, on the Gout, and on Palſy,” which was printed at Rome, in 1576, in 4to: and likewiſe a “Diſſertation on the Obeliſks of Rome, printed in 1589, 4to. But he is principally remembered for his deſcription of the ſubjects of natural hiſtory, particularly of mineralogy, contained in the muſeum of the Vatican, which was formed under the auſpices of Gregory XIII. and Sixtus V. and was afterwards totally diſperſed. He was about to prepare engravings of the principal ſubjects, when his diſeaſe, which terminated his life, interrupted his progreſs. His manuſcript came into the hands of Carlo Dati of Florence, where it remained till the time of Clement XI., who purchaſed it, and cauſed it to be ſplendidly edited by Lanciſi, his firſt phyſician, in 1717, under the title of “Metallotheca, opus poſthumum Authoritate et Munificentia Clementis XI. Pont. Max. è tenebris in lucem eductum; operâ & ſtud. J. M. Lanciſi Archiat. Prat. illuſtratum,” folio. An “Appendix ad Metallothecam” was publiſhed in 1719. Eloy Dict. Hiſt. de la Méd. Gen. Biog.

MERCATOR, Gerard, an eminent Flemiſh geographer and mathematician, was born at Ruremond, in the year 1512. After he had attained a good degree of claſſical learning, he ſtudied philoſophy at Bois-le-Duc, and removed from thence to Louvain, where he was admitted to the degree of M.A. His ſtudies now laid ſo faſt hold of him, that he frequently forgot the uſual periods for refreſhment and ſleep. At the age of twenty-four he married, and then began to learn the art of engraving. His firſt production in this way was a deſcription and map of the Holy Land, which he publiſhed in 1537, when he was only twenty-five years of age. In the year 1541 he made a terreſtrial globe, which proved the means of introducing him to the patronage of the emperor Charles V., for whom he executed maps, globes, and a collection of other mathematical inſtruments. This buſineſs was the means of obtaining for him an appointment in the emperor's houſhold. About the ſame time the duke of Juliers and Cleves made him his coſmographer. In 1551, Mercator produced his celeſtial globe, which was accompanied with a ſhort treatiſe on the uſe of that inſtrument. He now left Louvain, and ſettled at Duyſburg, where he publiſhed, at different periods, deſcriptions and maps of the World, Europe, Germany, France, and the Britiſh iſlands; theſe he afterwards collected together into an Atlas, to which he prefixed a treatiſe “On the Creation and Conſtruction of the World.” His method of laying down maps, &c. is a projection of the ſurface of the earth on a plane. (See Map.) In 1568, Mercator publiſhed his “Chronologia” from the beginning of the world to that year, and immediately he gave the public a corrected edition of “The Geographical Tables of Ptolemy.” He died of a paralytic ſtroke in 1594 at a very advanced age, and in the midſt of his uſeful labours, at the ſame time projecting new works for the improvement of the ſcience of geography. He was author of ſeveral other works beſides thoſe already noticed, Of theſe the principal are as follow, 1. "Ratio ſcribendarum Literarum Latinarum, quas Italicas curſoriaſque vocant:" 2. "De uſu Annuli Aſtronomici:" 3. "Harmonia Evangeliſtarum." He had a ſon named Bartholomew, who wrote notes on John Sacroboſco's treatiſe "De Sphæra Mundi," when he was very young, as he died at the age of eighteen.

Mercator, Nicholas, an eminent aſtronomer and mathematician, was born in Daniſh Holſtein about the year 1640. He received an excellent education, and his turn for mathematical ſtudies introduced him to public regard and eſteem in his country, and facilitated his correſpondence with thoſe perſons who were eminent in the ſame ſciences, in Denmark, Italy, and England. Receiving an invitation to viſit this country, he came, and was ſo well pleaſed with the reception he met with, that he ſpent the remainder of his life in England. He was, ſoon after his arrival, elected a fellow of the Royal Society, and applied himſelf very diligently to the improvement of the ſciences, but he has been charged with having borrowed the inventions of others, and adopting them as his own; and it appeared upon ſome occaſions that he was not endowed with a very liberal mind in ſcientific communications. Thus, it had been obſerved before him, that there was an analogy between a ſcale of logarithmic tangents and Wright's protraction of the nautical meridian line, which conſiſted of the ſums of the ſecants, though it did not appear by whom this analogy was firſt diſcovered. It ſeemed, however, that it was firſt publiſhed and introduced into the practice of navigation by Mr. Henry Bond, who mentions this property in an edition of Norwood's "Epitome of Navigation" printed about the year 1645, and he treated of it more fully in an edition of Gunter's works, printed in 1653, where he teaches, from this property, to reſolve all caſes of Mercator's ſailing by the logarithmic tangents, independently of the table of meridional parts. This analogy had been only found to be nearly true by trials, but not demonſtrated to be a mathematical property. Such demonſtration was probably firſt diſcovered by Mercator, who, deſirous of making the moſt advantage of this and another invention in navigation, invited, by a paper in the Philoſophical Tranſactions for June 1666, the public to enter into a wager with him on his ability to prove the truth or falſehood of the ſuppoſed analogy. This propoſal, not very reputable to a man of ſcience and literature, was not taken up by any one, and Mercator reſerved his demonſtration: he, however, diſtinguiſhed himſelf by many valuable pieces on philoſophical and mathematical ſubjects. Of theſe we may mention "Coſmographia, ſive Deſcriptio Cœli et Terræ in Circulos, &c.:" "Rationes Mathematicæ ſubductæ Anno 1653:" "Hypotheſis Aſtronomica nova et conſenſus ejus cum Obſervationibus:" "Logarithmotechnia, ſive methodus conſtruendi Logarithmos, &c:" "Inſtitutionum Aſtronomicarum Libri duo." He publiſhed alſo ſome papers in the Philoſophical Tranſactions.

Mercator's *Chart*, or *Projection*, is a ſea-chart, or projection of the ſurface of the earth in plano.

For the conſtruction, uſe, advantages, &c. of which, ſee *Mercator's* Chart.

Mercator's *Sailing*, is that performed loxodromically, by means of Mercator's charts. See *Mercator's* Sailing.

MERCATORUM Festum, among the Romans, a feſtival kept by the mercantile people on the ides, or 15th of May, in honour of Mercury, to whom they ſacrificed a ſow; then ſprinkling themſelves with the water of a fountain, called aqua Mercurii, they prayed the god to proſper their trade.

MERCATUS, or Mercado, Louis, in *Biography*, an eminent phyſician of the 16th century, was born at Valladolid, in Spain, where he became a medical teacher, and obtained ſuch reputation, as led to wealth and honourable appointments. He was firſt phyſician to Philip II. during a period of twenty years; and on the death of that prince, in 1598, was nominated to the ſame office by his ſon and ſucceſſor, Philip III. Mercado lived to the age of 86; but the latter years of his life were rendered painful by the affliction of a ſtone in the bladder. He was author of a conſiderable number of works relative to medicine and ſurgery, written in a better Latin ſtyle than moſt of thoſe compoſed by the writers of Spain; nevertheleſs, they are chiefly borrowed from the ancients, and contain nothing that is original. The whole were collected, and printed in three volumes, folio, in 1605, and have been ſeveral times reprinted. Eloy Dict. Hiſt.

MERCED, La, in *Geography*, a town of New Navarre; 90 miles S.W. of Caſa Grande.—Alſo, a town of Chili; 50 miles S.S.W. of St. Yago.

MERCER, a county of Pennſylvania, bounded N. by Crawford, E. by Venango, S.E. by Butler, S. by Beaver, and W. by Ohio ſtate; about 40 miles long, and 27 broad; containing about 642,000 acres, and 3220 inhabitants.—Alſo, a county of Kentucky, adjoining Woodford, Shelby, and Madiſon counties: it contains 9242 inhabitants, of whom 2169 are ſlaves. The chief town is Harrodſburg.

MERCHAB, or Merhab, a fortreſs of Syria, in the pachalic of Tripoli, on the coaſt of the Mediterranean, built by the Franks, and long poſſeſſed by the knights of St. John; 8 miles N. of Tortoſa.

MERCHANT, Mercator, is one who buys and trades in any thing: and as merchandiſe includes all goods and wares expoſed to ſale in fairs or markets, ſo the word merchant formerly extended to all ſorts of traders, buyers, and ſellers. But every one that buys and ſells is not at this day under the denomination of a merchant; only thoſe who traffic in the way of commerce, by importation or exportation, or carry on buſineſs by way of barter or exchange, and who make it their living to buy and ſell, by a continued aſſiduity, or frequent negociation in the myſtery of merchandiſing, are eſteemed merchants. Thoſe who buy goods, to reduce them by their own art or induſtry into other forms than they are of, and then to ſell them, are artificers, and not merchants. Bankers, and ſuch as deal by exchange, are properly called merchants. Lex. Mercat. on Merch. Com. 23.

The mercantile profeſſion is eſteemed noble, and independent. In France, by two arrets of Louis XIV., the one of 1669, the other of 1701, the nobility are allowed to trade, both by land and ſea, without derogating from their nobility: and we have frequent inſtances of merchants ennobled in that country, in regard to the utility of their commerce, and the manufactures they have ſet up. In Bretagne, even a retail trader does not derogate from nobility.

When the nobles of that province are diſpoſed for commerce, they let their nobility ſleep; that is, they do not loſe it, but only ceaſe to enjoy the privileges of their nobleſſe while their commerce continues; and re-aſſume it on their giving over trade, without any letters or inſtruments of rehabilitation.

In republics, trading is ſtill more valued; but no where more than in England, where the younger ſons and brothers of the beſt families are frequently bred up to merchandiſe. Add to this, that many of the Italian princes are the principal merchants of their ſtates; and think it no diſcredit to make their palaces ſerve as warehouſes; and that many of the kings of Aſia, and moſt of thoſe of the coaſt of Africa and Guinea, traffic with the Europeans, ſometimes by their miniſters, and ſometimes in perſon.

There are companies of merchants in London for carrying on conſiderable joint-trade to foreign parts. See Company.

Beſides theſe companies, there are other merchants who are diſtinguiſhed by the country to which they trade; as Dutch merchants; Weſt India merchants; Canary and Portugal merchants; Italian merchants, who trade to Leghorn, Venice, &c.; French and Spaniſh merchants.

The law of England, as a commercial country, pays a very particular regard to foreign merchants, in innumerable inſtances. Thus it is provided by Magna Charta, c. 30, that all merchants, unleſs beforehand publicly prohibited, ſhall have ſafe conduct to depart from, to come into, or tarry in, and to go through England, for the exerciſe of merchandiſe, without any unreaſonable impoſts, except in time of war: and if a war breaks out between us and their country, they ſhall be attached, if in England, without harm of body or goods, till the king, or his chief juſticiary, be informed how our merchants are treated in the land with which we are at war; and if our's are ſecure in that land, they ſhall be ſecure in our's. Upon which Monteſquieu remarks, with admiration, that the Engliſh have made the protection of foreign merchants one of the articles of their national liberty: and alſo, that the Engliſh know better than any other people upon earth, how to value at the ſame time theſe three great advantages, religion, liberty, and commerce. In this reſpect their diſpoſition is very different from the genius of the Roman people; who, in their manners, their conſtitution, and even in their laws, treated commerce as a diſhonourable employment, and prohibited the exerciſe of it to perſons of birth, rank, or fortune; and equally different from the bigotry of the canoniſts, who looked on trade as inconſiſtent with Chriſtianity, and determined at the council of Melfi, under pope Urban II. A.D. 1090, that it was impoſſible, with a ſafe conſcience, to exerciſe any traffic, or follow the profeſſion of the law. See Commerce.

If a difference ariſe between the king and any foreign ſtate, alien merchants are to have forty days notice, or longer time, to ſell their effects and leave the kingdom. 27 Ed. III. ſtat. 2. cap. 17.

The principal qualifications requiſite for the profeſſion of a merchant, are, 1. To know how to keep books ſingle or double, *viz.* journals, ledgers, and others. 2. To draw invoices, contracts, charter-parties, policies of aſſurance, bills of exchange, letters miſſive, &c. 3. To know the relations between the money, weights, and meaſures, of ſeveral countries. 4. To know the places where the ſeveral kinds of merchandiſe are manufactured, in what manner made, what the materials compoſed of, and whence; the preparation the materials require before they are wrought; and the merchandiſes afterwards. 5. The lengths and breadths of ſtuffs, as ſilks, wools, hairs, linens, &c.; the regulations of the places where they are manufactured; and their different prices at different ſeaſons. 6. The dyeing and the ingredients for the formation of the different colours. 7. The merchandiſes that abound or are more rare, in one country than another; their kinds and qualities; and the manner of trafficking in them to the beſt advantage, whether by land, by ſea, or river. 8. The commodities permitted or prohibited, both for the import and export of a ſtate. 9. The price of exchange, according to the courſe of ſeveral places, and what it is that raiſes or lowers it. 10. The duties to be paid, both at the import and export of wares, according to the uſage of the place, the tariffs, regulations, &c. 11. The manner of packing, bailing, and tunning merchandiſes, to keep them either in magazines, or in voyages, &c. 12. On what terms a merchant veſſel may be freighted and inſured. 13. The goodneſs and value of every thing requiſite for the conſtruction or refitting of veſſels, the prices of woods, cordage, maſts, anchors, ſails, and other neceſſaries. 14. The wages ordinarily given captains, officers, and ſailors; and the manner of contracting with them. 15. The foreign languages, which may be reduced to four principal ones; *viz.* the Spaniſh, uſed almoſt through all the Eaſt, particularly on the coaſt of Africa, from the Canaries to the Cape of Good Hope; the Italian, uſed throughout the coaſts of the Mediterranean, and many places of the Levant; the Teutonic, or German, uſed throughout moſt countries of the North; and the French, which is now become almoſt univerſally current. 16. The conſular juriſprudence, the laws, cuſtoms, companies, colonies, chambers of inſurance, conſulates in the ſeveral countries; and, in general, all the ordinances, regulations, and policies, relating to commerce.

Merchant *Court*, or *Court-Merchant*, a kind of judicatory power, inveſted in merchants, choſen for that purpoſe, in ſeveral parts of Europe: in order to decide and determine, in a ſummary way, all differences and litigations among themſelves and their dependents.

The affairs of merchants are accompanied with ſuch a variety of circumſtances, ſuch new and unuſual contingencies, which change and differ in every age, with a multitude of niceties and punctilios; and thoſe again altering, as the cuſtoms and uſages of countries and ſtates do alter, that it has been found impracticable to make any laws that could extend to all caſes: and our law itſelf does tacitly acknowledge its own imperfection in this caſe, by allowing the cuſtom of merchants to paſs as a kind of law in caſes of difficulty. See Custom *of Merchants*.

Merchant, *Law*. See Law.

Merchant-*Ship*. See Ship.

Merchant-*Statute*. See Statute.

Merchant, *Tenant per Statute*. See Tenant.

MERCHENLAGE, Merciorum *Lex*, was the law of the people here called the Mercians. Camden, in his Britannia, ſays, that in the year 1016 this kingdom was divided into three parts; whereof the Weſt Saxons had one, governing it by the laws called Weſt Saxonlage, which contained theſe nine ſhires, *viz.* Kent, Suſſex, Surrey, Berks, Hampſhire, Wilts, Somerſet, Dorſet, and Devon; the Danes had the ſecond, containing fifteen ſhires, *i. e.* York, Derby, Nottingham, Leiceſter, Lincoln, Northampton, Bedford, Bucks, Hertford, Eſſex, Middleſex, Norfolk, Suffolk, Cambridge, and Huntingdon, which was governed by the laws called Danelage: and the third part was in poſſeſſion of the Mercians, whoſe laws were called Merchenlage, and contained eight ſhires, Glouceſter, Worceſter, Hereford, Warwick, Oxford, Cheſter, Salop, Stafford; from which three, king William I. choſe the beſt, and with the other laws ordained them to be the laws of the kingdom. Camd. Brit. p. 94. See Common *Law*.

MERCIER, Bartholomew, in *Biography*, known under the name of the abbé St. Leger, was born at Lyons in 1784. He entered into the religious ſociety of St. Genevieve, of which he became librarian. Louis XV. gave him the abbey of St. Leger of Soiſſons, of which he was deprived and reduced to indigence in the revolution. He died in 1799. Mercier was a man of erudition, and one of the firſt bibliographers in Europe. His works are, 1. "Letters on the Bibliography of Debure," 8vo.; 2. "Letters on the true Author of the Political Teſtament of Cardinal Richelieu;" 3. "Supplement to Marchand's Hiſtory of Printing," 4to.; 4. "Letter concerning the Maid of Orleans;" 5. "Diſſertation on the Author of the Book on the Imitation of Jeſus Chriſt (Kempis);" 6. "Notice of a rare Book, entitled 'Pedis Admirandæ,' by J. d'Artis;" 7. "On the Letters attributed to Pope Ganganelli;" 8. "Letters on different rare Editions of the 15th Century;" 8vo. 9. "Library of Romances," tranſlated from the Greek, 2 vols. &c. He was concerned in the Journal de Trevoux, and the Magazine Encyclopédique.

MERCHET. See MARCHET and BOROUGH-*Engliſh*.

MERCKLEIN, GEORGE ABRAHAM, in *Biography*, a learned phyſician, and ſon of a phyſician of the ſame name, was born at Weiſſemburg, in Franconia, in November 1644. His early education was conducted by his father; but he was afterwards ſent to the univerſities of Nuremberg and Wittemberg, and thence to that of Padua, which was then in the higheſt reputation; he returned, however, to Altorf, where he took his doctor's degree in 1670. He ſucceeded his father, in 1683, in the office of phyſician to the Teutonic order of the houſe of Nuremberg, and was ſubſequently appointed firſt phyſician to two princes palatine, who were grand maſters of this order. He paſſed a life of great activity, and is ſaid to have brought on a conſumption by the extreme ardour with which he purſued his occupations, which terminated his life in April 1702, at the age of fifty-eight. Mercklein was admitted a member of the Academy Naturæ Curioſorum, under the title of Chiron I., and communicated many memoirs on medical ſubjects, which were publiſhed in their Ephemerides. He was alſo author and editor of the following works. "Tractatio Medica curioſa de ortu et occaſu Transfuſionis ſanguinis," Nuremberg, 1679, 1715, in which he gives a hiſtory of this invention, and expreſſes forcibly his diſapprobation of the practice, which he calls cruel and dangerous. "Joſephi Pandolphini à Monte Martiano Tractatus de Ventoſitatis Spinæ, ſæviſſimo Morbo," ibid. 1674. "Lindenius renovatus," an augmented edition of the work of J. Ant. Vander Linden, "De Scriptis Medicis," in two volumes 4to., 1686, and "Sylloge Caſuum Medicorum Incantationi vulgò adſcribi ſolitorum, maximèque præ cæteris memorabilium," ibid. 1698, 1715, 4to.: a curious ſubject, but treated with too little diſcrimination between real and ſuppoſititious facts. Eloy Dict. Hiſt. Gen. Biog.

MERCŒUR, in *Geography*, a town of France, in the department of the Correze, and chief place of a canton, in the diſtrict of Tulles; 18 miles S. of Tulles. The place contains 825, and the canton 6971 inhabitants, on a territory of 225 kiliometres, in 11 communes.

MERCURIAL, ſomething that conſiſts of, or bears a relation to mercury, or quickſilver.

We ſay alſo, a mercurial perſon, to denote a perſon of a briſk, volatile complexion; ſuch perſons being ſuppoſed by aſtrologers to be under the more immediate influence of the planet Mercury. We ſay, mercurial fumes, mercurial ſpirits, &c. with reference to the mineral mercury.

MERCURIAL *Level*. See LEVEL.

MERCURIAL *Medicines*. See MERCURIALS.

MERCURIAL *Phoſphorus, Pump, Salivation, Thermometer.* See the ſubſtantives.

MERCURIAL *Unguents, Frictions*, &c. See SALIVATION.

MERCURIAL *Waters*. See WATER.

MERCURIALS, medicines compoſed or prepared of mercury, or quickſilver. See MERCURY in the *Materia Medica*.

MERCURIALI, GIROLAMO, in *Biography*, a learned and eminent phyſician, was born at Forli, in Romagna, in September 1530. The places at which he received his education are not accurately known, but probably were Bologna and Padua, at the latter of which he is ſaid to have received his doctor's degree; but ſome aſſert, that he graduated at Venice in 1555. He ſettled in the practice of his profeſſion at his native town, and at the age of 32 was delegated on ſome public buſineſs to pope Pius IV., at Rome. He evinced ſo much talent, and acquired ſo much eſteem at the pontifical court, eſpecially with cardinal Alexander Farneſe, that he was honoured with the citizenſhip of Rome, and was ſtrongly invited to reſide there. The opportunities which the public libraries and collections of antiquities in that metropolis preſented for the purſuit of his favourite ſtudies, led him to accept the invitation; and during his abode there, he not only employed himſelf in his profeſſional concerns, but ſtudied the claſſical literature, and the monuments of antiquity with great ardour. The reſult of theſe reſearches was a learned and elegant work, which acquired him much celebrity in the literary world, and which was firſt publiſhed at Venice in 1569, under the title of "De Arte Gymnaſticâ Libri ſex," 4to. It was many times reprinted. It is rather to be regarded as a philological than a medical performance; ſince, while it throws much light on the private life and cuſtoms of the ancients, its reaſonings and precepts are almoſt wholly derived from their ſchools. The reputation of this work brought him an invitation, in the ſame year, to the firſt medical chair in the univerſity of Padua, which he accepted, and was ſucceſſor to Anthony Francanzano, a man of ſuch high reputation, that he had been called the Eſculapius of his age. The character of Mercuriali, however, was not diminiſhed by the ſplendour of that of his predeceſſor, and his fame ſoon extended throughout Europe. In 1573 he was called to Vienna by the emperor Maximilian II., to conſult reſpecting a ſevere illneſs under which that perſonage laboured; and his treatment was ſo ſucceſsful, that he returned loaded with valuable preſents, and honoured with the dignities of a knight and count palatine. He had fulfilled the duties of his profeſſorial office during the period of eighteen years, and his ſtipend had been gradually augmented to a greater ſum than had ever been allotted to a medical chair, when, in 1587, he removed to Bologna, where he was attended by a numerous audience. This removal has been partly attributed to a degree of diſſatisfaction or ſelf-accuſation, in conſequence of an error of judgment, which had been committed by him and Capivaccio, ſeveral years before, when they were called to Venice, in order to give their advice reſpecting a peſtilential diſorder, which prevailed in that city. On this occaſion both he and his colleague ſeem to have fallen into the miſtake of ſeveral medical theoriſts, of denying the reality of contagion; and their counſels were ſaid to have been productive of extenſive miſchief. Nevertheleſs his reputation appears to have ſuffered little from this error; for he was invited by Ferdinand, the grand duke of Tuſcany, to ſettle at Piſa in 1599, where he was ordered a ſtipend of eighteen hundred golden crowns, which was ultimately raiſed to two thouſand. He had not reſided long at Piſa, however, before the ſevere calculous affections, under which he laboured, rendered him incapable of attending to his profeſſional and profeſſorial duties, and he retired to his native town. He ſunk under his diſorder in 1606, and was interred, with great honours, in a chapel, which he had himſelf erected at Forli. He left a large property in money and effects, among which was a valuable collection of pictures; and he made a great number of charitable bequeſts.

Mercuriali was a voluminous writer, as the following catalogue of his works will evince. He was a learned commentator on Hippocrates, and edited a claſſified collection of his works. Like the learned of his age, however, he was bigotted to the doctrines of the ancients, and fond of hypothetical reaſoning, to the diſparagement of ſound obſervation; and he ſtrongly imbued his pupils with the ſame erroneous principles. His firſt publication was a tract entitled "Nomotheſaurus, ſeu Ratio lactandi Infantes." His ſecond, the work "De Arte Gymnaſtica" before mentioned. 3. "Variarum Lectionum in Medicinæ Scriptoribus et aliis, Libri iv.," Venice 1571. 4. "De Morbis Cutaneis, et omnibus corporis humani Excrementis," ib. 1572. 5. "Tractatus de Maculis peſtiferis et Hydrophobia," Baſle, 1577. 6. "De Peſtilentia in univerſum, præſertim verò de Veneta et Patavina," Venice 1577. 7. "Hippocratis Opera Græcè et Latinè," ibid. 1578. 8. "De Morbis Muliebribus Prælectiones," Baſle, 1582. 9. "De Morbis puerorum Tractatus locupletiſſimi," Venice, 1583. 10. "De Venenis et Morbis venenoſis," ibid. 1584. 11. "De Decoratione liber," ibid. 1585. 12. "Conſultationes et Reſponſa Medicinalia." Four volumes were ſucceſſively publiſhed in 1587, 1590, and 1597; and were republiſhed together after his death. 13. "Tractatus de Compoſitione Medicamentorum, De Morbis oculorum et aurium," ibid. 1590. 14. "De Hominis Generatione," 1597. 15. "Commentarii in Hippoc. Coi Prognoſtica, Prorrhetica, &c." ibid. 1597. 16. "Medicina Practica, ſeu, de cognoſcendis, diſcernendis, et curandis omnibus humani corporis affectibus," Francfort, 1602, folio. All theſe works have been ſeveral times reprinted, and ſome of them were ſelected after his death, and printed together, under the title of "Opuſcula aurea et ſelectiora," Venice, 1644, folio. Eloy Dict. Hiſt. de la Med. Gen. Biog.

MERCURIALIS, in *Botany*, is ſaid to have been ſo named, in ancient times, after Mercury, its reputed diſcoverer. This etymology is at leaſt as probable, if not ſo ingenious, as that preferred by Ambroſinus, who ſays *Mercurialis* is properly *Muliercularis*, becauſe it is uſed by young wenches (*mulierculis*) as a laxative, in ſallads. If the Linnæan *Mercurialis* be intended, certainly a very ſmall doſe would be ſufficient, if not dangerous, and we cannot but ſuſpect a confuſion of different plants under the name in queſtion. A ſimilar error reſpecting the Engliſh name, Mercury, has crept into our article LINOZOSTIS, without any communication with the writer of the preſent. The plant called Engliſh Mercury is *Chenopodium Bonus-Henricus*, an excellent pot-herb, very nearly akin to Spinach; whereas the *Mercurialis*, or Mercury, properly ſo denominated, is a virulent poiſon, from the uſe of which, by miſtake for the former, the moſt dangerous conſequences have followed, as Ray and others relate. Such an error is the more carefully to be guarded againſt, as this poiſonous plant is by far the moſt common of the two. See LINOZOSTIS and CHENOPODIUM.—Linn. Gen. 527. Schreb. 695. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 1083. Ait. Hort. Kew. ed. 1. v. 3. 408. Juſſ. 385. Lamarck Dict. v. 4. 116. Illuſtr. t. 820. Gærtn. t. 107.—Claſs and order, *Dioecia Enneandria.* Nat. Ord. *Tricoccæ*, Linn. *Euphorbiæ*, Juſſ.

Gen. Ch. Male, *Cal.* Perianth in three deep, ovato-lanceolate, concave, ſpreading ſegments. *Cor.* none, except the calyx be ſo conſidered. *Stam.* Filaments from nine to twelve, capillary, ſtraight, the length of the calyx; anthers formed of a pair of globoſe cells.

Female, *Cal.* Perianth as in the male. *Cor.* none. Nectary of two ſharp awl-ſhaped bodies, one at each ſide of the germen, and lodged in its furrow, but not always preſent. *Piſt.* Germen ſuperior, roundiſh, compreſſed, with a furrow at each ſide, hiſpid; ſtyles two, reflexed, horn-like, hiſpid; ſtigmas acute, reflexed. *Peric.* Capſule roundiſh, pouch-like, two-lobed, of two cells. *Seeds* ſolitary, roundiſh.

Obſ. *M. ambigua* is monoecious, and *M. annua* occaſionally ſo. *M. afra*, mentioned by Schreber, is *Hydrocotyle villoſa*, a plant of a totally different nature.

Eſſ. Ch. Male, Calyx in three deep ſegments. Corolla none. Stamens from nine to twelve. Anthers of two globes.

Female, Calyx in three deep ſegments. Corolla none. Styles two. Capſule two-lobed, of two cells. Seeds ſolitary.

1. M. *perennis.* Perennial Mercury, or Dog's Mercury. —Linn. Sp. Pl. 1465. Curt. Lond. faſc. 2. t. 65. Mill. Illuſtr. t. 91. Fl. Dan. t. 400. Engl. Bot. t. 1872. (Cynocrambe; Matth. Valgr. v. 2. 635. Camer. Epit. 998, 999. Fuchſ. Hiſt. 444. Ger. em. 333.)—Stem quite ſimple. Leaves rough. Root creeping.—Common and plentiful in buſhy places throughout Europe, in the ſpring, flowering in April or May. The *roots* are perennial, creeping and matted together to a great extent. *Herb* fetid, dark green, roughiſh, 12 or 18 inches high, with a round unbranched *ſtem*, moſt leafy about the ſummit. *Leaves* oppoſite, ſtalked, ovate, acute, crenate, hairy, with membranous, reflexed, intrafoliaceous *ſtipulas*. *Flowers* green, always dioecious, in axillary, ſtalked, upright cluſters. *Capſule* rough with hairs. When dried, the leaves often aſſume a blue tint, indicating the affinity of the genus to *Croton tinctorium*. This has been obſerved before, but we know of no experiments that have proved this plant uſeful in dyeing. That it is the λινοζωστις of Dioſcorides, his deſcription leaves no doubt, and he recommends it as a pot-herb, of a purgative quality. Poſſibly boiling, or the admixture of oily ſubſtances, may render it mild, and leſs dangerous.

2. M. *annua.* Annual, or French Mercury. Linn. Sp. Pl. 1465. Curt. Lond. faſc. 5. t. 68. Engl. Bot. t. 559. (M. mas et fœmina; Matth. Valgr. v. 2. 633, 634. Camer. Epit. 996, 997. Fuchſ. Hiſt. 475, 476. Ger. em. 332. Dod. Pempt. 658.)—Stem croſs-branched. Leaves ovate, ſmooth. Flowers racemoſe. Root fibrous. —Native of cultivated and waſte ground, chiefly in the more temperate parts of Europe. It is common about London, Norwich, and ſome other towns, but not in the north of England; flowering in autumn. From the former it is readily diſtinguiſhed by its fibrous annual *root*, and buſhy *ſtem*. The whole *herb* moreover is ſmooth, of a deep ſhining green, ſmelling diſagreeably, ſomething like Elder. *Leaves* ſtalked, ovate, acute, ſerrated. *Spikes* much as in *M. perennis*, but there are no linear ſcales at each ſide of the germen, and the *capſule* is prickly or warty. A few male *flowers* are often found diſperſed upon the female plant; and on the other hand, a few female ones upon the male now and then occur. The preſent ſpecies, like the former, is ſaid to have been uſed as a pot-herb, and to be of an emollient quality. It is, we believe, the leaſt virulent and dangerous of the two, but its nauſeous flavour is not promiſing of any good property. The *ſeeds* are ſaid by Lamarck to be very fattening to ſmall birds, eſpecially to the delicious Becafico, *Motacilla Ficedula*; which is not unlikely, conſidering the oily nature of ſeveral ſeeds in this natural order.

3. M. *ambigua.* Intermediate Mercury. Linn. Sp. Pl. 1465. Linn. fil. Dec. 1. 15. t 8.—Stem croſs-branched. Leaves ovate, nearly ſmooth. Flowers monoecious, in axillary tufts.—Native of Spain. Linnæus cultivated it in the Upſal garden, and found it conſtant from ſeed, yet its whole appearance is ſo like the laſt, that he was latterly diſpoſed

to think it a variety. The *flowers* however are not ſpiked, but grow, male and female together, in little axillary tufts, each flower on a ſimple ſtalk, the males moſt numerous.

4. M. *elliptica.* Shrubby Mercury. Lamarck n. 4. (M. luſitanica fruticoſa, amygdali folio; Tourn. Inſt. 534. M. tenuifolia fruticoſa perennis; Griſl. Luſit. 63.)—Stem croſs-branched, ſhrubby. Leaves elliptical, crenate, ſmooth. —Native of Portugal. Gathered near Faro by the abbè Durand. We have ſeen it alſo in Tournefort's herbarium. This is undoubtedly a very diſtinct ſpecies, unknown to Linnæus. The ſhrubby perennial *ſtem,* and the much ſmaller, elliptical, obtuſe, crenate, not ſerrated, *leaves,* at once diſtinguiſh it. The *flowers* are dioecious, axillary; the males in ſhort, denſe, ſolitary, ſtalked ſpikes; the females on ſingle-flowered, ſimple, ſhorter ſtalks, two or three together. *Germen* ſmooth and even, accompanied at each ſide by a ſmall, linear, whitiſh ſcale. The *leaves* and young twigs have often, in the dry plant, a reddiſh or purpliſh hue.

5. M. *longifolia.* Long-leaved Mercury. Lamarck n. 5. —Stem croſs-branched. Leaves oblong, downy, green, with blunt ſerratures. Fruit woolly.—Deſcribed by Lamarck from the herbarium of Thouin. Its native country is unknown. The *ſtem* is about a foot high, branched, ſlender and weak, ſlightly downy. *Leaves* ſtalked, ſpreading, oblong or ſomewhat elliptical, about an inch and half long, and not above five or ſix lines broad, being of a much narrower ſhape than thoſe of any other ſpecies. They are dark green, clothed on both ſides with depreſſed hairs, which render them rather ſilky; the margin ſerrated, with ſhort, blunt, glandular, curved teeth. *Footſtalks* about three lines long, with a pair of lateral glands at the top, and a pair of ſhort downy *ſtipulas* at their baſe. *Flowers* axillary, greeniſh, dioecious; the males in ſolitary, ſlender, ſtalked ſpikes; females ſolitary, on ſimple ſhort ſtalks. *Germen* and *capſule* hoary and woolly, accompanied by a ſlender ſcale at each ſide.

6. M. *tomentoſa.* Downy Mercury. Linn. Sp. Pl. 1465. (Phyllon arrhenogonon, ſive mariſicum; Ger. em. 333. f. 2; and Ph. theligonon, ſive fœminificum; f. 3.)—Whole plant finely downy and hoary. Stem ſomewhat ſhrubby. Leaves oblong, more or leſs ſerrated.—Native of Spain and the ſouth of France. Known from all the reſt by its white hoary aſpect, cauſed by the ſoft downy denſe hairs which clothe every part. The *ſtem* is moſt branched in the male plant, the *flowers* of which grow in little round heads, either ſolitary, or ſeveral one above another, on ſimple, ſolitary, axillary ſtalks. The female *flowers* are axillary, ſolitary, on ſimple ſtalks, on a ſeparate plant. Some female *flowers* nevertheleſs are occaſionally interſperſed on the former, as Gerarde's cut, borrowed from Cluſius, well expreſſes. The *leaves* of both are nearly ſeſſile, oblong, acute, veiny, generally more or leſs ſerrated, though ſometimes nearly entire. The ideas of the ancient botaniſts, from whence the above names originated, are truly abſurd. They not only miſtook the female plant for the male, on account of the ſhape of the capſule, in which they were pleaſed to find a certain anatomical reſemblance; but they gratuitouſly ſuppoſed that the herb, on account of ſuch reſemblance, would be efficacious in procuring male children, while the real male plant was preſumed to favour the generation of girls.

7 M. *indica.* Indian Mercury. Loureir. Cochinch. 628.—Stem ſhrubby, branched. Leaves alternate, lanceolate, ſmooth and naked. Styles three.—Native of Cochinchina, according to Loureiro, who ſays the freſh leaves, boiled in broth, have a mildly purging quality, without any bad effects; and that the plant is called *Rau mai,* or *Lue mai.* The *ſtem* is ſhrubby, ſtraight, ſix feet high, with round aſcending branches. *Leaves* alternate, lanceolate, ſerrated, ſmooth and ſhining. *Flowers* dioecious, lateral, of the proper ſtructure of a *Mercurialis,* except that the *germen* is ſaid to be three-lobed, with three *ſtyles,* which, as well as the alternate *leaves,* induces ſome ſuſpicion reſpecting the genus. We have ſeen no ſpecimen.

In the firſt edition of Sp. Pl. 1036, occurs a *Mercurialis procumbens,* not quoted by that name in any ſubſequent work of Linnæus. This however appears by the ſynonyms and his herbarium to be *Croton Ricinocarpus,* Sp. Pl. ed. 2. 1427. See Croton, n. 90.

Mercurialis, in the *Materia Medica,* the ſpecies called French mercury, *Mercurialis annua,* with branched ſtalks, and ſmooth gloſſy leaves, grows wild in gardens and dunghills. This plant is mucilaginous, and was formerly much employed as an emollient. It was eaten like ſpinach, and when uſed in conſiderable quantity it opens the bowels. Accordingly Tournefort informs us, that the French made a ſyrup of it, two ounces of which was given as a purge; and that they uſed it in clyſters and peſſaries, mixing one part of honey with one and a half of juice. In England it is now diſregarded. A cataplaſm of the leaves has been recommended in pains of the limbs, in tumours, and even in ulcers, which it cleanſes and diſpoſes to heal. Poor people in country places uſe it as a cataplaſm for the rheumatiſm, and even for the gout. There is another ſpecies, called cynocrambe, and dog's mercury, *Mercurialis perennis,* which grows wild in woods and hedges: this, though more acceptable to the palate, as an oleraceous herb, than the foregoing, has lately been found to poſſeſs noxious qualities, and to act as a violent narcotic. (See Phil. Tranſ. N° 203.) In drying it turns blue, and ſteeped in water, it affords a fine deep blue colour; but which, Dr. Stokes ſays, is unhappily deſtructible both by acids and alkalies, and recoverable by no means that he hath been able to diſcover. Miller by Martyn.

MERCURIFICATION, in *Metallurgic Chemiſtry,* the obtaining the mercury from metallic minerals in its fluid form. See Mercury in *Mineralogy* and *Chemiſtry.*

MERCURIO, in *Geography,* a town of Corſica or Golo, and chief place of a canton, in the department of Corté. The canton contains 2378 inhabitants.

MERCURY, ☿, in *Aſtronomy,* the ſmalleſt of the inferior planets, and the neareſt to the ſun.

The mean diſtance of Mercury from the ſun is to that of our earth from the ſun as 38710 to 100000: and his real diſtance from the ſun 36,841,468 miles. The eccentricity 7955.4. The inclination of its orbit, that is, the angle formed by the plane of its orbit with the plane of the ecliptic, is 7 degrees, and the ſecular change of the inclination by the action of the other planets + 20.43. The diameter of Mercury, meaſured by Dr. Bradley in 1723, in its tranſit over the ſun's diſc, with a micrometer to Huygens's teleſcope of 120 feet long, was found to be 10″.75; hence its diameter at the mean diſtance of the earth will be 7″.27. M. de la Lande, from the tranſit in 1753, found it to be 6″.5; and therefore it may be ſtated at 7″. Von Zach ſays, that the mean apparent diameter of Mercury is not ſo much as 7″, probably little more than 5″. Its real diameter to that of the earth is nearly as 0.4 to 1, or 3180 miles. The mean apparent diameter of the ſun at Mercury is = 80′; the denſity of Mercury to that of the earth is as 2.5833 to 1; its quantity of matter to that of the earth as 0.16536 to 1, the quantities of matter in ſpherical bodies being as the cubes of their diameters and denſities conjointly; the weights of equal bodies, or gravities, on the ſurfaces of Mercury and the Earth, are as 1.0333 to 1, ſuch weights varying as the diameters and denſities conjointly: the place of the aſcending node of Mercury in 1750 1^s 15° 20′ 43″; ſecular motion of the node 1° 12′ 10″; the annual motion of the node by the action of the other planets — 8.98; the preceſſion 50.25, and the motion in longitude 41.27. The place of the aphelion 8^s 14° 22′; the mean place of the planet 5^s 11° 54′; the motion of the aphelion in longitude in 100 years 1° 34′. The tropical revolution of Mercury 87^d 23^h 14′ 33″; the ſidereal revolution 87^d 23^h 15′ 44″. For further particulars ſee DENSITY, DIAMETER, DISTANCE, EXCENTRICITY, and PLANETS. As the intenſities of light and heat, which the planets receive from the ſun, vary inverſely as the ſquares of their diſtances from the ſun; and as the proportional diſtances of Mercury and the Earth are as 4 to 10, we ſhall have the inverſe ſquares $\frac{10^2}{4^2}$ to 1, or 6.25 to 1 for the relative intenſities of light and heat at Mercury and the Earth.

According to ſir Iſaac Newton, the heat and light of the ſun on the ſurface of Mercury, are almoſt ſeven times as intenſe as on the ſurface of the earth in the middle of ſummer: which, as he found by experiments made for that purpoſe by a thermometer, is ſufficient to make water boil. Such a degree of heat, therefore, muſt render Mercury uninhabitable to creatures of our conſtitution. And if bodies on its ſurface be not inflamed, and ſet on fire, it muſt be becauſe their degree of denſity is proportionably greater than that of ſuch bodies is with us. The revolution of Mercury round the ſun, or his year, has been already ſtated; but his diurnal revolution, or the length of his day, is not yet determined; nor is it certain whether he has ſuch a motion round his own axis or not.

What variety of weather or ſeaſons it may be liable to, we are ſtill at a loſs to determine; as not knowing the inclination of his axis to the plane of his orbit.

Mercury changes its phaſes, like the moon, according to its ſeveral poſitions with regard to the ſun and earth; except only that he never appears quite full, becauſe his enlightened ſide is never turned directly towards us, but when he is ſo near the ſun as to be loſt to our ſight in his beams. And as his enlightened ſide is always towards the ſun, it is plain that he ſhines not by any light of his own; for if he did, he would conſtantly appear round. This planet, when viewed with Dr. Herſchel's ten feet reflector, and with other teleſcopes, appeared much darker than any of the ſolar ſpots, and perfectly well defined; no irregularity of form having been perceptible at the moment of contact; but the obſervation appears to have been intermitted at the inſtant of the approach of the planet to the ſun's limb. Dr. Herſchel could not perceive the ſlighteſt degree of ellipticity in the form of the planet's diſc.

The ſituation of this planet proves evidently, that the hypotheſis of Ptolemy is falſe: for Mercury is ſometimes obſerved betwixt the earth and ſun; and ſometimes beyond the ſun. But the earth is never found between Mercury and the ſun; which however muſt happen, if the ſpheres of all the planets encompaſſed the earth, as a centre, according to the Ptolemaic ſcheme.

The diameter of the ſun, viewed from Mercury, would appear between two and three times as big as it appears on our earth; that planet being ſo much nearer to him than we are, and therefore the ſun's diſk would appear ſeven times as large as to us. Mercury's greateſt diſtance from the ſun, with regard to us, never exceeds twenty-eight degrees twenty minutes (ſee ELONGATION); whence it is ſeldom viſible, being commonly either loſt in the ſun's light, or, when the moſt remote from the ſun, in the crepuſculum. The beſt obſervations of this planet are thoſe made when it is ſeen on the ſun's diſk; for, in its lower conjunction, it paſſes before the ſun like a little ſpot, eclipſing a ſmall part of his body, only obſervable with a teleſcope.

The node from which Mercury aſcends northward above the ecliptic, is in the 15th degree of Taurus; the oppoſite in the 15th degree of Scorpio. The earth is in theſe points about the 6th of November, and 4th of May, new ſtyle; and when Mercury comes to either of his nodes at his inferior conjunction about theſe times, he will appear in this manner to paſs over the diſc of the ſun. But in all other parts of his orbit, his conjunctions are inviſible, becauſe he either goes above or below the ſun. The firſt obſervation of this kind was that of Gaſſendi, in November, 1631. Several ſubſequent obſervations of the like tranſits are collected in Du Hamel's Hiſt. of the Royal Acad. of Sciences, p. 470. ed. 2. See Dr. Halley's Accounts of the Tranſits of Mercury and Venus, in Phil. Tranſ. N° 193. See TRANSIT.

To an inhabitant of Mercury, the ſolar ſpots will appear to traverſe his diſc ſometimes in a right line from eaſt to weſt, and ſometimes elliptically. As the other planets are above Mercury, their phenomena will be nearly the ſame there as with us. Venus and the Earth, when in oppoſition to the ſun, will ſhine with full orbs, and afford a noble light to that planet.

MERCURY.

Table I. Epochs of the Mean Longitude of Mercury.

Years.		Mean Long.				Aphelion.				Node.			
		S.	D.	M.	S.	S.	D.	M.	S.	S.	D.	M.	S.
Nat. J. C.	0	8	24	0	44	7	16	13	21	0	24	17	48
	100	11	8	5	4	7	17	47	6	0	25	29	58
	1400	7	11	1	24	8	8	5	51	1	11	8	8
	1500	9	25	5	44	8	9	39	36	1	12	20	18
B. N. S.	1600	10	28	14	38	8	11	13	21	1	13	32	28
C.	1700	1	8	13	26	8	12	47	6	1	14	44	38
B.	1740	2	7	51	10	8	13	24	36	1	15	13	30
B.	1760	2	22	40	2	8	13	43	21	1	15	27	56
B.	1780	3	7	28	52	8	14	2	6	1	15	42	22
	1786	2	3	52	47	8	14	7	44	1	15	46	42
	1787	3	27	35	50	8	14	8	40	1	15	47	25
B.	1788	5	25	24	26	8	14	9	36	1	15	48	8
	1789	7	19	7	30	8	14	10	32	1	15	48	51
	1790	9	12	50	33	8	14	11	28	1	15	49	35
	1791	11	6	33	37	8	14	12	25	1	15	50	18
B.	1792	1	4	22	13	8	14	13	21	1	15	51	1
	1793	2	28	5	16	8	14	14	17	1	15	51	45
	1794	4	21	48	20	8	14	15	13	1	15	52	28
	1795	6	15	31	23	8	14	16	10	1	15	53	11
B.	1796	8	13	19	59	8	14	17	6	1	15	53	55
	1797	10	7	3	3	8	14	18	2	1	15	54	38
	1798	0	0	46	6	8	14	18	58	1	15	55	21
	1799	1	24	29	10	8	14	19	55	1	15	56	4
C.	1800	3	18	12	13	8	14	20	51	1	15	56	48
	1801	5	11	55	16	8	14	21	47	1	15	57	31
	1802	7	5	38	20	8	14	22	43	1	15	58	14
	1803	8	29	21	23	8	14	23	40	1	15	58	57
B.	1804	10	27	9	59	8	14	24	36	1	15	59	41
	1805	0	20	53	3	8	14	25	32	1	16	0	24
	1806	2	14	36	6	8	14	26	29	1	16	1	8
	1807	4	8	19	10	8	14	27	25	1	16	1	51
B.	1808	6	6	7	46	8	14	28	21	1	16	2	34
	1809	7	29	50	49	8	14	29	17	1	16	3	17
	1810	9	23	33	53	8	14	30	13	1	16	4	1
	1811	11	17	16	56	8	14	31	10	1	16	4	44
B.	1812	1	15	5	32	8	14	32	6	1	16	5	27
	1813	3	8	48	36	8	14	33	2	1	16	6	10
	1814	5	2	31	39	8	14	33	58	1	16	6	54
	1815	6	26	14	43	8	14	34	55	1	16	7	37
B.	1816	8	24	3	19	8	14	35	51	1	16	8	20
	1817	10	17	46	22	8	14	36	47	1	16	9	4
	1818	0	11	29	26	8	14	37	43	1	16	9	47
	1819	2	5	12	29	8	14	38	40	1	16	10	30
B.	1820	4	3	1	5	8	14	39	36	1	16	11	14

Biſſextiles.

Table II. Mean Motion of Mercury for *Years.*

Years.		Mot. in Long.				Mot. Aphel.				Mot. Node.		
		S.	D.	M.	S.	S.	D.	M.	S.	D.	M.	S.
	1	1	23	43	3	0	0	0	56	0	0	43
	2	3	17	26	7	0	0	1	52	0	1	27
	3	5	11	9	10	0	0	2	49	0	2	10
B.	4	7	8	57	46	0	0	3	45	0	2	53
	5	9	2	40	50	0	0	4	41	0	3	36
	6	10	26	23	53	0	0	5	37	0	4	20
	7	0	20	6	57	0	0	6	34	0	5	3
B.	8	2	17	55	33	0	0	7	30	0	5	46
	9	4	11	38	36	0	0	8	26	0	6	30
	10	6	5	21	40	0	0	9	22	0	7	13
	11	7	29	4	43	0	0	10	19	0	7	56
B.	12	9	26	53	19	0	0	11	15	0	8	40
	13	11	20	36	23	0	0	12	11	0	9	23
	14	1	14	19	26	0	0	13	8	0	10	6
	15	3	8	2	29	0	0	14	4	0	10	49
B.	16	5	5	51	6	0	0	15	0	0	11	33
	17	6	29	34	9	0	0	15	56	0	12	16
	18	8	23	17	12	0	0	16	52	0	12	59
	19	10	17	0	16	0	0	17	49	0	13	43
B.	20	0	14	48	52	0	0	18	45	0	14	26
	40	0	29	37	44	0	0	37	30	0	28	52
	60	1	14	26	36	0	0	56	15	0	43	18
	80	1	29	15	28	0	1	15	0	0	57	44
	100	2	14	4	20	0	1	33	45	1	12	10
	200	4	28	8	40	0	3	7	30	2	24	20
	300	7	12	13	0	0	4	41	15	3	36	30
	400	9	26	17	20	0	6	15	0	4	48	40
	500	0	10	21	40	0	7	48	45	6	0	50
	600	2	24	26	0	0	9	22	30	7	13	0
	700	5	8	30	20	0	10	56	15	8	25	10
	800	7	22	34	40	0	12	30	0	9	37	20
	900	10	6	39	0	0	14	3	45	10	49	30
	1000	0	20	43	20	0	15	37	30	12	1	40
	1100	3	4	47	40	0	17	11	15	13	13	50
	1200	5	18	52	0	0	18	45	0	14	26	0
	1300	8	2	56	20	0	20	18	45	15	38	10
	1400	10	17	0	40	0	21	52	30	16	50	20
	1500	1	1	5	0	0	23	26	15	18	2	30
	2000	1	11	26	40	1	1	15	0	24	3	20

TABLE III.—Mean Motion of Mercury for *Days.*

Days of Month.	January. Mot. Long.				Mot. Aph.	Mot. Node.	Days of Month.	February. Mot. Long.				Mot. Aph.	Mot. Node.	Days of Month.	March. Mot. Long.				Mot. Aph.	Mot. Node.
	S.	D.	M.	S.	SEC.	SEC.		S.	D.	M.	S:	SEC.	SEC.		S.	D.	M.	S.	SEC.	SEC.
1	0	4	5	33	0	0	1	4	10	57	22	5	4	1	8	5	32	33	9	7
2	0	8	11	5	0	0	2	4	15	2	54	5	4	2	8	9	38	6	9	7
3	0	12	16	38	1	0	3	4	19	8	27	5	4	3	8	13	43	39	10	7
4	0	16	22	10	1	1	4	4	23	13	59	6	4	4	8	17	49	11	10	8
5	0	20	27	43	1	1	5	4	27	19	32	6	4	5	8	21	54	44	10	8
6	0	24	33	15	1	1	6	5	1	25	5	6	5	6	8	26	0	16	10	8
7	0	28	38	48	1	1	7	5	5	30	38	6	5	7	9	0	5	49	10	8
8	1	2	44	20	1	1	8	5	9	36	10	6	5	8	9	4	11	21	10	8
9	1	6	49	53	2	1	9	5	13	41	42	6	5	9	9	8	16	54	10	8
10	1	10	55	26	2	1	10	5	17	47	15	6	5	10	9	12	22	26	11	8
11	1	15	0	58	2	1	11	5	21	52	47	6	5	11	9	16	27	59	11	8
12	1	19	6	31	2	2	12	5	25	58	20	7	5	12	9	20	33	32	11	9
13	1	23	12	3	2	2	13	6	0	3	53	7	5	13	9	24	39	4	11	9
14	1	27	17	36	2	2	14	6	4	9	25	7	5	14	9	28	44	37	11	9
15	2	1	23	8	2	2	15	6	8	14	58	7	6	15	10	2	50	9	11	9
16	2	5	28	41	3	2	16	6	12	20	30	7	6	16	10	6	55	42	12	9
17	2	9	34	13	3	2	17	6	16	26	3	7	6	17	10	11	1	14	12	9
18	2	13	39	46	3	2	18	6	20	31	35	8	6	18	10	15	6	47	12	9
19	2	17	45	19	3	2	19	6	24	37	8	8	6	19	10	19	12	19	12	9
20	2	21	50	51	3	2	20	6	28	42	40	8	6	20	10	23	17	52	12	9
21	2	25	56	24	3	3	21	7	2	48	13	8	6	21	10	27	23	25	12	10
22	3	0	1	56	4	3	22	7	6	53	46	8	6	22	11	1	28	57	12	10
23	3	4	7	29	4	3	23	7	10	59	18	8	6	23	11	5	34	30	13	10
24	3	8	13	2	4	3	24	7	15	4	51	8	7	24	11	9	40	2	13	10
25	3	12	18	34	4	3	25	7	19	10	23	9	7	25	11	13	45	35	13	10
26	3	16	24	7	4	3	26	7	23	15	56	9	7	26	11	17	51	7	13	10
27	3	20	29	39	4	3	27	7	27	21	28	9	7	27	11	21	56	40	13	10
28	3	24	35	12	4	3	28	8	1	27	1	9	7	28	11	26	2	12	13	10
29	3	28	40	44	4	3								29	0	0	7	45	14	10
30	4	2	46	17	5	4								30	0	4	13	18	14	11
31	4	6	51	50	5	4								31	0	8	18	50	14	11

In the Months January and February of a Biſſextile Year, ſubtract 1 from the given Day of the Month.

TABLE III. Mean Motion of Mercury for *Days*.

Days of the Month.	April.	Mot. Aphelion.	Mot. Node.	Days of the Month.	May.	Mot. Aphelion.	Mot. Node.	Days of the Month.	June.	Mot. Aphelion.	Mot. Node.
	Mot. Long.				Mot. Long.				Mot. Long.		
	S. D. M. S.	SEC.	SEC.		S. D. M. S.	SEC.	SEC.		S. D. M. S.	SEC.	SEC.
1	0 12 24 23	14	11	1	4 15 10 39	19	14	1	8 22 2 29	23	18
2	0 16 29 55	14	11	2	4 19 16 12	19	15	2	8 26 8 1	24	18
3	0 20 35 28	14	11	3	4 23 21 45	19	15	3	9 0 13 34	24	18
4	0 24 41 0	14	11	4	4 27 27 17	19	15	4	9 4 19 6	24	18
5	0 28 46 33	15	11	5	5 1 32 50	19	15	5	9 8 24 39	24	19
6	1 2 52 6	15	11	6	5 5 38 22	19	15	6	9 12 30 12	24	19
7	1 6 57 38	15	12	7	5 9 43 55	20	15	7	9 16 35 44	24	19
8	1 11 3 11	15	12	8	5 13 49 27	20	15	8	9 20 41 17	25	19
9	1 15 8 43	15	12	9	5 17 55 0	20	15	9	9 24 46 49	25	19
10	1 19 14 16	15	12	10	5 22 0 32	20	16	10	9 28 52 22	25	19
11	1 23 19 48	16	12	11	5 26 6 5	20	16	11	10 2 57 54	25	19
12	1 27 25 21	16	12	12	6 0 11 38	20	16	12	10 7 3 27	25	19
13	2 1 30 53	16	12	13	6 4 17 10	20	16	13	10 11 8 59	25	19
14	2 5 36 26	16	12	14	6 8 22 43	21	16	14	10 15 14 32	25	20
15	2 9 41 59	16	13	15	6 12 28 15	21	16	15	10 19 20 5	26	20
16	2 13 47 31	16	13	16	6 16 33 48	21	16	16	10 23 25 37	26	20
17	2 17 53 4	16	13	17	6 20 39 20	21	16	17	10 27 31 10	26	20
18	2 21 58 36	17	13	18	6 24 44 53	21	16	18	11 1 36 42	26	20
19	2 26 4 9	17	13	19	6 28 50 25	21	17	19	11 5 42 15	26	20
20	3 0 9 41	17	13	20	7 2 55 58	22	17	20	11 9 47 47	26	20
21	3 4 15 14	17	13	21	7 7 1 31	22	17	21	11 13 53 20	27	20
22	3 8 20 46	17	13	22	7 11 7 3	22	17	22	11 17 58 52	27	21
23	3 12 26 19	17	13	23	7 15 12 36	22	17	23	11 22 4 25	27	21
24	3 16 31 52	18	14	24	7 19 18 8	22	17	24	11 26 9 57	27	21
25	3 20 37 24	18	14	25	7 23 23 41	22	17	25	0 0 15 30	27	21
26	3 24 42 57	18	14	26	7 27 29 13	23	17	26	0 4 21 3	27	21
27	3 28 48 29	18	14	27	8 1 34 46	23	17	27	0 8 26 35	27	21
28	4 2 54 2	18	14	28	8 5 40 18	23	18	28	0 12 32 8	28	21
29	4 6 59 34	18	14	29	8 9 45 51	23	18	29	0 16 37 40	28	21
30	4 11 5 7	18	14	30	8 13 51 24	23	18	30	0 20 43 13	28	22
				31	8 17 56 56	23	18				

TABLE III. Mean Motion of Mercury for *Days*.

Days of the Month.	July.				Mot. Aphelion.	Mot. Node.	Days of the Month.	Auguſt.				Mot. Aphelion.	Mot. Node.	Days of the Month.	September.				Mot. Aphelion.	Mot. Node.
	Mot. Long.							Mot. Long.							Mot. Long.					
	S.	D.	M.	S.	SEC.	SEC.		S.	D.	M.	S.	SEC.	SEC.		S.	D.	M.	S.	SEC.	SEC.
1	0	24	48	45	28	22	1	5	1	40	35	33	25	1	9	8	32	24	38	29
2	0	28	54	18	28	22	2	5	5	46	7	33	25	2	9	12	37	57	38	29
3	1	2	59	51	28	22	3	5	9	51	40	33	26	3	9	16	43	29	38	29
4	1	7	5	23	29	22	4	5	13	57	12	33	26	4	9	20	49	2	38	29
5	1	11	10	56	29	22	5	5	18	2	45	33	26	5	9	24	54	34	38	29
6	1	15	16	28	29	22	6	5	22	8	17	34	26	6	9	29	0	7	38	30
7	1	19	22	1	29	22	7	5	26	13	50	34	26	7	10	3	5	39	39	30
8	1	23	27	33	29	22	8	6	0	19	23	34	26	8	10	7	11	12	39	30
9	1	27	33	6	29	23	9	6	4	24	55	34	26	9	10	11	16	44	39	30
10	2	1	38	38	29	23	10	6	8	30	28	34	26	10	10	15	22	17	39	30
11	2	5	44	11	30	23	11	6	12	36	0	34	26	11	10	19	27	50	39	30
12	2	9	49	44	30	23	12	6	16	41	33	35	27	12	10	23	33	22	39	30
13	2	13	55	16	30	23	13	6	20	47	5	35	27	13	10	27	38	55	39	30
14	2	18	0	49	30	23	14	6	24	52	38	35	27	14	11	1	44	27	40	31
15	2	22	6	21	30	23	15	6	28	58	11	35	27	15	11	5	50	0	40	31
16	2	26	11	54	30	23	16	7	3	3	43	35	27	16	11	9	55	32	40	31
17	3	0	17	26	31	24	17	7	7	9	16	35	27	17	11	14	1	5	40	31
18	3	4	22	59	31	24	18	7	11	14	48	35	27	18	11	18	6	37	40	31
19	3	8	28	31	31	24	19	7	15	20	21	36	27	19	11	22	12	10	40	31
20	3	12	34	4	31	24	20	7	19	25	53	36	28	20	11	26	17	43	41	31
21	3	16	39	37	31	24	21	7	23	31	26	36	28	21	0	0	23	16	41	31
22	3	20	45	9	31	24	22	7	27	36	58	36	28	22	0	4	28	48	41	32
23	3	24	50	42	31	24	23	8	1	42	31	36	28	23	0	8	34	20	41	32
24	3	28	56	14	32	24	24	8	5	48	4	36	28	24	0	12	39	53	41	32
25	4	3	1	47	32	25	25	8	9	53	36	37	28	25	0	16	45	25	41	32
26	4	7	7	19	32	25	26	8	13	59	9	37	28	26	0	20	50	58	41	32
27	4	11	12	52	32	25	27	8	18	4	41	37	28	27	0	24	56	30	42	32
28	4	15	18	24	32	25	28	8	22	10	14	37	29	28	0	29	2	3	42	32
29	4	19	23	57	32	25	29	8	26	15	46	37	29	29	1	3	7	36	42	32
30	4	23	29	30	33	25	30	9	0	21	19	37	29	30	1	7	13	8	42	32
31	4	27	35	2	33	25	31	9	4	26	51	37	29							

TABLE III. Mean Motion of Mercury for *Days*.

Days of the Month.	October.				Mot. Aphelion.	Mot. Node.	Days of the Month.	November.				Mot. Aphelion.	Mot. Node.	Days of the Month.	December.				Mot. Aphelion.	Mot. Node.
	Mot. Long.							Mot. Long.							Mot. Long.					
	S.	D.	M.	S.	SEC.	SEC.		S.	D.	M.	S.	SEC.	SEC.		S.	D.	M.	S.	SEC.	SEC.
1	1	11	18	41	42	33	1	5	18	10	30	47	36	1	9	20	56	47	52	40
2	1	15	24	13	42	33	2	5	22	16	3	47	36	2	9	25	2	19	52	40
3	1	19	29	46	43	33	3	5	26	21	35	47	36	3	9	29	7	52	52	40
4	1	23	35	19	43	33	4	6	0	27	8	47	37	4	10	3	13	24	52	40
5	1	27	40	51	43	33	5	6	4	32	40	48	37	5	10	7	18	57	52	40
6	2	1	46	23	43	33	6	6	8	38	13	48	37	6	10	11	24	30	52	40
7	2	5	51	56	43	33	7	6	12	43	45	48	37	7	10	15	30	2	53	41
8	2	9	57	29	43	33	8	6	16	49	18	48	37	8	10	19	35	35	53	41
9	2	14	3	1	44	34	9	6	20	54	50	48	37	9	10	23	41	7	53	41
10	2	18	8	34	44	34	10	6	25	0	23	48	37	10	10	27	46	40	53	41
11	2	22	14	6	44	34	11	6	29	5	56	49	37	11	11	1	52	12	53	41
12	2	26	19	39	44	34	12	7	3	11	28	49	37	12	11	5	57	45	53	41
13	3	0	25	11	44	34	13	7	7	17	1	49	38	13	11	10	3	17	53	41
14	3	4	30	44	44	34	14	7	11	22	33	49	38	14	11	14	8	50	54	41
15	3	8	36	17	44	34	15	7	15	28	6	49	38	15	11	18	14	22	54	41
16	3	12	41	49	45	34	16	7	19	33	38	49	38	16	11	22	19	55	54	42
17	3	16	47	22	45	35	17	7	23	39	11	49	38	17	11	26	25	28	54	42
18	3	20	52	54	45	35	18	7	27	44	43	50	38	18	0	0	31	0	54	42
19	3	24	58	27	45	35	19	8	1	50	16	50	38	19	0	4	36	33	54	42
20	3	29	3	59	45	35	20	8	5	55	49	50	38	20	0	8	42	5	55	42
21	4	3	9	32	45	35	21	8	10	1	21	50	38	21	0	12	47	38	55	42
22	4	7	15	4	45	35	22	8	14	6	54	50	39	22	0	16	53	10	55	42
23	4	11	20	37	46	35	23	8	18	12	26	50	39	23	0	20	58	43	55	42
24	4	15	26	10	46	35	24	8	22	17	59	51	39	24	0	25	4	16	55	42
25	4	19	31	42	46	35	25	8	26	23	31	51	39	25	0	29	9	48	55	43
26	4	23	37	15	46	35	26	9	0	29	4	51	39	26	1	3	15	21	55	43
27	4	27	42	47	46	36	27	9	4	34	36	51	39	27	1	7	20	53	56	43
28	5	1	48	20	46	36	28	9	8	40	9	51	40	28	1	11	26	26	56	43
29	5	5	53	52	47	36	29	9	12	45	42	51	40	29	1	15	31	58	56	43
30	5	9	59	25	47	36	30	9	16	51	14	51	40	30	1	19	37	31	56	43
31	5	14	4	57	47	36								31	1	23	43	3	56	43

TABLE IV. Mean Motion of Mercury for *Hours, Minutes,* and *Seconds.*

Hours.	Mot. Lon.	Hours.	Mot. Lon.	Min.	Mot. Lon.	Min.	Mot. Lon.	Min.	Mot. Lon.	Min.	Mot. Lon.	Min.	Mot. Lon.
					′ ″		′ ″		′ ″		′ ″		′ ″
	D. M. S.		D. M. S.	Sec.	″ ‴	Sec.	″ ‴	Sec.	″ ‴	Sec.	″ ‴	Sec.	″ ‴
1	0 10 14	13	2 13 0	1	0 10	13	2 13	25	4 16	37	6 18	49	8 21
2	0 20 28	14	2 23 14	2	0 20	14	2 23	26	4 26	38	6 29	50	8 31
3	0 30 41	15	2 33 28	3	0 31	15	2 33	27	4 36	39	6 39	51	8 42
4	0 40 55	16	2 43 42	4	0 41	16	2 44	28	4 46	40	6 49	52	8 52
5	0 51 9	17	2 53 55	5	0 51	17	2 54	29	4 57	41	6 59	53	9 2
6	1 1 23	18	3 4 9	6	1 1	18	3 4	30	5 7	42	7 10	54	9 12
7	1 11 37	19	3 14 23	7	1 12	19	3 14	31	5 17	43	7 20	55	9 23
8	1 21 51	20	3 24 38	8	1 22	20	3 24	32	5 27	44	7 30	56	9 33
9	1 32 5	21	3 34 52	9	1 32	21	3 35	33	5 38	45	7 40	57	9 43
10	1 42 18	22	3 45 5	10	1 42	22	3 45	34	5 48	46	7 51	58	9 53
11	1 52 32	23	3 55 19	11	1 52	23	3 55	35	5 58	47	8 1	59	10 4
12	2 2 46	24	4 5 32	12	2 3	24	4 5	36	6 8	48	8 11	60	10 14

TABLE V. The Equation of the Orbit of Mercury for every Degree of Anomaly, ſuppoſing the Mean Diſtance to be 38710, and Excentricity 79855.4.

Argument. Mean Anomaly of Mercury.

	Sig. O. −	Differ.	Sig. I. −	Differ.	Sig. II. −	Differ	Sig. III. −	Differ.	Sig. IV. −	Differ.	Sig. V. −	Differ.	
D.	D. M. S	M. S.	D. M. S.	M. S.	D. M. S.	M. S.	D. M. S.	M. S.	D M. S.	M. S.	D. M. S.	M. S.	D.
0	0 0 0	19 36	9 34 42	18 14	17 46 53	13 53	22 55 26	5 39	22 45 28	7 38	14 55 11	24 16	30
1	0 19 36	19 35	9 52 56	18 8	18 0 46	13 41	23 1 5	5 17	22 37 50	8 10	14 30 55	24 46	29
2	0 39 11	19 35	10 11 4	18 2	18 14 27	13 29	23 6 22	4 56	22 29 40	8 42	14 6 9	25 16	28
3	0 58 46	19 35	10 29 6	17 56	18 27 56	13 16	23 11 18	4 34	22 20 58	9 15	13 40 53	25 46	27
4	1 18 21	19 34	10 47 2	17 50	18 41 12	13 2	23 15 52	4 11	22 11 43	9 46	13 15 7	26 15	26
5	1 37 55	19 33	11 4 52	17 43	18 54 14	12 49	23 20 3	3 48	22 1 57	10 20	12 48 52	26 43	25
6	1 57 28	19 32	11 22 35	17 37	19 7 3	12 36	23 23 51	3 25	21 51 37	10 53	12 22 9	27 11	24
7	2 17 0	19 31	11 40 12	17 30	19 19 39	12 22	23 27 16	3 2	21 40 44	11 26	11 54 58	27 37	23
8	2 36 31	19 29	11 57 42	17 23	19 32 1	12 7	23 30 18	2 37	21 29 18	11 59	11 27 21	28 4	22
9	2 56 0	19 28	12 15 5	17 16	19 44 8	11 53	23 32 55	2 14	21 17 19	12 33	10 59 17	28 29	21
10	3 15 28	19 26	12 32 21	17 9	19 56 1	11 39	23 35 9	1 48	21 4 46	13 6	10 30 48	28 53	20
11	3 34 54	19 24	12 49 30	17 1	20 7 40	11 23	23 36 57	1 24	20 51 40	13 41	10 1 55	29 16	19
12	3 54 18	19 22	13 6 31	16 53	20 19 3	11 8	23 38 21	0 59	20 37 59	14 14	9 32 39	29 39	18
13	4 13 40	19 20	13 23 24	16 45	20 30 11	10 52	23 39 20	0 33	20 23 45	14 49	9 3 0	30 1	17
14	4 33 0	19 18	13 40 9	16 37	20 41 3	10 37	23 39 53	+0 6	20 8 56	15 23	8 32 59	30 21	16
15	4 52 18	19 14	13 56 46	16 28	20 51 40	10 20	23 39 59	−0 20	19 53 33	15 56	8 2 38	30 40	15
16	5 11 32	19 12	14 13 14	16 20	21 2 0	10 4	23 39 39	0 46	19 37 37	16 31	7 31 58	30 58	14
17	5 30 44	19 9	14 29 34	16 11	21 12 4	9 47	23 38 53	1 14	19 21 6	17 6	7 1 0	31 16	13
18	5 49 53	19 6	14 45 45	16 1	21 21 51	9 30	23 37 39	1 42	19 4 0	17 39	6 29 44	31 32	12
19	6 8 59	19 3	15 1 46	15 52	21 31 21	9 12	23 35 57	2 9	18 46 21	18 14	5 58 12	31 46	11
20	6 28 2	18 59	15 17 38	15 43	21 40 33	8 54	23 33 48	2 37	18 28 7	18 47	5 26 26	32 0	10
21	6 47 1	18 55	15 33 21	15 33	21 49 27	8 37	23 31 11	3 6	18 9 20	19 22	4 54 26	32 11	9
22	7 5 56	18 51	15 48 54	15 23	21 58 4	8 18	23 28 5	3 35	17 49 58	19 55	4 22 15	32 23	8
23	7 24 47	18 47	16 4 17	15 12	22 6 22	7 59	23 24 30	4 4	17 30 3	20 29	3 49 52	32 32	7
24	7 43 34	18 43	16 19 29	15 2	22 14 21	7 41	23 20 26	4 34	17 9 34	21 3	3 17 20	32 41	6
25	8 2 17	18 39	16 34 31	14 51	22 22 2	7 21	23 15 52	5 4	16 48 31	21 35	2 44 39	32 48	5
26	8 20 56	18 34	16 49 22	14 40	22 29 23	7 1	23 10 48	5 34	16 26 56	22 8	2 11 51	32 53	4
27	8 39 30	18 29	17 4 2	14 29	22 36 24	6 41	23 5 14	6 4	16 4 48	22 40	1 38 58	32 57	3
28	8 57 59	18 24	17 18 31	14 17	22 43 5	6 21	22 59 10	6 36	15 42 8	23 13	1 6 1	33 0	2
29	9 16 23	18 19	17 32 48	14 5	22 49 26	6 0	22 52 34	7 6	15 18 55	23 44	0 33 1	33 1	1
30	9 34 42		17 46 53		22 55 26		22 45 28		14 55 11		0 0 0		0
	Sig. XI. +		Sig. X. +		Sig. IX. +		Sig. VIII. +		Sig. VII. +		Sig. VI. +		

TABLE VI. Logarithms of the Diſtance of Mercury from the Sun.

Argument. Mean Anomaly of Mercury.

	Sig. O.		Sig. I.		Sig. II.		
D.	Logarithms.	Differ.	Logarithms.	Differ.	Logarithms.	Differ.	D.
0	9.668993		9.661990		9.640787		30
1	9.668985	8	9.661514	476	9.639832	955	29
2	9.668962	23	9.661022	492	9.638862	970	28
3	9.668924	38	9.660515	507	9.637875	987	27
4	9.668870	54	9.659991	524	9.636872	1003	26
5	9.668800	70	9.659452	539	9.635853	1019	25
6	9.668715	85	9.658897	555	9.634819	1034	24
7	9.668614	101	9.658326	571	9.633768	1051	23
8	9.668497	117	9.657739	587	9.632702	1066	22
9	9.668365	132	9.657136	603	9.631619	1083	21
10	9.668218	147	9.656517	619	9.630521	1098	20
11	9.668055	163	9.655882	635	9.629407	1114	19
12	9.667877	178	9.655232	650	9.628277	1130	18
13	9.667683	194	9.654565	667	9.627131	1146	17
14	9.667473	210	9.653883	682	9.625970	1161	16
15	9.667247	226	9.653185	698	9.624793	1177	15
16	9.667006	241	9.652471	714	9.623600	1193	14
17	9.666760	256	9.651740	731	9.622392	1208	13
18	9.666478	272	9.650994	746	9.621169	1223	12
19	9.666191	287	9.650231	763	9.619930	1239	11
20	9.665887	304	9.649453	778	9.618676	1254	10
21	9.665568	319	9.648658	795	9.617407	1269	9
22	9.665233	335	9.647848	810	9.616123	1284	8
23	9.664883	350	9.647021	827	9.614823	1300	7
24	9.664517	366	9.646179	842	9.613509	1314	6
25	9.664134	383	9.645321	858	9.612179	1330	5
26	9.663736	398	9.644446	875	9.610835	1344	4
27	9.663324	412	9.643555	891	9.609477	1358	3
28	9.662895	429	9.642647	908	9.608104	1373	2
29	9.662450	445	9.641724	923	9.606717	1387	1
30	9.661990	460	9.640787	937	9.605316	1401	0
	Sig. XI.		Sig. X.		Sig. IX.		

Table VI. Logarithms of the Diſtance of Mercury from the Sun.

Argument. Mean Anomaly of Mercury.

	Sig. III.		Sig. VI.		Sig. V.		
D.	Logarithms.	Differ.	Logarithms.	Differ.	Logarithms.	Differ.	D.
0	9·605316	1415	9·557972	1692	9·510077	1330	30
1	9·603901	1429	9·556280	1694	9·508747	1300	29
2	9·602472	1443	9·554586	1696	9·507447	1268	28
3	9·601029	1456	9·552890	1695	9·506179	1236	27
4	9·599573	1469	9·551195	1695	9·504943	1201	26
5	9·598104	1482	9·549500	1693	9·503742	1167	25
6	9·596622	1495	9·547807	1691	9·502575	1130	24
7	9·595127	1507	9·546116	1688	9·501445	1092	23
8	9·593620	1519	9·544428	1685	9·500353	1054	22
9	9·592101	1532	9·542743	1679	9·499299	1014	21
10	9·590569	1543	9·541064	1674	9·498285	972	20
11	9·589026	1554	9·539390	1667	9·497313	930	19
12	9·587472	1566	9·537723	1660	9·496383	887	18
13	9·585906	1577	9·536063	1651	9·495496	842	17
14	9·584329	1586	9·534412	1642	9·494654	797	16
15	9·582743	1597	9·532770	1631	9·493857	750	15
16	9·581146	1607	9·531139	1618	9·493107	703	14
17	9·579539	1616	9·529521	1606	9·492404	655	13
18	9·577923	1625	9·527915	1592	9·491749	605	12
19	9·576298	1634	9·526323	1577	9·491144	555	11
20	9·574664	1642	9·524746	1560	9·490589	504	10
21	9·573022	1649	9·523186	1542	9·490085	453	9
22	9·571373	1656	9·521644	1524	9·489632	402	8
23	9·569717	1663	9·520120	1505	9·489230	350	7
24	9·568054	1668	9·518615	1484	9·488880	296	6
25	9·566386	1674	9·517131	1461	9·488584	243	5
26	9·564712	1679	9·515670	1437	9·488341	189	4
27	9·563033	1684	9·514233	1412	9·488152	135	3
28	9·561349	1687	9·5·2821	1386	9·488017	82	2
29	9·559662	1690	9·511435	1358	9·487935	28	1
30	9·557972		9·510077		9·487907		0
	Sig. VIII.		Sig. VII.		Sig. VI.		

TABLE VII. Reduction to the Ecliptic both in Longitude and Diſtance.

Argument. The Longitude of Mercury — the Longitude of the Node.

Degrees.	Sig. O. — Sig. VI. —		Sub. from Log.	Sig. I. — Sig. VII. —		Sub. from Log.	Sig. II. — Sig. VIII. —		Sub. from Log.	Degrees.
	M	S.		M.	S.		M.	S.		
0	0	0	0	11	7	808	11	9	2432	30
1	0	26	1	11	20	858	10	56	2480	29
2	0	53	4	11	32	908	10	41	2528	28
3	1	20	9	11	43	959	10	26	2574	27
4	1	47	16	11	54	1011	10	9	2621	26
5	2	13	24	12	4	1063	9	53	2665	25
6	2	39	35	12	13	1118	9	34	2708	24
7	3	5	48	12	21	1172	9	16	2749	23
8	3	31	62	12	28	1226	8	57	2789	22
9	3	57	79	12	34	1281	8	37	2829	21
10	4	23	98	12	40	1337	8	17	2867	20
11	4	48	118	12	45	1392	7	56	2903	19
12	5	13	140	12	48	1448	7	34	2937	18
13	5	37	164	12	50	1506	7	12	2969	17
14	6	1	189	12	51	1562	6	50	3000	16
15	6	25	216	12	52	1619	6	27	3030	15
16	6	48	246	12	51	1675	6	3	3058	14
17	7	11	277	12	50	1731	5	39	3084	13
18	7	33	309	12	48	1788	5	15	3108	12
19	7	54	343	12	45	1845	4	50	3130	11
20	8	14	378	12	40	1901	4	25	3151	10
21	8	34	415	12	35	1957	3	59	3169	9
22	8	53	454	12	29	2012	3	34	3186	8
23	9	12	493	12	22	2066	3	8	3201	7
24	9	31	534	12	15	2120	2	41	3213	6
25	9	50	577	12	6	2173	2	15	3224	5
26	10	7	622	11	56	2227	1	47	3233	4
27	10	23	667	11	45	2280	1	21	3240	3
28	10	39	713	11	35	2332	0	54	3245	2
29	10	54	760	11	22	2382	0	27	3248	1
30	11	7	808	11	9	2432	0	0	3249	0
	Sig. XI. + Sig. V. +		Sub. from Log.	Sig. X. + Sig. IV. +		Sub. from Log.	Sig. IX. + Sig. III. +		Sub. from Log.	

TABLE VIII. Heliocentric Latitude of Mercury.

Argument. The Longitude of Mercury — the Longitude of the Node.

Degrees.	Sig. O. *N.* Sig. VI. *S.*	Differ.	Sig. I. *N.* Sig. VII. *S.*	Differ.	Sig. II. *N.* Sig. VIII. *S.*	Differ.	Degrees.
	D. M. S	M. S.	D. M. S.	M. S.	D. M. S.	M. S.	
0	0 0 0	7 18	3 29 37	6 20	6 3 30	3 37	30
1	0 7 18	7 19	3 35 57	6 15	6 7 7	3 30	29
2	0 14 37	7 18	3 42 12	6 11	6 10 37	3 23	28
3	0 21 55	7 18	3 48 23	6 6	6 14 0	3 18	27
4	0 29 13	7 18	3 54 29	6 1	6 17 18	3 11	26
5	0 36 31	7 17	4 0 30	5 58	6 20 29	3 3	25
6	0 43 48	7 16	4 6 28	5 54	6 23 32	2 56	24
7	0 51 4	7 15	4 12 22	5 49	6 26 28	2 49	23
8	0 58 19	7 14	4 18 11	5 44	6 29 17	2 42	22
9	1 5 33	7 12	4 23 55	5 40	6 31 59	2 35	21
10	1 12 45	7 11	4 29 35	5 35	6 34 34	2 27	20
11	1 19 56	7 10	4 35 10	5 30	6 37 1	2 20	19
12	1 27 6	7 9	4 40 40	5 24	6 39 21	2 13	18
13	1 34 15	7 7	4 46 4	5 19	6 41 34	2 5	17
14	1 41 22	7 5	4 51 23	5 14	6 43 39	1 58	16
15	1 48 27	7 4	4 56 37	5 8	6 45 37	1 50	15
16	1 55 31	7 2	5 1 45	5 3	6 47 27	1 44	14
17	2 2 33	6 59	5 6 48	4 58	6 49 11	1 36	13
18	2 9 32	6 55	5 11 46	4 52	6 50 47	1 28	12
19	2 16 27	6 53	5 16 38	4 46	6 52 15	1 20	11
20	2 23 20	6 50	5 21 24	4 40	6 53 35	1 12	10
21	2 30 10	6 48	5 26 4	4 34	6 54 47	1 5	9
22	2 36 58	6 46	5 30 38	4 28	6 55 52	0 57	8
23	2 43 44	6 42	5 35 6	4 22	6 56 49	0 50	7
24	2 50 26	6 40	5 39 28	4 17	6 57 39	0 44	6
25	2 57 6	6 37	5 43 45	4 11	6 58 23	0 36	5
26	3 3 43	6 33	5 47 56	4 4	6 58 59	0 27	4
27	3 10 16	6 30	5 52 0	3 57	6 59 26	0 19	3
28	3 16 46	6 27	5 55 57	3 50	6 59 45	0 11	2
29	3 23 13	6 24	5 59 47	3 43	6 59 56	0 4	1
30	3 29 37		6 3 30		7 0 0		0
	Sig. XI. *S.* Sig. V. *N.*		Sig. X. *S.* Sig. IV. *N.*		Sig. IX. *S.* Sig. III. *N.*		

As a ſpecimen of the uſe of the preceding tables, we ſhall give the following example from the Aſtronomy of Profeſſor Vince, whoſe polite compliance with our wiſh to extract the preceding tables from his valuable work, demands our reſpectful acknowledgment.

To compute the Heliocentric Latitude and Longitude of Mercury, and Logarithm of his Diſtance from the Sun.—From Table I. of the epochs, take out the epochs of the mean longitude of the aphelion and node, for the given year, and place them in an horizontal line. But if the given year be not found in that table, take the neareſt year preceding the given year, as an epoch, and take out as before; under which (Table II.) place the mean motion, in longitude, of the aphelion and node, anſwering to the number of years elapſed ſince the epoch to the given year.

Under theſe, write down (Table III.) the mean motions of the ſame, for the given day of the month.

Under theſe, write down (Table IV.) the mean motions of the ſame, for the given hours, minutes, and ſeconds.

Add together the numbers in the ſeveral columns, rejecting 12 *S*, or any multiple thereof, if they occur; and you get the mean longitude, places of the aphelion, and node for the given time.

Subtract the longitude of the aphelion from the mean longitude, and the remainder is the mean anomaly.

With the mean anomaly enter Table V., and take out the equation of the orbit, making proportion for the minutes and ſeconds, if there be any, correcting the reſult of the proportion for ſecond differences.

Apply the equation, with its proper ſign, to the mean longitude, and you get the longitude on the orbit, from the mean equinox.

From the longitude of Mercury in his orbit, ſubtract the longitude of the node, and you get the argument, called the *argument of latitude.*

To the longitude on the orbit thus found, apply the reduction (Table VII.) with its proper ſign, and you have the longitude upon the ecliptic, reckoned from the mean equinox.

To the longitude thus found, apply the nutation, or equation of the equinoxes in longitude with its proper ſign, and you get the true longitude of Mercury on the ecliptic, from the true equinox.

With the argument of latitude enter Table VIII., and take out the heliocentric latitude, making proportion for the minutes and ſeconds, if neceſſary, correcting the reſult of the proportion for ſecond differences, and this is the true heliocentric latitude of Mercury,

With the mean anomaly of Mercury enter Table VI., and take out the logarithm of the diſtance, making proportion for the minutes and ſeconds, if neceſſary.

With the argument of latitude enter Table VII., and in the column *Sub. Log.* take out the number, making proportion for minutes and ſeconds, if neceſſary; and ſubtracting it from the logarithm of the diſtance laſt found, you have the logarithm of the curtate diſtance.

Example.—What is the heliocentric Latitude and Longitude of Mercury on June 3, 1793, at 5^h 17′ 19″, mean Time at Greenwich, and the Logarithm of his Diſtance from the Sun?

	Longitude.	Aphelion.	Node.
	s ° ′ ″	s ° ′ ″	s ° ′ ″
Epoch for 1793 - -	2 28 5 16	8 14 14 17	1 15 51 45
Mean Motion to June 3	9 0 13 34	24	18
———— for 5^h -	51 9		
———— for 17′ -	2 54		
———— for 19″ -	3		
Mean Long. - -	11 29 12 56	8 14 14 41	1 15 52 3
Equation Table V. -	— 23 39 59	11 29 12 56	11 5 32 57
Long. on Orbit - -	11 5 32 57	3 14 58 15 Mean Anom.	9 19 40 54 Arg. of Lat.
Reduct. Table VII. -	+ 8 10		
Long. from mean Equin.	11 5 41 7	Hence, Tab. VI. Log. diſt. 9.582789	Hence, Tab. VIII. *Hel. lat.* 6° 35′ 21″ S.
Nutation - - -	— 6		
True Long. on Ecl. -	11 5 41 1	Reduct. - 2878	
		9.579911 Log. of curtate diſtance from the Sun.	

MERCURY, in *Botany*, &c. See MERCURIALIS.

MERCURY, *Engliſh.* See CHENOPODIUM.

MERCURY is a metal of a ſilvery-white colour, and fluid at the uſual temperature of the atmoſphere. It is known under a variety of denominations: the common name among the ancients was *hydrargyrum*, q. d. water of ſilver. The moderns commonly call it *mercury*, from ſome ſuppoſed relation it bears to the planet of that name. In Engliſh it is popularly called *quickſilver*, from its appearance. Many of the chemiſts call it *Proteus*, from the variety of forms, colours, &c. it paſſes through in their preparations.

§ 1. *Ores of Mercury.*

1. *Native Mercury; Gediegen queck-ſilber*, Wern.; *Mercure natif*, Haüy.

Its colour is that of ſilver.

It is found as globules in the cells of other ores of mercury, and as large maſſes in druſed cavities, &c.

When pure it is perfectly fluid; it feels very cold, and as if wet, but does not adhere to the finger. It has neither ſmell nor taſte.

Its luſtre is metallic ſplendent. Sp. gr. 13.568, Cavendiſh, Briſſon; 13.581, Haüy; 13.600, Klapr.

Native mercury is generally pure, but ſometimes it is amalgamated with ſome ſilver, though not ſufficiently ſaturated to be referrible to the following ſpecies, into which a tranſition is thus formed.

There are only a few places where native mercury has been found in abundance, ſuch as Idria, the Palatinate, and Spain; but in ſmall quantities it occurs almoſt always together with cinnabar and other mercurial ores, in fletz-rocks, which appear to be ſubordinate to ſome coal formation. See the ſequel of this article, and MINIUM.

For the uſe, and chemical and phyſical properties of mercury, ſee the ſequel of this article.

2. *Native Amalgam; Natürliches amalgam,* Wern.; *Mercure argental,* Haüy.

Its colour varies between that of tin and ſilver.

It is ſeldom found maſſive; oftener diſſeminated, in ſuperficial laminæ, and ſometimes cryſtallized. The cryſtals hitherto obſerved are: 1. The regular octahedron with all its edges truncated, mentioned by Romé de l'Iſle (Mercure argental *émarginé,* Haüy, pl. 65, fig. 24.) 2. The rhomboidal or garret dodecahedron (Mercure argental *dodécaèdre,* Haüy, ib. fig. 25.) This occurs more frequently than the others, and is by Cordier conſidered as the primitive cryſtal. 3. The preceding truncated on the edges (Mercure arg. *triforme,* Haüy, ib. fig. 26.) Alſo the leucite cryſtal, or the double eight-ſided pyramid, flatly acuminated on each extremity by four planes ſet on the alternate lateral edges, is mentioned among the modifications of this ſubſtance.

The cryſtals are never large, generally of the ſize of a ſmall pea: they are uſually imbedded, ſeldom ſeveral of them grouped together.

Externally it is ſhining and ſplendent, but leſs ſo than native mercury: luſtre metallic. When ſcraped it becomes dull.

Fracture conchoidal. It is more or leſs ſoft, ſometimes approaching to fluid; not particularly brittle. Spec. grav. 14.1192, as a mean of ſeveral experiments by Cordier.

Beſides this paſty ſemifluid amalgam, there is a more ſolid variety, the fracture of which is more imperfectly flat conchoidal, ſometimes paſſing into fine-grained uneven, and which, when preſſed between the fingers, or cut with a knife, gives out a more creaking ſound than the other variety.

Expoſed to the fire the mercury is volatilized, and a button of ſilver remains.

The variety analyſed by Heyer contained 74 parts of mercury and 25 of ſilver; that examined by Klaproth 64 parts of mercury and 36 of ſilver; laſtly, Cordier found 72.5 of mercury and 27.5 of ſilver in the cryſtallized amalgam.

The native amalgam is of rare occurrence; it has been found at Salberg in Sweden, at Roſenau and Niederſlana in Hungary, at Mörsfeld in the Palatinate, and principally at Moſchellandſberg and Stahlberg in Deuxponts, in a yellowiſh and reddiſh ferruginous clay, mixed with other mercurial ores, and accompanied with ſpathoſe iron, lithomarge, limeſtone, barytes, hornſtone, iron pyrites, &c.

Nothing exact is known reſpecting the mode of its occurrence; but probably it is confined to beds in fletz mountains.

The more ſolid variety reſembles ſilver, but may eaſily be known by the property it poſſeſſes of whitening gold and copper when rubbed on them.

3. *Mercurial Horn-Ore; Queck-ſilber horn-ertz,* Wern.; *Mercure muriaté,* Haüy.

Its uſual colour is aſh-grey, more or leſs deep; it often paſſes into yellowiſh-grey and greyiſh-white, and alſo inclines to greeniſh-grey.

It is ſeldom found maſſive or diſſeminated; but generally in thin cruſts formed by tubercular or ſmall globular maſſes, which are often compoſed of minute cryſtals. The form of theſe cryſtals is generally a dodecahedron like that of zircon, or rectangular four-ſided priſm, acuminated by four planes ſet on the lateral edges. (Mercure muriaté *dodécaèdre,* Haüy.) Beſides this the following modifications are mentioned by authors: a rectangular four-ſided priſm, acuminated like the preceding by four planes, but which are ſet on the lateral planes; a ſix-ſided priſm bevelled at both extremities, the bevelling planes ſet on the two largeſt oppoſite lateral planes; and the octahedron with ſummits and edges truncated.

Theſe cryſtals are always minute and irregular, often gibbous, whence the difficulty of determining their figure with exactneſs. Externally they are ſplendent, internally ſplendent with a complete diamond luſtre, ſometimes approaching metallic luſtre.

It appears to be compoſed of fine-grained diſtinct concretions. It is generally faintly tranſlucent, ſometimes only on the edges; ſoft; may be cut with a knife, and is eaſily frangible.

Its ſpecific gravity and other characters remain yet undetermined, on account of the ſmallneſs and ſcarcity of the fragments that have hitherto been found.

Before the blowpipe it is volatilized, without decompoſition. It is ſoluble in water. Woulfe found it compoſed of 64 parts of ſulphat of mercury, and 36 muriat of mercury; Kirwan of 70 parts of mercury, and 30 of muriatic and ſulphuric acids.

The Horn mercury, the ſcarceſt of all mercurial ores, was firſt diſcovered by Mr. Woulfe in the quickſilver mines of Moſchellandſberg and Mörsfeld, in ferruginous clayey ſand-ſtone, accompanied with other ores of mercury, ochrey-brown iron-ſtone, malachite and blue copper ore, calcareous ſpar, lithomarge, &c. It has alſo been found at Idria, generally in the cavities of an indurated clay, and of ſlate-clay accompanied with cryſtallized cinnabar; at Horzowitz in Bohemia, with dark red cinnabar in a vein of brown ironſtone, and at Almaden in Spain.

4. *Mercurial Liver-Ore; Queck-ſilber-Lebererz,* Wern.; *Liver-coloured mercurial ore,* Aik. *Mercure ſulfuré bituminifère,* Haüy.

It is divided by Werner into compact and ſlaty liver-ore.

a. *Compact.*—Its colour is intermediate between dark lead-grey and cochineal red.

Occurs maſſive and rarely diſſeminated. Internally it is gliſtening and glimmering, with ſemi-metallic luſtre.

Fracture even, paſſing ſometimes into fine-grained uneven, and imperfect large and flat conchoidal: fragments indeterminately angular, more or leſs blunt-edged; opaque. Streak ſhining, and of a deep cochineal red colour. It is ſoft, may be cut with a knife, and is eaſily frangible. Specif. grav. 7.186—7.352, Kirwan; 7.937, Gellert.

b. *Slaty*—Its colour nearly the ſame as the preceding, only now and then more of the red obſervable on the principal fracture. It is found only maſſive. Its fracture in the direction of the laminæ is curved and thick ſlaty; it is ſhining, and its luſtre approaches the metallic; croſs fracture even and compact, and but little ſhining or only glimmering. Fragments more or leſs ſlaty. It is opaque, and uncommonly eaſily frangible.

The mercurial liver-ore affords upwards of 80 *per cent.* of pure mercury. Klaproth, who analyſed the compact variety from Idria, obtained the following reſults :

Mercury	818
Sulphur	137.50
Charcoal	23
Silex	6.50
Alumine	5.50
Oxyds of copper	2
Copper	0.20
Water which ſerved to form the ſulphurated hydrogen gas, and other loſs	7.30
	1000

This analyſis, Klaproth adds, may ſerve to rectify the erroneous notions which have been adopted concerning the compoſition of this mixed mineral. By ſhewing that the ſulphur is combined with the metal in the ſame proportion as in cinnabar, namely, as 1 to 6 in round numbers, we are taught how little foundation there is for the opinion of thoſe who, like Sage and Kirwan, think that a part only of the mercury is in the ſtate of ſulphurated mercury, and that the other is in the ſtate of a ſimple oxyd. If that were the caſe, the non-ſulphurated part would certainly be ſoluble in the nitric acid ; but experiment ſhews that this is not the caſe, becauſe the acid cannot diſſolve any part even when boiling, the mineral powder remaining unchanged at the bottom of the veſſel. See Nichol's Journ. vol. 15. p. 231.

Both varieties of mercurial liver-ore occur together at Idria in Friaul, to which they appear excluſively to belong, though Spain, Siberia, and other places have been mentioned by authors among their localities. They are found in large maſſes, in and with ſlate-clay, and a kind of bituminous ſhale, and accompanied with cinnabar, and ſometimes ſmall quantities of native mercury and iron pyrites. Two ores of mercury, ſuppoſed to belong to the liver-ore, are at Idria diſtinguiſhed by particular names. One is the *Brandertz*, which appears to be a kind of coarſe coal impregnated with cinnabar ; the blackiſh-grey variety contains only from 1 to 18 *per cent.*, the red from 30 to 40 *per cent.* of mercury. The other is called *Corallen-ertz*, (bead or coral-ore) ; it conſiſts of reddiſh-black oblong beads of the ſize of a large coffee bean, of a foliated ſtructure, imbedded in a blackiſh bituminous ſhale, and alſo in ſand-ſtone. The richeſt affords about 40 *per cent.* of mercury.

5. *Cinnabar ; Zinnober*, Wern ; *Mercure ſulfuré*, Haüy. This ſpecies may conveniently be ſubdivided into two varieties, *viz* dark red cinnabar and bright red cinnabar.

Dark red cinnabar ; Dunkel-rother zinnober, Wern.

Its colour is cochineal red, which in ſome varieties inclines on one ſide to carmine red, on the other to lead grey.

It is found maſſive, diſſeminated, in ſuperficial coatings and membranes, amorphous, cellular, dendritic, and cryſtallized.

Its primitive form is the regular hexahedral priſm ; integrant molecule, the triangular equilateral priſm. The following, according to Werner, Emmerling, and Eſtner, are the principal ſecondary forms : 1. The rhomboid rather flattened, truncated in the two diagonally oppoſite obtuſe angles. 2. The ſix-ſided table, formed by the increaſe of the truncating planes of the preceding figure. 3. The regular ſix-ſided priſm, either perfect or acuminated by three planes ſet on the alternate lateral planes. 4. The three-ſided pyramid, either double or ſingle, in which the angles are ſometimes more or leſs deeply truncated. 5. The regular octohedron, ſometimes terminating in an edge at the ſummit.

Haüy, on the other hand, has obſerved only two diſtinct modifications in the cryſtals of cinnabar ; the one is the primitive form, or the regular ſix-ſided priſm (Mercure ſulfuré *primitif*, pl. 65. fig. 27), in which the diviſions parallel with the lateral planes are very diſtinct ; the other (Merc. ſulf. *bibiſalterne*, fig. 28.) a ſimilar ſhort priſm, with ſix marginal planes at each extremity placed alternately with regard to the lateral planes and to the planes of the other extremity.

Theſe cryſtals, whoſe real form is often difficultly determinable, are generally ſmall and very ſmall ; they are grouped together without order, generally lining the cavities of maſſive cinnabar. Externally they are ſplendent ; internally both the cryſtallized and amorphous varieties are ſhining, which ſometimes paſſes into gliſtening, and likewiſe into glimmering ; with diamond luſtre approaching to ſemimetallic. The foliated varieties have the ſtrongeſt luſtre.

Fracture either more or leſs perfectly lamellar, the cryſtalline varieties with laminæ ſometimes rather curved ; or fine-grained uneven, with a tendency to conchoidal. Fragments indeterminately angular, rather blunt-edged. The lamellar varieties preſent granular diſtinct concretions ; ſometimes there is a tendency to thick and ſtraight lamellar diſtinct concretions.

Maſſive cinnabar is opaque, ſeldom tranſlucent on the edges ; but the cryſtals are ſometimes tranſlucent and even approach tranſparent.

It becomes ſhining in the ſtreak, affording a ſcarlet red powder. It is ſoft and eaſily cut with the knife, and very heavy. Spec. gr. varies from 4.500 to 10.218, which latter was determined by Briſſon on a pure cryſtal from Almaden : 7.710, Klapr. (the Japaneſe in grains) : 8.116, Kl. (the maſſive from Neumärktel).

The conſtituent parts of dark red cinnabar, were found by Klaproth to be

	The Japaneſe.	From Neumärktel.
Mercury	84.50	85.0
Sulphur	14.75	14.25
	99.25	99.25

Bright red cinnabar ; Hochrother zinnober, Wern.

Colour bright ſcarlet red. It is found maſſive, diſſeminated, and coating. Internally it is glimmering, of rather a pearly luſtre ; ſometimes, eſpecially on the croſs fracture, it is dull ; principal fracture between earthy and fibrous ; croſs fracture earthy, fine-grained ; fragments indeterminately angular, blunt-edged. It is opaque. Streak ſcarlet red, ſhining. It is very ſoft, paſſing into friable ; and ſoils. It is very heavy.

This ſub-ſpecies, which is much ſcarcer than the preceding, is found in the quickſilver mines of the Palatinate, particularly at Wolfſtein and at Deuxponts, where it is accompanied with brown iron-ſtone, iron-ochre, quartz, calcareous ſpar, and dark red cinnabar. The other localities aſſigned to light red cinnabar are not well authenticated.

Some authors, as Eſtner, are ſaid to have miſtaken the red iron-ochre, which is found with bright red cinnabar, for this latter variety; whence the other ſhades of red they mention are not applicable to the ſubſtance in queſtion.

Werner adopts two diſtinct formations of cinnabar, contemporaneous with the mountains in which they occur in beds. Theſe latter, in the older formations, conſiſt of a kind of chlorite ſlate, quartz, &c.; in the newer, of ſlate clay, &c. It is alſo found in veins, the relative age of which is not aſcertained. To the newer formation, which is far more abundant than the old, belong the repoſitories in the Palatinate, in Deuxponts, Spain, Idria, &c.; to the older, thoſe of Hartenſtein in Saxony, of Carinthia, &c. In veins it occurs at Horzowitz in Bohemia, in Lower Hungary, &c., where it is accompanied with ſome other mercurial ores, with iron-ſtone, galena, and other geognoſtically related ſpecies, which, in this caſe, are always indications of venigenous origin. When occurring in beds, it is generally accompanied (beſides with other ores of mercury) with compact lime-ſtone, calcareous ſpar, barytes, quartz, and ſometimes traces of copper ores; the beds themſelves are principally formed by ſlate clay, a kind of ſand-ſtone, and rocks of a ſimilar nature. Some of the older beds are found in clay ſlate mountains, and contain the cinnabar in contemporaneous ſmall veins or trums. The newer beds are ſuppoſed partly to belong to the coal-formation. Mohs.

The geognoſtic relations of the Japaneſe dark red cinnabar are not known. It is brought to us in ſmall grains, being moſtly fragments of flattened ſix-ſided priſms, which partly contain finely diſſeminated iron pyrites, and are alſo found adhering to particles of a quartzy ſubſtance.

The principal quickſilver mines in the Palatinate are at the following places, *viz.* Mörsfeld, where the cinnabar traverſes quartz, which is often completely coloured by it; the native quickſilver, formerly found at this place, was ſo abundant, that, according to Ferber, it was obſerved in the very ſtreets of the town: Spitzenberg near Mörsfeld, where cinnabar occurs mixed with brown iron-ſtone; alſo ſmall veins of aſphaltum are ſometimes found here in the maſſes of cinnabar: Carlſglück, which furniſhes a mercurial ſand ore, being cinnabar in a grey fine-grained and partly ſlaty ſand-ſtone, mixed with more or leſs clay; alſo native mercury has ſometimes been found here included in geodes of brown iron-ſtone: Wolfſtein, where there is the mine *Theodors Erzluſt*, in a mountain called the Königſberg; it was formerly uncommonly rich in mercurial ores, ſuch as the light red cinnabar both earthy and fibrous, which is almoſt excluſively found here, accompanied with brown iron-ſtone, &c.: at Potzberg, in the principality of Veldentz, cinnabar occurs in a kind of pudding-ſtone.

In the territory of Deuxponts, the moſt remarkable mine is that in the Schloſsberg of Obermoſchel or Moſchellandſberg, where both cinnabar and native mercury are found in great abundance.

The quickſilver mines of Idria were diſcovered in 1497. The richeſt ores, according to Ferber's account, occur in a conſiderable bed of clay ſlate. The roof and hanging ſide of the veins conſiſt of limeſtone; they are very much rent, and traverſed by dykes or ridges of other calcareous rocks and of a hard clay ſlate, which produce ſlips and faults in the mercurial vein. The clay ſlate of Idria is generally ſoft at ſome depth under ground, but harder and more diſtinctly ſlaty towards the ſurface: its principal colour is black. This ſlate is traverſed and penetrated in all directions by veins of cinnabar and diſſeminated native mercury, which are alſo found in neſts. It is in the ſofter part of the ſlate that the richer ores are generally found; they are firm, compact, and commonly marle-like, and when unmixed with other ſoft earthy ſubſtances, are ſuſceptible of poliſh. Theſe richer ores contain from 40 to 70 and even 80 pounds of quickſilver in the hundred weight.

The different rock-ſtones at Idria containing mercury are, 1. Grey and black lime-ſtone, improperly called hornſtone by the miners; it conſtitutes only the roof and ſides of the ſlaty vein and the bars, which latter ſometimes contain much diſſeminated cinnabar. 2. Varieties of clay of various colours, white, grey, yellow, red, and blackiſh, ſome pure others marly, and of various degrees of hardneſs: the blackiſh-grey variety yields from five to ten *per cent.* of quickſilver. 3. Grey clay ſlate, either pure or mixed with lime: it contains from two to three *per cent.* of quickſilver; the more its colour increaſes in depth the richer it becomes, ſo that the darkeſt, or blackiſh-grey variety, yields ſometimes eight pounds in the hundred weight. 4. Black ſoft clay ſlate, called *Mildzeug*, of a more or leſs marly nature, and containing from ten to fifteen, and ſometimes even from thirty to forty pounds in the hundred. 5. A black hard clay ſlate, called *Spiegel*, or looking-glaſs ſlate, on account of its ſhining ſurface: it ſometimes produces from forty to fifty pounds in the hundred weight; but very little when purely argillaceous, and very hard. 6. Druſes, or aggregations of calcareous, gypſeous, and barytic cryſtals, which are ſometimes found coated with cinnabar.

The following are the principal mercurial ores known at Idria: 1. Pure cinnabar, maſſive and cryſtallized. 2. Red ore, or impure cinnabar, of a tile-red colour, mixed with marle and pyrites; producing about thirty pounds in the hundred. 3. *Schnürl-erz*, or bead-ore, becauſe the cinnabar traverſes the matrix in ſmall veins ſimilar to ſtrings of beads. 4. Mercurial liver-ore, a very rich ore, yielding from fifty to eighty pounds in the hundred weight. 5. Mercurial brand ore. 6. Coral ore, which contains from one to forty pounds. Vide ſupra *Mercurial liver-ore.*

The Spaniſh quickſilver mines are the moſt ancient we are acquainted with. Pliny informs us that no other cinnabar was made uſe of at Rome than that from Spain, particularly that of the *Regio Siſaponenſis* in Bœtica, which appears to have been the territory of the preſent Almaden. This latter name is of Saracenian origin, ſignifying the ſhaft or gallery of a mine. According to Theophraſtus' and Pliny's account, the cinnabar brought to Rome was a kind of ſand; a term which is applicable to thoſe ſmall fragments of cinnabar mixed with quartz, which are ſtill found in conſiderable quantity in the old mine de las Cuebas, near Almaden, from the ſize of a hazel-nut to that of a hemp-ſeed.

The prevailing mountain-rock at and near Almaden is a grey clay ſlate, traverſed in many places by conſiderable beds of a breccia, which is compoſed of pieces of a ſimilar clay ſlate, with white calcareous ſpots, and fragments of the ſame black bituminous ſhale, which is the uſual concomitant of the quickſilver mines of Almaden. This breccia is here known under the name of *Fraileſque*, on account of its prevailing colour, which reſembles that of the habit of the Franciſcan monks.

The moſt important mines are at the ſouth ſide of Almaden, in the immediate neighbourhood of the town; there are ſix of them, running, within the ſpace of about fifty fathoms, nearly from eaſt to weſt: ſome of them, eſpecially that of San Diego, deviate from this courſe, deſcribing part of a large circle. Their dip is from ſixty to upwards of eighty degrees; they frequently interſect each other, and are alſo traverſed by the above-mentioned breccia and a black bituminous ſhale ; but at a certain depth (ſuch as in the mine Franciſco, which is 100 fathoms deep), they generally continue their courſe without interruption. They are all very rich in ore : where the veins meet, particularly thoſe of San Julian and San Diego, the repoſitories of ore are from four to five fathoms in thickneſs : theſe conſiſt of a quartz, richly intermixed with cinnabar, yielding from twenty to thirty pounds in the hundred.

The other quickſilver mines belonging to the territory of Almaden are, 1. That of Almadenejos, where veins of quartz, from one to half a fathom in thickneſs, richly penetrated by cinnabar, traverſe the grey clay ſlate above-mentioned. 2. That of Guadalperal, half a Spaniſh league N.W. from Almadenejos : this mine, which is very ſuperficial, was wrought by the Romans. The rock it traverſes is the ſame clay ſlate with that of Almaden, only that the breccia contains no fragments of the black bituminous ſhale, which is one of the component parts of that ſeen at Almaden. The ores of this mine conſiſt of cryſtalline cinnabar, moſtly in very narrow veins or trums. 3. The mine de las Cuebas, about three Engliſh miles from Almaden, in the ſame direction with that of Guadalperal. The quickſilver ores are here found in ſhort interrupted veins of quartz traverſing bituminous ſhale.

For a complete account of the quickſilver mines of Almaden, ſee Hoppenſack über den Bergbau in Spanien. Weimar, 1796.

Mercury, *Aſſay and Analyſis of the Ores of.*—Mercury is frequently combined with ſilver and biſmuth in the form of an amalgam. The mercury may be ſeparated by diſtillation in a retort of iron, or of glaſs coated with ſand and clay. The reſiduum, which is generally ſilver and biſmuth, may be diſſolved in nitric acid. When the ſolution is complete, a large quantity of water muſt be added, by which the greateſt part of the biſmuth will be ſeparated in the ſtate of ſubnitrat. If oxymuriatic gas be paſſed through the ſolution of ſilver and the remaining biſmuth, the former will be precipitated in the ſtate of muriat of ſilver, while the biſmuth will be held in ſolution in the ſtate of oxymuriat of biſmuth. When the muriat of ſilver is ſeparated, the biſmuth may be precipitated by potaſh, and the oxyd collected and dried. The ſubnitrat of this metal firſt ſeparated muſt be boiled with potaſh, to ſeparate the nitric acid. This oxyd, being waſhed and dried, may be added to the other. For every 100 of this oxyd, allow 90 of the metal. The muriat of ſilver contains, in the 100, 77.77 of the metal.

A ſpecimen of the native amalgam of ſilver and mercury, analyſed by Klaproth, gave 64 mercury and 36 ſilver in the 100.

Should any gold be preſent, it will be left undiſſolved when the reſidual metals are taken up by the nitric acid.

Native cinnabar may be analyſed by diſſolving it in nitro-muriatic acid. The mercury will be diſſolved in the ſtate of oxymuriat of mercury, while the ſulphur will be ſeparated. If much heat be employed, ſome of the ſulphur will be converted into ſulphuric acid, and ſome of the mercury, in conſequence, will be thrown down in the ſtate of ſulphat : the ſolution, therefore, muſt be made in the cold.

The ſulphur being ſeparated, waſhed, and dried, may be weighed.

The mercury may be ſeparated in the metallic form by a clean piece of iron. This is almoſt the only inſtance in which a metal is precipitated by another in a ſtate of purity, ſince iron does not in any degree combine with mercury. The mercury may alſo be thrown down by the green ſulphat of iron. This ore, according to Klaproth, conſiſts of 84.5 mercury, and 14.75 ſulphur. The hepatic ore may be analyſed by a proceſs ſimilar to the laſt. This, however, is apt to abound with other ſubſtances beſides ſulphur and mercury. A ſpecimen from Idria was analyſed by Klaproth, and the reſult is given under the article *Ores* of Mercury, ſupra.

The native muriat of mercury conſiſts of a mixture of ſulphuric and muriatic combined with the oxyd of mercury. This ore muſt be reduced to a fine powder, and mixed with twenty-four parts of water ; oxymuriatic gas muſt then be paſſed through it for a length of time, till the whole of the powder be diſſolved. The ſulphuric acid may be precipitated by muriat of barytes. The mercury may be precipitated from the muriatic acid by a bright piece of iron.

The ſulphat by this proceſs becomes oxyſulphat of mercury. In the ore it may be conſidered as the ſulphat : for every 100, therefore, of ſulphat of barytes precipitated, allow 211.76 of ſulphat of mercury in the ore. The reſt may be conſidered muriat of mercury. For 100 of mercury allow 4 of oxygen, and 11.2 muriatic acid.

For the aſſay of mercurial ores in the dry way, let the ſpecimen be pulverized, and accurately mixed with one-fourth its weight of quicklime, and an equal portion of iron filings, and then let it be pretty ſtrongly ignited in an iron or earthen retort, as long as any mercury comes over into the receiver.

The modes of extracting the metal from the ores of mercury are very ſimple. Meſſrs. Aikin, in their valuable Dictionary of Chemiſtry and Mineralogy, have given an account of the proceſs for this purpoſe at the mines of Deuxponts and of Idria, and alſo at Almaden in Spain. The former is the beſt and moſt ſcientific, and it is as follows : when the ore is brought out of the mine it is accurately ſorted, thoſe pieces being rejected which appear to be deſtitute of metal. The ſorted ore, being pulverized, is mingled with one-fifth, more or leſs, according to the proportion of cinnabar contained in the ore, of quicklime powdered by expoſure to the air. This mixture is then put into iron retorts, about forty or fifty in number, capable of holding about 60lbs. weight, which, thus charged, are fixed in a long furnace ; a glaſs receiver is then attached to each retort, but not luted, and a gentle fire is applied in order to expel all the moiſture : when this is effected, the juncture of the veſſels is cloſely ſtopped with tempered clay, and a full red heat is applied for ſeven or eight hours, at the expiration of which time all the mercury will have been volatilized and condenſed in the receiver. The common produce varies between ſix and ten ounces of metal from 100lbs. of the ore.

The proceſs at Almaden is more rude and inartificial : it is deſcribed by Meſſrs. Aikin (*ubi ſupra*) ; and to their account of it the reader, deſirous of further information, is referred.

The conveyance of mercury from place to place requires, on account of its fluidity, extraordinary precautions. It is packed in the following manner. A freſh ſound ſheep-ſkin, the hair of which has been taken off, is laid over a wooden bowl, and a quantity, from 50lbs. to 75lbs. of mercury is poured into it : the ends of the ſkin are then gathered up, and tied together with great care, thus forming a ſort of bag in which the metal is incloſed : this bag is incloſed in a ſecond ſkin, and the ſecond in a third ; and, laſtly, theſe bags are put into very tight barrels, capable of holding from two to four of them, and in this ſtate are brought into the market.

Chemical and Phyſical Properties of Mercury.—It is a
white

white metal reſembling tin. Its ſpecific gravity is 13.568. It is liquid at the greateſt cold of this climate, but becomes ſolid at — 39°, or 71° below the freezing point of water. It has frequently been reduced to the ſolid form in this country by the aid of freezing mixtures, and lately, by Mr. Leſley, in the vacuum of the air-pump. In this ſtate it poſſeſſes ſome of the characters of tin, as far as regards its appearance and malleability. It is ſaid to undergo a rapid decreaſe of volume immediately before congelation, a property the reverſe of what is obſerved in the freezing of water; and in the congelation of all bodies, the liquids of which are of greater ſpecific gravity than their ſolids, will it not be found that ſolid mercury is of greater ſpecific gravity than the liquid? The boiling point of mercury, or the temperature at which it aſſumes the elaſtic form, is 650°, or, as ſome ſay, 660°; ſo that the number of degrees between its freezing and boiling points is 689°, or 699°. This property admits of its being diſtilled, which furniſhes a ſimple method of ſeparating it from ſubſtances which are not volatile. Hence we may conclude, that if our natural temperature were more than 650°, mercury would be preſented to us in the form of a permanently elaſtic fluid: while, in a temperature leſs than — 39°, it would be a ſolid malleable metal.

Mercury does not decompoſe water at any temperature, and hence it may be kept under that fluid without undergoing any change.

When expoſed to the air it ſoon tarniſhes, and becomes covered with a dark grey powder. If it be agitated with the fingers for a ſhort time, they become ſoiled with the ſame powder. This ſubſtance is produced by the mercury combining with the oxygen of the atmoſphere. It may be formed in greater quantity by a ſtronger agitation in contact with oxygen. This has been effected by putting a ſmall quantity of mercury into a large bottle, and tying it to the ſpoke of a coach-wheel. The change of ſurface, from the motion of the wheel, induces the rapid oxydation of the mercury. The oxyd ſo obtained is the firſt or protoxyd of mercury, and was called by the old chemiſts *Ethiops per ſe.* If, according to Dalton, the atom of mercury be 167, hydrogen being 1, and oxygen 7, the protoxyd will be $\frac{167 \times 7}{7} = \frac{100}{4}$, or four *per cent.* This is exactly what Fourcroy makes it by experiment. In taking a general view of the combinations of mercury with other bodies, it would appear that Mr. Dalton has rated the atom of mercury too high. The analyſis of the ſulphuret appears to be the moſt perfect. It may with much confidence be admitted, that 85 of mercury combines with 15 of ſulphur for the ſecond ſulphuret. Hence we ſhall have $\frac{15}{85} = \frac{26}{147\frac{1}{3}}$. We ſhall find, therefore, in treating of the other compounds, that it will be nearer the truth, to call the atom of mercury 147. This number will give the protoxyd 4.5 *per cent.* When mercury is diſſolved in nitric acid with a boiling heat, and the oxyd precipitated by lime water, the precipitate will be formed of a yellow colour. This is in all probability the ſecond oxyd, which ſhould be conſtituted as follows: $\frac{147 + 14}{14} = \frac{100}{8.7}$, or 8.7 oxygen, and 81.3 mercury. Chenevix makes it 10.7. It is likely, however, that as he expelled the acid by heat, the oxyd might abſorb more oxygen, or the acid might not be all driven off.

The third oxyd of mercury may be formed by expoſing the metal or the protoxyd in ſmall quantity in a large glaſs matraſs, the neck being drawn out to a ſmall point. When the mercury is heated in this veſſel to a boiling heat, 650°, the ſmallneſs of the aperture does not admit of its eſcape in vapour, while it is completely expoſed to the oxygen of the atmoſpheric air. By this means the mercury becomes converted into a red powder, which is the third oxyd. The ſame may alſo be procured by adding lime-water to a ſolution of the oxymuriat of mercury (corroſive ſublimate), when a beautiful red powder is precipitated, which is the oxyd in queſtion. The proportions will be $\frac{147 + 21}{21} = \frac{100}{12.5}$ or 87.5 mercury, and 12.5 oxygen.

This oxyd is of a beautiful red colour: it poſſeſſes ſome of the qualities of an acid, inaſmuch as it has a decided taſte, is corroſive to the ſkin, and when heated with the filings of tin or zinc, it cauſes them to inflame by yielding with facility its oxygen to them. Chenevix makes the proportions to be 85 mercury and 15 of oxygen, but for the reaſons given in the ſecond oxyd it is, doubtleſs, rated too high.

Mercury does not combine with carbon, hydrogen, or nitrogen, but it combines with ſulphur and phoſphorus.

When two parts of ſulphur and one of mercury are rubbed together in a mortar, the mercury combines with a portion of ſulphur. The whole maſs appears of a black colour, and conſiſts of the ſulphuret of mercury mixed with an exceſs of ſulphur. This ſubſtance was formerly called *Ethiops mineral.* If this maſs be expoſed to a heat ſufficient to ſublime the ſulphur, the exceſs of the latter ſubſtance eſcapes, leaving behind a ſubſtance of a deep violet colour. If this heat be continued the ſulphuret is ſublimed, which, if collected by a proper veſſel, will form a red cake, which, when reduced to powder and waſhed, conſtitutes the factitious cinnabar, known in the arts by the name of *Vermilion.* There appears to be two ſulphurets of mercury, *viz.* cinnabar, and one containing leſs ſulphur. The firſt will conſiſt of 8 of ſulphur and 92 of mercury, for $\frac{147 + 13}{13} = \frac{100}{7.1}$. The ſecond ſulphuret conſiſts of 15 ſulphur and 85 mercury, from what has been before ſtated. The ſecond ſulphuret of mercury has a beautiful ſcarlet colour, for which it is eſteemed in the arts as a pigment: it does not diſſolve in water and is perfectly taſteleſs. It does not change on expoſure to the air. When expoſed to a ſtrong heat the ſulphur combines with oxygen, and burns with a blue flame. Iron has a ſtronger attraction for ſulphur than mercury. Hence, if the red ſulphuret be mixed with iron filings and introduced into a retort, the iron combines with the ſulphur, and if the heat be ſufficiently raiſed, the mercury comes over in a ſtate of tolerable purity. This method is employed in the large way to ſeparate mercury from native cinnabar.

A method of preparing artificial cinnabar has been diſcovered by Mr. Kirchoff. To 300 grains of mercury add 68 grains of ſulphur, which being moiſtened with a ſolution of potaſh, muſt be rubbed together in a mortar which is not of metal. By this means the ethiops mineral is produced. To this ſubſtance 160 grains of potaſh, diſſolved in its own weight of water, muſt be added. Let the maſs now be transferred into a porcelain diſh and heated over a chemical lamp, adding water from time to time to ſupply the loſs by evaporation, in order to keep the ſolid ingredients covered. During this proceſs it ſhould be conſtantly triturated with a glaſs piſtil. At the end of two hours the colour will begin to change from black to brown, and ſoon paſſes through different ſhades to a red. As the maſs aſſumes the form of jelly, the red colour increaſes in brightneſs, and ſoon acquires its maximum of tint, at which time it will be proper to withdraw the heat, otherwiſe the colour declines to a dirty brown. It is recommended, that after it has acquired a tolerable good colour, it ſhould be expoſed for a few days to a low and uniform temperature, by which means the colour gradually improves and ultimately becomes exquiſite. If the cinnabar thus obtained be expoſed to a ſtrong heat, it becomes brown and ultimately of a violet colour. It is highly probable, that this violet-coloured ſulphuret is the firſt ſulphuret produced from the ſecond, from ſome of the ſulphur being volatilized.

Phoſphorus does not eaſily combine with mercury. Pelletier, however, ſucceeded in uniting theſe bodies by diſtilling a mixture of red oxyd of mercury and phoſphorus. He obſerved that the red oxyd aſſumed a black colour before it combined with the phoſphorus. Dr. Thomſon, partly from this fact and from his own experience, is of opinion, that it is not the metal which unites with the phoſphorus, but the black oxyd. In reaſoning from analogy we might be apt to doubt this fact. We know that when ſulphur is heated with an oxyd of mercury, the oxygen of the latter combines with a portion of ſulphur, and is carried off in the ſtate of ſulphurous acid gas. Then ſince phoſphorus has a ſtronger attraction for oxygen than ſulphur, it would ſeem likely that the mercury would be reduced to its metallic form before it combined with the phoſphorus. This, however, is not a fair concluſion, ſince none of the compounds of phoſphorus are volatile. The circumſtance of ſulphurous acid being elaſtic, is doubtleſs a ſtrong reaſon why the metals in the metallic ſulphurets are generally free from oxygen.

The phoſphuret above alluded to is a ſolid of a black colour: its conſiſtency is ſuch as to be cut with a knife. When expoſed to the air it exhales a vapour ſmelling like phoſphorus.

Mercury combines with moſt of the metals forming alloys, which have been called amalgams. Many of theſe compounds are of great uſe in the arts.

Gold unites with mercury with ſuch facility, that if a piece of pure gold be ſingly dipped into it, it comes out completely covered with mercury. When the gold is divided into ſmall grains and heated red-hot, the mercury being heated near to its boiling point, the gold almoſt inſtantly diſſolves. A conſiderable proportion of gold may be added in this way without materially altering its liquidity. If, however, this liquid amalgam be ſqueezed through ſheep's leather, an alloy will be obtained of almoſt any degree of conſiſtence. The amalgam of gold uſed for gilding is about the conſiſtency of paſte. The ſubſtance to be gilt, which is copper, braſs, or ſilver, is firſt covered with mercury, in order to form a medium for covering the ſurface with the amalgam. When the ſurface of ſilver is clean, the mercury combines with it with great facility. Copper or braſs do not take the mercury by the ſame mode of application. A dilute nitric acid is added to the mercury, by which a portion of the metal is diſſolved. If a ſmall quantity of this ſolution be applied to the braſs or copper ſurface, the mercury becomes precipitated upon it, and is inſtantly made fit to receive the amalgam. A ſmall quantity of the amalgam, more or leſs, according to the thickneſs of the gilding required, is laid upon the quickſilvered ſurface, and uniformly ſpread about with a bruſh. The ſubſtance is then held over a clean coke or charcoal fire, and thus alternately heated and bruſhed till all the mercury is evaporated, leaving the gold firmly and uniformly adhering to the ſurface.

Mercury does not combine eaſily with platina in maſſes. If, however, the precipitate from nitromuriatic acid by muriat of ammonia be expoſed to a ſtrong heat, the acid and oxygen are expelled, leaving pure platina in a ſtate of minute diviſion. If the mercury be mixed with this powder and heat applied, an alloy will be formed, from which an amalgam of any degree of conſiſtence may be obtained by ſqueezing through leather. This amalgam may be employed for coating metals, ſuch as ſilver, braſs, and copper. The metallic precipitate of platina above-mentioned, might be obtained at little expence, probably not more than the price of ſilver. Veſſels of copper might, therefore, be covered with platina without much increaſing their intrinſic value.

We hope, therefore, that artiſts in this line will take the hint. Even if no other end ſhould be gained than preventing the deleterious effects of copper, the object is worth attention.

Silver eaſily amalgamates with mercury. When the proportion is eight of mercury to one of ſilver, the maſs is capable of aſſuming a cryſtalline form. The ſpecific gravity of this compound is greater than an arithmetical mean, a proof of conſiderable affinity between the two metals. This amalgam, like the two laſt, may be employed to coat copper and braſs with ſilver.

Copper is capable of combining with mercury. The alloy, however, is not of any uſe, and has been little examined.

Mercury does not combine with iron. This circumſtance preſents many advantages. Iron veſſels are well calculated for conveying mercury from place to place, and iron retorts are well fitted for diſtilling that ſubſtance. There are ſome diſadvantages in mercury not uniting with iron. If the ſurface of iron could be covered with mercury like copper, &c. it might be gilt with as much facility as thoſe metals. Although it is generally conſidered as incapable of uniting with mercury, it is ſtated in Crell's Journal, that Mr. Vogel has ſucceeded by the following proceſs. Take half an ounce of iron-filings and one ounce of alum, and rub them together to a very fine powder; add to this from an ounce to an ounce and a half of mercury, and triturate till the amalgam begins to be formed; then pour in a little water, and continue the agitation for an hour: the alum is now to be diſſolved out and the amalgam of iron will remain behind.

Tin combines eaſily with mercury. It is this alloy which conſtitutes the ſilvering of glaſs reflectors. A piece of tinfoil is firſt cut to the ſize of the glaſs plate to be ſilvered. This ſheet is ſpread upon a ſmooth and perfectly flat ſtone, at firſt truly horizontal, but capable of being placed in an inclined poſition. The ſheet of tinfoil is then covered with mercury, till the whole of the ſurface appears perfectly bright and liquid. The plate of glaſs, perfectly clean, is then laid upon the tinfoil. A number of weights are alſo laid upon the glaſs-plate, and the ſtone put into an inclined poſition by a lever, and held in that ſituation by temporary props. By this means the exceſs of mercury is ſqueezed out, and runs off by a groove in the edge of the ſtone. As much mercury is left with the tinfoil as will form a tolerably hard alloy.

Mercury unites with zinc in any proportion. This alloy is employed in a friable ſtate for the purpoſe of laying on the cuſhions of electric machines, which much increaſes their exciting power.

It is alſo employed in the proceſs called *ſimiloring*. An amalgam of the conſiſtency of that uſed for gilding is applied, in a manner ſimilar to the gilding amalgam, to the ſurface of copper. The mercury evaporates by heat, leaving the zinc behind. The latter, however, does not appear in its pure ſtate, but combines a portion of copper, and by that means produces a fine yellow ſurface, little inferior to gold, but in fact it is nothing more than braſs formed by the union of the copper with the zinc. This proceſs is employed by the button-makers. Some ſorts of buttons are firſt covered all over with this yellow coating. The upper ſurface of the button is afterwards really gilt.

Mercury is readily alloyed with lead, biſmuth, and antimony: the ſecond of theſe is frequently uſed to adulterate mercury. It may contain a conſiderable portion of biſmuth without ſenſibly loſing its liquidity.

Salts of Mercury.—The ſalts of mercury are generally diſtinguiſhed by their nauſeous taſte. Thoſe that conſtitute the greateſt part are inſoluble in water. They form ſeveral varieties from the oxyd of mercury, aſſuming different ſtates of oxydation, and alſo from their aptneſs to exiſt in the ſtate of ſub and ſuper-ſalts.

Sulphat of Mercury.—Sulphuric acid does not act upon mercury without the aſſiſtance of heat. The acid is then partly decompoſed. An atom of oxygen is ſeparated, which combines with the mercury. The acid flies off in the ſtate of ſulphurous acid. Indeed this is the beſt way of getting this gaſeous acid in a ſtate of purity. The oxyd of mercury unites with another portion of the acid, forming the ſulphat of mercury which ſeparates in the form of white powder. In this experiment the ſulphuric acid ſhould not be in exceſs, ſince in that caſe the ſuper-ſulphat of mercury would be obtained. This ſalt diſſolves in 500 parts of water at 60°, and in 287 at 212°. On evaporation it affords ſmall priſmatic cryſtals. It is not changed by expoſure to the air, but is decompoſable by heat. According to the analyſis of Fourcroy, it is compoſed of 12 acid, 83 of the ſecond oxyd of mercury, and 5 water. If we conſider the atom of mercury 147, oxygen 7, and ſulphuric acid 34, the atom of the ſecond oxyd will be $147 + 2 \times 7 = 161$: then for the ſulphat we have $\frac{161 + 34}{34} = \frac{100}{17.4}$, or 17.4 acid, and 82.6 of the ſecond oxyd of mercury.

Super-ſulphat of Mercury.—When an exceſs of ſulphuric acid is boiled upon mercury, the oxyd combines with two atoms of acid, conſtituting the ſuper-ſulphat of mercury. It has a diſagreeable acrid taſte. It is not changed by expoſure to the air. It changes vegetable blues to red. Fourcroy ſays that when the acid amounts to $\frac{1}{12}$th of its weight, it is ſoluble in 157 of cold, and 33 of boiling water, and obſerves that it is differently ſoluble with different proportions of acid. This is the firſt inſtance in which we have heard of the acid of a ſalt being ſo unlimited, and we cannot help doubting the accuracy of the above fact. In all the inſtances in which ſuper-ſalts have been analyſed, they have been found to contain a double doſe of acid. Conſidering it therefore as ſuch, we have $\frac{161 + 2 \times 34}{2 \times 34} = \frac{100}{29.7}$, or 29.7 acid, and 70.3 baſe.

Super-oxyſulphat of Mercury.—This ſalt is deſcribed by Dr. Thomſon as the oxyſulphat, but the proportion of acid given by the analyſis of Meſſrs. Braumcamp and Sigueira-Oliva, ſhews it to be a ſuper-ſalt. When mercury is boiled with an exceſs of acid, and the heat continued longer than in the formation of the laſt ſalts, ſome of the exceſs is decompoſed, giving another atom of oxygen to the mercury, while ſulphurous acid gas is diſengaged. The oxyd, therefore, combines with an exceſs of oxygen, and then this oxyd combines with an exceſs of acid, which conſtitutes the ſuper-oxyſulphat. This ſalt is ſparingly ſoluble in water, and affords ſmall cryſtals of the ſhape of priſms.

According to the chemiſts above-named, it is compoſed of 31.8 acid, and 63.8 peroxyd, and 4.4 water. According to hypotheſis it will conſiſt as follows: $\frac{168 + 68}{78} = \frac{100}{28.9}$, which gives 28.9 acid, and 71.1 peroxyd.

Oxyſulphat of Mercury.—The ſalt which has been called *Turbith mineral*, has been ſuppoſed to be a ſub-oxyſulphat of mercury. If, however, we can depend upon the analyſis of Braumcamp and Sigueira-Oliva, we can only conſider it an oxyſulphat. It is in the ſtate of a yellow powder, and was formerly much uſed in medicine. It has, however, been laid aſide on account of its extreme ſeverity of operation. According to the above chemiſts it is compoſed of 15 acid, 84.7 peroxyd, and 0.3 water. If we conſider it as a ſulphat, we ſhall have $\frac{168 + 34}{34} = \frac{100}{16.8}$, which gives 16.8 acid, and 83.2 of the peroxyd. If ſuch a ſalt exiſts as the ſub-oxyſulphat, it will be found to conſiſt of 9.2 acid, and 90.8 peroxyd; for $\frac{168 \times 2 + 34}{34} = \frac{100}{9.2}$. It does not appear likely that ſuch a miſtake could be made in an analyſis. The difference between the ſub and the neutral ſalt is nearly ſix *per cent* of acid. It may, therefore, with ſome confidence be concluded, that *Turbith mineral* is the oxyſulphat of mercury, and not a ſub-ſalt, as has been ſuppoſed.

Nitrat of Mercury.—When nitric acid of a mean ſtrength is poured upon mercury, a briſk efferveſcence enſues, induced by the diſengagement of nitrous gas. When the acid is much diluted, and the mixture kept cool by placing the veſſel in a large maſs of cold water, the ſolution goes on very ſlowly. By this means every atom of mercury decompoſes an atom of nitric acid, taking an atom of oxygen, by which an atom of nitrous gas is evolved. The atom of oxyd ſo found unites with two atoms more of nitric acid, forming the ſalt in queſtion. It will be proper to obſerve here, that there is a ſeeming anomaly as well in this as in moſt of the ſoluble nitrats, and in a great number of carbonats. Although we call them indiſcriminately nitrats and carbonats, they are, ſtrictly ſpeaking, ſuper-nitrats and ſuper-carbonats. We may almoſt generally conclude, that thoſe ſalts which have been called nitrats are ſuper-nitrats; while thoſe which have been denominated ſub-nitrats will prove, on analyſis, to be nitrats ſimply. We cannot, however, at preſent make this diſtinction without ſome further experiments.

When the above ſolution is carried to a certain extent, or the dilute ſolution evaporated, the ſalt very eaſily affords cryſtals, which are in the form of four-ſided pyramids, baſe to baſe.

When ſulphuretted hydrogen is paſſed through a ſolution of nitrat of mercury, the hydrogen combines with the oxygen of the mercury, forming water, while the ſulphur combines with the mercury, and falls down in the form of ſulphuret.

A ſolution of muriat of tin added to this ſalt precipitates the mercury by combining with its oxygen. The cryſtals of nitrat of mercury detonate upon burning coals, and explode with phoſphorus by the blow of a hammer. No analyſis of this ſalt has been given by chemiſts, but from the weight of its conſtituent atoms it will be as follows: $\frac{147 + 7 + 2 \times 19}{2 \times 19} = \frac{100}{19.3}$; which gives 19.3 of acid, and 80.7 of the protoxyd.

Oxynitrat of Mercury.—When mercury is diſſolved in nitric acid with the aſſiſtance of heat, an atom of mercury decompoſes two atoms of the acid, while two other atoms of acid unite with the oxyd ſo formed, conſtituting what is called the oxynitrat, but which is in fact a ſuper-oxynitrat. If this action goes on with a little water the ſalt ſoon forms into a yellow cryſtalline maſs, which ſhews a marked difference in the character of the two ſalts, ariſing from the baſe of this ſalt having a larger proportion of oxygen. If water be added in conſiderable quantity to the ſolution of this ſalt, a portion of it loſes one atom of acid, and is converted into a yellowiſh powder, which falls to the bottom of the veſſel. This has been improperly called a ſub-oxynitrat. From the analyſis it appears to be a nitrat.

On paſſing ſulphuretted hydrogen gas through a ſolution of the oxynitrat, it becomes reduced to the nitrat, and is ſaid, by Zaboada, to combine with ſulphur. It is more likely, however, that the ſulphur would be converted into ſulphuric acid, and that the precipitate is a ſulphat of mercury. When muriat of tin is added to a ſolution of this ſalt, inſtead of reducing it to the metallic form, which is the caſe with the nitrat, it reduces it merely to the ſtate of the protoxyd, which combines with the muriatic acid to form muriat of mercury. Its components will be known from the following analogy: $\frac{161 + 38}{38} = \frac{100}{19.1}$, which gives 19.1 of acid, and 80.9 of the ſecond oxyd.

The ſalt which has been called ſub-oxynitrat, but which from its analyſis muſt be the oxynitrat, was formerly called *nitrous turbith*, from its reſemblance to the ſulphat. It has been analyſed by Meſſrs. Braumcamp and Sigueira-Oliva, who make it to conſiſt of 12 acid, and 88 ſecond oxyd.

By treating this ſalt as the oxynitrat ſimply, we ſhall ſee that the proportions by hypotheſis agree nearly with the above analyſis: for $\frac{161 + 19}{19} = \frac{100}{10.5}$, or 10.5 acid, and 89.5 of the ſecond oxyd.

Beſides the oxynitrat already deſcribed, which contains the ſecond oxyd, a ſalt may be formed with the third oxyd, ſo that we have three ſalts formed with the three oxyds; namely, the nitrat, the oxynitrat, and, for the ſake of diſtinction, the laſt might be called the hyper-oxynitrat. This laſt ſalt cannot be formed by boiling the nitric acid with mercury, but by directly diſſolving the third oxyd in nitric acid. Muriat of ſoda cauſes no precipitation from a ſolution of this ſalt, ſince the oxyd is at a maximum of oxydation, and is all employed in forming the ſuper-oxymuriat.

Muriat of Mercury.—Muriatic acid has no action upon mercury, but readily combines with its oxyds, forming with the firſt a muriat of mercury, and with the third or peroxyd an oxymuriat, or rather, as we ſhall ſhew, a ſuper-oxymuriat. The old method of making the muriat was by triturating four parts of the oxymuriat with three parts of metallic mercury, till the latter totally diſappeared. By this proceſs the peroxyd in the oxymuriat gives up as much oxygen to the metal as makes the whole into the protoxyd, which, with the exceſs of acid in the oxymuriat, forms the whole into a ſimple muriat. The maſs ſo produced is put into a matraſs capable of holding about four times the quantity of matter which is put into it. This being ſet in a ſand bath, and the heat raiſed, the muriat of mercury ſublimes into the upper part of the matraſs. The veſſel is now broken, and the ſublimed matter carefully ſelected. This, however, is frequently mixed with a little of the oxymuriat, which is to be ſeparated by repeated ſublimations, or by waſhing in water, the oxymuriat being ſoluble while the muriat is not ſo. It would appear that this method was invented long before the component parts of the ſalts were known. The metallic mercury added to the oxymuriat is much too little. If we conſider the oxyd in the muriat as being the protoxyd, the metal ought to be to the oxymuriat as 294 to 212. If the running mercury were leſs there would be an exceſs of oxymuriat. This experiment is very important in ſhewing that the oxyd of mercury in the muriat is the protoxyd. If it were the ſecond oxyd, 212 parts of the oxymuriat ought only to take up 73.5 of running mercury. The above proceſs, however, ſhews that 212 of the oxymuriat takes up 159 of mercury, and ſtill ſome of the oxyſalt is found in exceſs after ſublimation. Although in this proceſs 212 parts of the oxymuriat, by trituration with 294 of mercury, would form 462 of the protoxyd; the acid in the oxymuriat will not be ſufficient to form the whole into a muriat. The acid in 212 parts of the oxymuriat is 44, which will combine with 308 of the protoxyd, to form 352 of the muriat. This quantity ought to be ſublimed, leaving behind 154 of the protoxyd. If, inſtead of employing 212 of the oxymuriat to 294 of mercury, we make their proportions as 212 to 192, we ſhould get 352 parts of the muriat, as before; but the reſiduum will conſiſt of 52 parts of the peroxyd. The Edinburgh form for calomel, or muriat of mercury, is four parts of corroſive ſublimate (oxymuriat of mercury) to 3.5 of running mercury.

In the above proportions of 212 to 192, in which the reſiduum is 52 of peroxyd, the proportions reduced to their loweſt terms, are 4 to 3.6; for $\frac{212}{192} = \frac{4}{3.6}$. If, however, this proceſs were carried on with the greateſt economy, 212 parts of the oxymuriat ſhould be triturated with 294 of mercury, and 22 of real muriatic acid. The whole of the matter will, in this caſe, be ſublimed in the ſtate of muriat, which will be 528 parts, while in the common way only 352 of this ſalt is obtained.

Muriat of mercury may be formed in the humid way with much more convenience, and probably cheaper. This proceſs was firſt propoſed by Scheele. He diſſolved the mercury in nitric acid, with heat, and then added to the ſolution a ſolution of muriat of ſoda. A precipitate was formed, which, when well waſhed with hot water, was the muriat of mercury, which has been called by the names of *calomel* and *mercurius dulcis*.

This proceſs has been much improved by diſſolving the mercury in a dilute nitric acid, without heat. In Scheele's proceſs the mercury was converted into the ſecond oxyd, which, when the muriat of ſoda was added, about three-fourths of the muriat were formed, and one-fourth of oxymuriat of mercury. By diſſolving the mercury ſlowly, nothing but the protoxyd is formed, and not the leaſt proportion of oxymuriat will be left in the ſolution, after the muriat is precipitated.

The oxyd of mercury in the muriat, as we have before ſhewn, is the protoxyd, that of oxymuriat being the peroxyd; but the oxyd of the oxynitrat is, in all probability, the ſecond oxyd. It will appear, therefore, from theory, and experience confirms it, that one part of the ſecond oxyd in the nitrat gives up an atom of oxygen to the other part, and thus dividing the reſulting ſalts into muriat and oxymuriat, the former being precipitated, while the latter remains diſſolved in the liquid. This idea is ſtrongly confirmed by experiment. If lime-water be added to the oxynitrat a yellow oxyd is precipitated, which is the ſecond oxyd. If lime-water be added to the muriat precipitated from the oxynitrat, the black or firſt oxyd is obtained; but if the ſame be added to the liquor from whence the muriat has been precipitated, the red or third oxyd will fall down. If the mercury be diſſolved in dilute nitric acid in the cold, the ſimple nitrat will always be formed, in which the oxyd is a protoxyd. The whole of this oxyd will combine with the muriat, when the muriat of ſoda is added to form the muriat of mercury. This is by far the moſt ſimple and ſafe proceſs for making calomel. If the mercury be diſſolved with heat, the oxyd of the nitrat will be the ſecond oxyd, which conſtitutes the oxynitrat. When muriat of ſoda is added to this, one-half of the mercury combines with an extra atom of oxygen, at the ſame time the other loſes an atom, reducing one-half to the protoxyd, and the other to the peroxyd; the former combines with the muriatic acid to form muriat of mercury, the other combines with another portion of acid to form the oxymuriat. This latter ſalt is then divided into a ſuper and a ſalt, the former remaining in ſolution, the latter falling down with the muriat. Hence it will appear, that when the oxynitrat is uſed, we do not obtain a pure muriat. An improved method of ſubliming calomel has been invented, which may be conſidered a valuable diſcovery. Inſtead of ſubliming it into a cake, as in the old way, it is ſublimed into water. By this means the ſalt is completely freed from any ſoluble matter. The muriat of mercury, when pure, is in the ſtate of white powder. It is nearly inſoluble in water, requiring 1152 parts of boiling water to diſſolve 1 of this ſalt. By expoſure to the air it becomes of a deeper colour. It ſublimes at a heat leſs than that required to ſublime the oxymuriat. Hence it happens, that the latter ſalt is always attached to the under ſide of the ſublimed cake of the former, when the two ſalts are ſublimed together. This affords the means of their ſeparation, by detaching the oxymuriat and ſubliming again. When the muriat is mixed with water, and oxymuriatic gas paſſes through it, it is converted into oxymuriat of mercury. Nitric acid diſſolves it with the diſengagement of nitrous gas. The reſult becomes a mixture of oxymuriat and oxynitrat. The laſt fact furniſhes an eaſy method of analyſing the ſalt, and has been taken advantage of by Chenevix and Zaboada. When it is diſſolved in nitric acid, nitrat of ſilver precipitates the muriatic acid. The former chemiſt by this means found 100 parts of the ſalt or calomel to conſiſt of 11.5 parts of muriatic acid, and 88.5 protoxyd, or 79 of mercury, and 9.5 of oxygen. The latter chemiſt, from 100 grains of the ſalt, obtained 10.6 of acid; he then precipitated the mercury with muriat of tin, which amounted to 85 grains: the reſt was oxygen, which was 5 *per cent*, very nearly agreeing with that above given, which was 4.5 *per cent*. By the latter, therefore, we have 10.5 muriatic acid, and 89.5 of protoxyd of mercury. By hypotheſis $\frac{147 + 7 + 22}{22} = \frac{100}{12.5}$. This gives 12.5 muriatic acid, and 87.5 of protoxyd.

Calomel nine times ſublimed forms what ſome have called the "Mercurial Panacea."

Oxymuriat of Mercury.—This ſalt is generally known by the name of *corroſive ſublimate*. It has long been known for its dreadful effects on the animal ſyſtem when taken on the ſtomach in too large a quantity, and as a medicine in moderate doſes. It was underſtood by the alchemiſts, and has been tolerably well deſcribed by Albertus Magnus.

A great variety of proceſſes has been invented for preparing it, moſt of which are complicated and uncertain. We ſhall, therefore, give the direct method only, which is ſimple and economical.

We have ſeen in the formation of the muriat of mercury, by triturating it with running mercury, that if the oxymuriat had not an extra doſe of acid, as well as an extra doſe of oxygen, the proportion of acid in the oxymuriat ought to be leſs than that in the muriat, becauſe no addition of acid is employed with the running mercury. We muſt conſider the ſalt in queſtion, therefore, not as the oxymuriat of mercury, but the ſuper-oxymuriat. It was ſome time ago aſſumed by Gay Luſſac, as a principle, that in all ſalts in which the baſes combined with an extra doſe of oxygen, the acid was increaſed in a proportionate degree. The preſent ſalt and ſome others ſeem to countenance ſuch an opinion, but the principle is far from being general. We have many inſtances of ſuper-ſalts without an increaſe of oxygen in the baſe. There are alſo oxy-ſalts without an increaſe of acid. In the oxyſulphats of mercury above treated, one of them has merely an exceſs of oxygen in the baſe of the ſalt. The other has both an exceſs of oxygen and an exceſs of acid, the firſt being a ſulphat, and the ſecond a ſuper-oxyſulphat. The oxyſulphat of iron has no extra doſe of acid; ſince the nitric acid alone, when too great a heat is not applied, is ſufficient to convert the green ſulphat into the red or oxyſulphat. This ſalt, however, is frequently reſolved into two diſtinct ſalts, *viz.* the ſuper-oxyſulphat and a ſub-ſalt, a proof that an exceſs of baſe is as common to the oxy-ſalts as an exceſs of acid. The oxymuriat of mercury may be prepared by directly adding muriatic acid to the red or peroxyd of mercury. The ſolution affords cryſtals by evaporation. It may alſo be formed by paſſing oxymuriatic gas through a ſolution of the nitrat of mercury, or through a mixture of water with any of the oxyds of mercury, and then evaporating the ſolution to obtain the ſalt in cryſtals. In making the muriat by adding muriat of ſoda to the ſolution of oxynitrat of mercury, it has been ſhewn that the ſecond oxyd is divided into the protoxyd and the peroxyd, the former combining with one atom of acid, forming the muriat, which falls down; the other portion combining with two atoms of acid, forming the ſalt in queſtion, and remaining diſſolved in the liquid. It would appear that this latter ſalt could not be formed if an exceſs of muriatic acid were not preſent, in order to give to the oxymuriat its double doſe of acid. The ſolution of mercury in the nitric acid has generally an exceſs of acid, which diſengages muriatic acid from the muriat of ſoda, to make up for this demand. It would be worth while to make the experiment with a ſaturated ſolution of nitrat of mercury, and with a neutral ſolution of muriat of ſoda. Would an oxymuriat of mercury, ſtrictly ſpeaking, be formed? Or would this ſalt be reſolved into a ſub-oxymuriat of mercury, and a ſuper-oxymuriat? Experiment muſt decide

cide this point. The oxymuriat of mercury has generally been employed in medicine and the arts in the ſtate after ſublimation. It is then a white ſemitranſparent maſs in needle-formed priſmatic cryſtals. Its aggregation is very great, on which account it is ſcarcely ſoluble in cold water. If, however, it be rubbed in a mortar with boiling water, it diſſolves nearly $\frac{1}{3}$d of its weight. When cold, however, it does not retain more than $\frac{1}{20}$th. The oxymuriat, therefore, made by ſublimation, ſhould not be attempted to be diſſolved in cold water, becauſe of its great aggregation.

When this ſalt is formed by evaporation, or when its cryſtals are formed in the humid way, it is more to be depended upon. Theſe cryſtals will immediately diſſolve in three or four parts of boiling water, and in about 20 of cold water. The form of the humid cryſtals is that of quadrangular priſms, rather rhomboidal. An analyſis of this ſalt has been made by Chenevix, by Zaboada, and by Meſſrs. Braumcamp and Sigueira Oliva. The firſt makes it

18 Muriatic acid
82 Peroxyd, *i. e.* 69.7 mercury, and
12.3 oxygen.
100

The ſecond 19.5 Acid
80.5 Peroxyd
100

The latter 18.8 Acid
81.2 Peroxyd
100

We ſhall ſee from the following calculation, that this ſalt is ſuper-oxymuriat of mercury; the acid 2 × 22, the oxygen 3 × 7, and the mercury 147; $\frac{147 + 21 + 44}{44} = \frac{100}{20.7}$, which gives 20.7 acid, and 79.3 of peroxyd.

The neutral oxyſulphat would be $\frac{147 + 21 + 22}{22} = \frac{100}{11.6}$, or 11.6 acid, and 88.4 of peroxyd; ſo that the near agreement in the above analyſis, and their great difference from this laſt ſtate, leave no doubt of the ſalt in queſtion being a ſuper-ſalt.

It is frequently a matter of much importance to be able to detect the preſence of this ſalt, particularly when it has been adminiſtered as a poiſon. The life of an individual ſometimes depends upon the reſult of a chemical teſt, many of which are very ambiguous. How very neceſſary, therefore, it is to be able to detect the preſence of very ſmall portions of this ſubſtance by ſome method which will be ſo ſimple and certain as to be uſed by any individual. We ſhall here give the common methods which have been recommended by different chemiſts.

If the fluid containing the corroſive ſublimate be colourleſs and clear, ſuch as water, ſulphuretted hydrogen gas paſſed through the fluid will change it to firſt a yellow colour, which gets deeper, and if the quantity of ſublimate be conſiderable, it will become black. This gas may be obtained as follows. Heat a bar of iron to a bright red, and rub the heated part with a roll of ſulphur. A ſulphuret of iron will be formed, which will fall off in drops. Let this ſubſtance be put into a common phial, to which a cork muſt be fitted, through which is paſſed a bended glaſs tube. Then to one part of the ſulphuret of iron add one of ſulphuric acid, and five of water. Inſert the cork with its tube as quick as poſſible, and let the gas which eſcapes paſs through the fluid ſuppoſed to contain the ſublimate, which, if that ſubſtance be preſent, will change colour in a few minutes. It muſt be obſerved, that the ſame gas would give a yellow colour if the fluid contained arſenic. The latter, however, is more of a golden yellow, and remains permanent, while the former changes to a dark brown. Pure potaſh or lime water is an excellent teſt for the oxymuriat of mercury. When ſolutions of the above ſubſtances are dropped into a fluid containing the ſmalleſt portion of corroſive ſublimate, the potaſh produces a bright orange coloured precipitate, which is the peroxyd of mercury. The lime water produces a ſimilar precipitate, but rather more inclining to a brick-red colour.

A very ſenſible teſt for corroſive ſublimate was ſome time ago propoſed by Dr. Boſtock of Liverpool, which was the muriat of tin. When a few drops of a ſolution of tin in muriatic acid are added to any fluid containing the ſmalleſt portion of oxymuriat of mercury, a very conſpicuous milky whiteneſs inſtantly appears. This is occaſioned by the oxyd of tin ſeizing the exceſs of oxygen in the oxymuriat of mercury, by which a quantity of the oxyd of tin, or rather, perhaps, the ſubmuriat, is inſtantly ſet free, and at the ſame time the oxymuriat of mercury is converted into muriat, which is alſo precipitated. Hence this very conſpicuous phenomenon ariſes from the joint precipitation of the above ſubſtances. Senſible as this may be, it is not to be relied upon, except in the hands of very accurate obſervers. When muriat of tin is dropped in water, it becomes milky by the precipitation of the ſubmuriat of tin, even where no corroſive ſublimate is preſent. Hence, if more water be preſent with the ſuſpected matter, than will be calculated to keep the tin ſuſpended, the reſult will be ambiguous and uncertain.

From what has been ſaid of the properties of this ſalt, it will appear that any ſubſtance will form a teſt of ſalt which will either precipitate the oxyd, or deprive it of ſome of its oxygen. In the firſt caſe the high coloured red oxyd becomes very conſpicuous: in the ſecond, the oxymuriat of mercury is reduced to the ſtate of muriat, which renders the fluid turbid and milky, from the inſolubility of the latter ſubſtance.

The moſt ſatisfactory appearance of the preſence of corroſive ſublimate would be the mercury itſelf, ſince this ſalt is the only ſoluble muriat to be purchaſed in the ſhops. If the mercury be made to appear in its metallic ſtate, it may almoſt be deemed impoſſible for it to have originated from any other ſubſtance than the oxymuriat of mercury. Fortunately we have it in our power to recommend a method to the public which will anſwer this purpoſe completely. It is ſo ſimple as to be practiſed by any perſon unacquainted with chemiſtry, and it is ſo ſenſible, at the ſame time, that it is impoſſible to ſay how minute a quantity of mercury can be detached.

It is founded upon the principle by which the precipitation of one metal by another, under the influence of electricity, takes place. In order to make the apparatus as ſimple as poſſible, we ſhall uſe, in lieu of a piece of gold wire, a common wedding ring, and when a piece of zinc wire cannot be had, a piece of iron wire will do very well. Let the zinc or iron wire be bent into the ſhape of a parallelogram about two inches long, and about the width of the gold ring. Let this conſiſt of three ſides, two long ſides and one ſhort ſide, that it may have the appearance of a fork or a ſtaple. Tye the ends of the wire to the ring with a bit of thread, ſo that the ſame may be oppoſite to each other, ſeparated by the diameter of the ring. When this is done, the ring and the wire, when laid upon a flat ſurface, will touch the ſurface in two places; the ring in one place, and the ſhort ſide of the parallelogram in another, the touching points being about two inches diſtant: then take a flat piece of window glaſs, or a ſmall looking glaſs, and lay it in a horizontal poſition, ſo that any liquid dropped upon it may not run to any ſide. This being done, prepare a ſmall quantity of dilute ſulphuric or muriatic acid, about four of water to one of acid, and alſo get ſome of the liquid ſuppoſed to contain the corroſive ſublimate. Let the dilute acid be dropped upon the plate, till it ſpreads to the breadth of about one inch and a half. Then, at about half an inch diſtance from it, let the ſuſpected liquid be dropped, till the peripheries of the two circles join. After this, let the apparatus above deſcribed be ſo laid, that the iron wire may touch the dilute acid, and the gold ring the other liquid. If the latter contain corroſive ſublimate, the ring will become covered with mercury on the part which touches the liquid. This appearance will be ſooner in taking place, as the quantity of corroſive ſublimate is greater. When the liquid contains two parts of this ſubſtance, the mercury will be very perceptible upon the ring in five minutes from the time of the connection being made.

Mr. Chenevix, in aſcertaining that corroſive ſublimate was not oxymuriat of mercury, but merely muriat of mercury highly oxydated, has diſcovered a ſalt which is truly the oxymuriat of this metal. By paſſing a current of oxymuriatic gas through water, in which there was ſome red oxyd of mercury, after a time the red oxyd became of a very dark brown colour, and part of it was diſſolved. The liquor was then evaporated nearly to dryneſs, and a mixed ſalt was obtained, conſiſting partly of corroſive muriat, and partly of another ſalt which cryſtallized later than the former, and on being rediſſolved and cryſtallized appeared nearly pure. This ſalt, which has not been much examined, poſſeſſes the eſſential quality of an oxymuriat, in giving out vapours of oxymuriatic acid by the effuſion of the ſulphuric or any ſtronger acid.

Phoſphat of Mercury.—Phoſphoric acid does not act upon mercury, becauſe of the great affinity of phoſphorus for oxygen. This acid, however, combines with the oxyds of mercury, forming phoſphat of mercury. The beſt method of forming this ſalt is by adding phoſphat of ſoda in ſolution to nitrat of mercury: the phoſphoric acid leaves the ſoda to combine with the oxyd of mercury; the compound falling down in the ſtate of white powder. It ſhould be obſerved, that if the phoſphat of ſoda is not made from the acid which is obtained by burning phoſphorus, the reſult will not be correct; ſince the acid obtained from bones is a ſuper-phoſphat of lime: and Mr. Dalton has lately found, that the ſubſtance at preſent uſed in medicine as phoſphat of ſoda, is a triple ſalt, being a phoſphat of ſoda and lime.

Phoſphat of mercury becomes phoſphoreſcent when rubbed in the dark. Like the phoſphat of lead, it affords phoſphorus by diſtillation with charcoal. It is ſaid to anſwer as a ſubſtitute for ſome other mercurials in medicine. It appears from its analyſis to be a ſuper-oxyphoſphat: this, however, does not appear plauſible, from the manner of preparing it. If the nitrat of mercury be fully ſaturated with acid, the mercury cannot unite with more acid than will form a ſimple phoſphat, except the phoſphat of ſoda be a ſuper-ſalt, or that the phoſphat of mercury on its formation, be reſolved into ſub and ſuper-ſalts; both of which fall down together. If the ſolution of mercury employed in the preparation of the ſalt does not contain the ſecond oxyd, the ſalt cannot be an oxy-ſalt, nor can any portion of it become ſo, but at the expence of two ſalts being formed; the one conſiſting of the acid united to the protoxyd, as in the caſe of forming the muriat; and the other conſiſting of the acid united with the peroxyd, forming an oxy-ſalt. There is at preſent ſo much ambiguity in the facts given of this ſalt, that we cannot be warranted at preſent in propoſing any thing concluſive. The neutral phoſphat with the protoxyd, if ſuch a ſalt exiſt, will be as follows: $\frac{147 + 7 + 23}{23} = \frac{100}{13}$, or 13 acid, and 87 baſe. The oxyphoſphat will be $\frac{147 + 21 + 23}{23} = \frac{100}{12}$, or 12 acid and 88 baſe. The ſuper-oxyphoſphat is $\frac{147 + 21 + 46}{46} = \frac{100}{21.5}$, or 21.5 acid, and 78.5 baſe. According to the analyſis of Braumcamp and Sigueira, it conſiſts of 28.5 acid, and 71.5 of the peroxyd. The ſub-oxyphoſphat of mercury, which in all probability may exiſt, will conſiſt as follows: $\frac{(147 + 21) . 2 + 23}{23} = \frac{100}{6.1}$, or 6.1 of acid, and 3.9 of peroxyd.

Fluat of Mercury.—Fluoric acid has no action upon mercury. When an alkaline fluat is added to a ſolution of nitrat of mercury, an inſoluble powder falls down, which is the fluat of mercury. Nothing more is known of this ſalt.

Borat of Mercury.—This ſalt may, like the laſt, be formed by adding borat of ſoda to nitrat of mercury, the boracic acid having no action upon the metal. It falls down in the form of inſoluble powder, like the laſt ſalt.

Carbonat of Mercury.—Carbonic acid does not act upon mercury. This ſalt is formed by adding carbonat of potaſh to nitrat of mercury. The ſalt is precipitated in the ſtate of powder of a white colour, and is known in medicine by the name white precipitate of mercury. According to the analyſis of Bergman, it conſiſts of 90.9 mercury, and 9.1 of oxygen and carbonic acid. By hypotheſis it is $\frac{147 + 14 + 19}{19} = \frac{100}{1.1}$, or 11 of acid, and 89 of the ſecond oxyd. When this ſalt is expoſed to heat, the carbonic acid flies off, and leaves the yellow oxyd.

The precipitate formed by adding the carbonat of potaſh to oxynitrat of mercury is ſeldom a true carbonat. At the moment it is precipitated, it appears of a beautiful white; but upon ſhaking the mixture ſome carbonic acid eſcapes, and the precipitate aſſumes a yellowiſh hue. It is therefore certain, that the precipitate becomes ultimately a ſub-carbonat. If it were to remain a carbonat, no carbonic acid ought to eſcape. The proportions under theſe circumſtances are $\frac{2 . (147 + 14) + 19}{19} = \frac{100}{5.5}$, or 5.5 of carbonic acid, and 94.5 of the yellow oxyd. The oxygen in this ſalt is 4.1 *per cent.* This, added to the acid, gives 9.6 of oxygen and acid together, which very nearly agrees with the analyſis of Bergman above given. Hence it will appear that this was the ſalt which he analyſed, and not the carbonat.

nat. The ſub-carbonat obtained from the nitrat, which gives the protoxyd, is perfectly white.

Acetat of Mercury.—The acetic acid does not act upon mercury; but it diſſolves its oxyds, forming ſeveral ſpecies of ſalts. When a ſolution of the acetat of potaſh is added to a ſolution of the nitrat of mercury, the acetic acid combines with the protoxyd, and is precipitated in the form of flat ſcaly cryſtals, reſembling boracic acid, which is the true acetat of mercury. If the oxynitrat be employed which contains the ſecond oxyd, in all probability a change takes place ſimilar to that in the formation of the muriat, by adding muriat of ſoda. The oxyd is equally divided into the prot and peroxyd, by which an acetat, with ſome ſub-oxyacetat, is formed, while a ſuper-oxyacetat will remain diſſolved. This ſalt is inſoluble in alcohol, and nearly ſo in water.

Oxyacetat.—This ſalt may be formed by diſſolving the peroxyd in the acetic acid. When evaporated it does not cryſtallize, but forms a yellow coloured maſs, which is deliqueſcent. When water is added to it, the ſalt is changed into a ſub-oxyacetat, which precipitates in the ſtate of a yellow powder, and a ſuper-oxyacetat, which remains diſſolved. When the oxyacetat is heated, the acetic acid deprives the mercury of ſome oxygen, and cryſtals of the acetat are formed.

Oxalat of Mercury.—Oxalic acid, as well as the other vegetable acids, has no action upon mercury. It combines with the oxyd of mercury, forming an oxalat which is nearly inſoluble in water. This ſalt turns black by the action of light; and, according to the authority of Klaproth, it detonates when heated. Dr. Thomſon thinks this ſalt a conſtituent of the fulminating mercury of Howard.

Tartrat of Mercury.—If tartrat of potaſh be added to a ſolution of nitrat of mercury, the tartrat of mercury will be precipitated in the ſtate of white powder. It is changed to a yellow colour by expoſure to light.

Citrat of Mercury.—This ſalt is ſcarcely ſoluble in water. It is decompoſed by diſtillation; the oxyd being reduced by the carbon and hydrogen of the acid.

The *Succinat of Mercury* is ſlightly ſoluble.

The *Benzoat of Mercury* is inſoluble in water: it ſublimes by heat, and is decompoſed by the ſulphuric, nitric, and muriatic acids.

The *Malat* of this metal is an inſoluble powder.

Pruſſiat of Mercury.—This ſalt may be formed by boiling the red oxyd of mercury with Pruſſian blue in water. It is ſoluble in water to a certain extent, and the ſolution affords cryſtals of a priſmatic form. It is generally employed to get pure pruſſic acid, by diſtillation with ſulphuric acid.

Arſeniat of Mercury.—When arſenic acid and mercury are heated together in a retort, the mercury is oxydized, and oxyd of arſenic is volatilized, leaving the arſeniat of mercury. This ſalt may alſo be formed by adding the arſeniat of potaſh to nitrat of mercury in ſolution. The arſeniat of mercury is precipitated in the form of yellow powder.

Molybdat of Mercury, with the protoxyd, is inſoluble, but ſoluble with the peroxyd, which forms an oxymolybdat.

Chromat of Mercury is formed by an alkaline chromat with nitrat of mercury. It falls down in the ſtate of powder of a purple colour. Several triple ſalts of mercury have been noticed by chemiſts.

Nitro-oxymuriat of Mercury has been pointed out by Berthollet. It is formed by adding a ſolution of muriat of ſoda to oxynitrat of mercury. A ſalt is obtained by evaporation in rhomboidal cryſtals. May not this ſalt be merely a mixture of muriat of ſoda and ſuper-oxymuriat of mercury cryſtallized together on account of the ſimilarity of their form?

Oxymuriat of Soda and Mercury.—This is no doubt the ſuper-oxymuriat of mercury cryſtallized with muriat of ſoda, ſince it is formed by adding four parts of ſuper-oxymuriat of mercury to one of muriat of ſoda.

Sub-oxymuriat of Mercury and Ammonia.—When ammonia is poured upon the ſuper-oxymuriat of mercury, the ammonia takes up as much of the acid as leaves the remainder in a ſtate of ſub-ſalt. The two ſalts fall down together in the ſtate of white powder. The analyſis of Fourcroy ſhews it to conſiſt of certain proportions of the two ſalts; which is 16 acid, 81 oxyd, and 3 of ammonia. This gives 14 of muriat of ammonia, and 86 of the ſub-oxymuriat of mercury.

This compound ſalt is ſoluble in muriatic acid. In this ſtate it has been called *ſal alembroth.* In modern nomenclature, it has been denominated the *ammoniaco-mercurial muriat.*

Tartrat of Potaſh and Mercury.—This ſalt is formed by boiling the oxyd of mercury with ſuper-tartrat of potaſh. The oxyd of mercury takes the exceſs of acid from the ſuper-tartrat to form a tartrat. By evaporation the two cryſtallize together.

Mercury combines with the ſulphuret and ſuper-ſulphuret of hydrogen, forming black inſoluble precipitates. The firſt is called hydro-ſulphuret, and the ſecond a hydroguretted ſulphuret.

Mercury is very valuable in the arts on account of ſome of its phyſical properties, principally for conſtructing barometers and thermometers.

For the firſt of theſe uſes the mercury ſhould be perfectly free from air, which it mechanically contains in common with other liquids, and which leaves it when the preſſure of the atmoſphere is removed. If, therefore, a barometer be made with mercury not freed from air, the column conſtituting the barometer will be depreſſed by the ſpring of the air which riſes into the upper part of the tube.

In order to purify mercury for the uſe of barometers and thermometers, it ſhould firſt be diſtilled in a retort of iron or Wedgewood ware. After this, however, it does not acquire its greateſt degree of fluidity, nor does it appear perfectly bright. This is principally owing to its being mechanically mixed with ſome oxyd of mercury. This is completely removed by digeſting it a little time with very dilute nitric acid. It becomes very brilliant and fluid. It muſt now be well waſhed with water, and the water dried up clean. After this it muſt be boiled in the tube it is intended to fill. If, while the tube is hot, it be placed, with the open end upwards, under the receiver of an air-pump, and is ſhaken frequently, a ſtill greater quantity of air is ſet free, and the mercurial column will ſtand higher in conſequence. We can have little dependence upon the abſolute height of the barometer, where this precaution is not taken. See Barometer and Thermometer.

Mercury is extenſively uſed in gilding, but has been productive of great miſchief to the workmen, from their inhaling the vapour which muſt of neceſſity be formed.

We have already given ſome account of this proceſs, ſufficient to ſhew, that if the mercury, when it evaporates, could be forced into ſome channel, without coming near to the workman, and without mixing with the ſmoke of the chimney, its deleterious effects would not only be avoided, but the greateſt part of the mercury would be ſaved, which would be of very great importance to the proprietors of ſuch manufactures as employ gilding on a large ſcale.

We have long been in poſſeſſion of the means of remedying

ing this evil, at an expence which would ſpeedily be reimburſed by the ſaving of the mercury alone.

The furnace to produce the heat ſhould be a common air-furnace, but ſo conſtructed as to contain a veſſel of the nature, though not of the ſhape, of a muffle. Its form would be determined by the ſize and figure of the articles to be gilt. It ſhould have ſuch an opening in front, and be ſo ſpacious within, as juſt to allow the workman to turn the articles freely about during their expoſure to evaporate the mercury. The upper part of the muffle ſhould have a chimney connected with it of earthenware, of the ſame kind as that of the muffle. This chimney muſt paſs for ſome diſtance up the main chimney, in order to be heated for the purpoſe of rarefying the encloſed air, to cauſe a rapid current. The earthen chimney, being carried about a yard high, ſhould now branch out of the main chimney, and be continued with an iron pipe to the height of about twenty feet. This iron pipe ſhould communicate with the earthen tube, by a perpendicular branch from it, within about ſix feet of the bottom of the former, ſo that one part of the iron pipe aſcends to the height of twenty feet, and the other deſcends about ſix feet into a ciſtern of water. By this means a current of air will conſtantly be entering the mouth of the muffle, which muſt of neceſſity carry with it the vapour of mercury, unmixed with any other extraneous matter. The mercurial vapour will be condenſed long before it reaches the top of the iron tube, and will fall into the ciſtern of water below. The water will prevent the oxydation of the mercury between the times of removing it.

Another advantage attending this apparatus, will be the uniform heat to which the evaporable ſurface will be expoſed. The greateſt heat of the fire will be much leſs in this contrivance, and conſequently leſs annoying to the face and eyes of the workman. This evil, however, may be ſtill made leſs, by interpoſing a ſcreen of glaſs between the face and the fire.

Mercury, or *Hydrargyrus*, in the *Materia Medica*. This fluid, ſuppoſed by the Greeks to be poiſonous and corroſive, was introduced into medicine, by the Arabians, as an ingredient in external applications, againſt different cutaneous maladies. The practice was followed by ſome phyſicians in Europe towards the end of the thirteenth century; but was not eſtabliſhed or looked upon in general to be ſafe, till about the beginning of the ſixteenth, when the venereal diſtemper, then lately received from America, was found to yield to mercurial applications alone: and now alſo the internal uſe of mercury began to be ventured on, in this and in other diſeaſes. Crude and fluid mercury taken internally produces no effect on the body; becauſe the adheſion of its integrant parts to each other hinders their diviſion and diſtribution, or ſolution, without which it cannot have any effect. In its crude ſtate, therefore, it does nothing but load the ſtomach and inteſtines. It falls downwards by its weight, and goes out of the body with the fæces, in the ſame ſtate in which it entered. Hence ſome have been induced to give a pound or more in violent conſtipations, in order to open obſtructions that had reſiſted the common methods of cure by purgatives, relaxants, and emollients. But the practice has been attended with no remarkable ſucceſs.

Dr. Dover, in his "Phyſician's Legacy to his Country," having recommended crude mercury or quickſilver as a moſt beneficial medicine for ſeveral diſeaſes, it had for ſome time a great run in London, which occaſioned the writing a great many pamphlets for and againſt it. Dr. Cheyne alſo greatly recommends this medicine in his treatiſe, entitled "The Rational Method of curing Diſeaſes."

The authors of the Medical Eſſays of Edinburgh aſſure us, that though ſome they knew had taken an ounce or two of crude mercury each morning for ſeveral weeks, yet they were not apprized of any inſtance of its increaſing any of the ſenſible evacuations; but they have been told, that ſome who uſed it thus, had paſſed ſome of it with their urine, and that the hands of others, taking this medicine, had tinged their ſnuff-boxes, &c.

But we have an account of the effects of crude mercury on a perſon who had the advice of his phyſician for the taking it, in a remarkable caſe, recorded in the Philoſophical Tranſactions, about the time when Dr. Dover had brought it into ſuch general uſe; and as the effects of it, in this caſe, may ſerve to caution people as to the uſe of it, it may be proper to give the ſubſtance of it, which is this: a perſon had long been ſubject to great difficulty in going to ſtool, for which he at length took ſeveral ounces of crude mercury at different times, but without relief. Upon the opening of the abdomen there iſſued out a great quantity of wind, before the ſtomach or guts were wounded. The ſtomach was empty, and its inner coat violently inflamed. The ſmall guts were, in many places, fouled with a black powder, reſembling æthiops mineral, and in ſeveral parts of them were found ſmall globules of quickſilver. The black powder was doubtleſs the quickſilver altered into a ſort of æthiops in the body. The colon was inflamed and diſtended, and contained ſix quarts of liquid excrement, among which was a great deal of crude mercury, and of the ſame black powder. This gut alſo was inflamed on the outſide, and had formed an abſceſs where it adhered to the omentum; the other guts in contact with this part alſo ſhared this diſorder. On the lower part of the colon the coats became ſchirrous, and the paſſage was very ſmall. Some of the valves were alſo become ſchirrous, and obſtructed the paſſage, and a ſmall plum-ſtone was found buried in the villoſe coat of this inteſtine. This had alſo formed a ſmall abſceſs, which diſcharged itſelf into the pelvis. What part of theſe ſymptoms was owing to the taking the quickſilver is eaſily ſeen, and ſuch effects may be guarded againſt for the future, by obſerving the ſtate of the patient before it is given. Phil. Tranſ. N° 442. p. 295.

But when mercury is much divided, ſo that its molecules cannot again unite and form fluid mercury by the interpoſition of proper ſubſtances, it operates with great power, and extends its action through the whole habit. In theſe forms, whether taken internally, or introduced into the blood from external applications, it ſeems to liquefy all the juices of the body, and may be ſo managed as to promote excretion through all the emunctories. The ſalutary effects of mercurials have, in many caſes, very little dependence on the quantity of ſenſible evacuation. Venereal maladies and chronical diſtempers, proceeding from a viſcidity of the humours and obſtructions of the ſmall veſſels, are often ſucceſsfully cured by mercurials taken in ſuch doſes as not to produce any remarkable diſcharge: eſpecially if aſſiſted by diaphoretics, and a warm diluting regimen. In this view, camphor, and the reſin or extract of guaiacum, are frequently joined to the mercury; and to the more active preparations, a little opium; which not only promotes the diaphoreſis, but prevents the mercury from irritating the firſt paſſages, and running off by the groſſer emunctories. Mercurials are always pernicious in the true ſcurvy, and in conſtitutions inclined to this diſeaſe, whoſe humours are diſpoſed to a putreſcent ſtate; and a long continued uſe of mercury colliquates the whole maſs of blood, and tends to weaken the nerves, ſo as to bring on tremors and paralyſes. Mercurials are deſtructive to inſects, perhaps of every kind: they are ſometimes given internally againſt worms; and Van

Helmont ſays, that water in which mercury has lain ſome time, though inſipid, will deſtroy worms; and Mr. Boyle ſeems to recommend it as an innocent and uſeful coſmetic. Works Abr. vol. iii. p. 345.

Although mercury in its native metallic ſtate is a perfectly inert ſubſtance with reſpect to any operation on the animal ſyſtem, it may be rendered active by ſome changes in its chemical ſtate, or ſome addition to its ſubſtance. When rendered thus active, it ſeems to be a ſtimulus to every ſenſible and moving fibre of the body to which it is applied; and it is particularly a ſtimulus to every excretory of the ſyſtem, to which it is externally or internally applied. Beſides its noted effects upon the excretories of the ſaliva, it ſeems to operate upon the whole of thoſe of the alimentary canal. It proves often diuretic; and Dr. Cullen ſays, that he has met with particular proofs of its reaching and acting upon the organs of perſpiration. Whilſt it is known to operate more upon certain excretions than upon others, it may be preſumed, that when any tolerable quantity is thrown into the body, it is in part diſtributed over the whole; and therefore its medicinal effect is, that it is the moſt univerſal aperient and deobſtruent known. Dr. Cullen, however, contends, in oppoſition to the common opinion, that the effects of its producing evacuations depend entirely upon the ſtimulus given to the excretories, and not at all to any change produced in the ſtate of the fluids. Upon many occaſions of mercury thrown into the body very largely, this author has found no difference in the appearance of the ſtate of the blood drawn out of the veins. From the ſtimulus given by mercury to the whole ſyſtem, he has always found the blood putting on the ſame appearance that it does in inflammatory diſeaſes, nor has he obſerved any circumſtance that implies any diminution of its ordinary conſiſtence. Although it has been the common opinion, that mercury diminiſhes the conſiſtence of the blood, and very much increaſes its fluidity, no evidence or proof of this as a fact, known to Dr. Cullen, has been produced; and he thinks, that it has been taken up upon miſtaken facts, and ſupported by a theory which is without foundation. Upon the whole, our author concludes, that the chief effects of mercurial medicines are to be aſcribed to their general ſtimulus of the ſyſtem, and eſpecially to their ſtimulating the various excretories of it. Concerning its medical effects in the diſeaſe to which it has been moſt generally and moſt efficaciouſly applied, we refer to the article LUES VENEREA. But the various operations of mercury are modified, in a very remarkable degree, by the different preparations of it which have been propoſed and employed. In conſequence of the changes which it undergoes by its numerous preparations, ſo that it is become one of the moſt conſiderable articles in the chemical pharmacy, and a remedy of the moſt extenſive application, it is not only a powerful ſtimulant, but it enters into the circulation, quickens the vaſcular action, and excites powerfully the whole of the glandular ſyſtem, increaſing all the ſecretions and excretions. Hence it happens, that its various preparations produce different effects, operating ſometimes as ſtimulants, aſtringents, cathartics, or emmenagogues, and locally as errhines; and hence it becomes uſeful in a great variety of diſeaſes; ſuch as febrile affections, ſpaſms, cachectic diſeaſes, glandular obſtructions, and cutaneous eruptions. Since Paracelſus, counteracting ancient authority and practice, evinced that it might be exhibited internally, not only with ſafety, but with advantage, during a period of almoſt 300 years, experience has fully ſanctioned its uſe; and as Mr. Pearſon juſtly obſerves, "not one medicine beſides, derived from the animal, vegetable, or mineral kingdom, has maintained its credit, with men actually employed in extenſive practice, during a tenth part of that period." Although it is a medicine capable of being abuſed, to the diſappointment of the patient, and to the injury of the conſtitution, yet under the direction of cautious and judicious practitioners, it may rank as one of the moſt uſeful of the articles of the Materia Medica.

The chemical changes which have been propoſed, in order to render mercury active and uſeful, have been many and various; but Dr. Cullen, in his "Materia Medica," refers them to four heads; 1ſt, by being converted into vapour; 2dly, by calcination; 3dly, by triture with viſcid fluids; and, 4thly, by being combined with acids of different kinds. The firſt mode of employing mercury, may perhaps (he ſays) be the beſt adapted to ſome local complaints; but its application to the whole body is attended with ſo much hazard and uncertainty in the adminiſtration, as hardly ever to be an eligible practice. The preparation by calcination is not, as had been formerly ſuppoſed, of any peculiar power or advantage; and is therefore as he believes, little employed in the preſent practice; this operation ſerving merely to put the mercury in a condition to be acted upon by the acids of the ſtomach, and the preparation not differing from others made by a combination with acids. The preparations by triture ſeem to be milder than thoſe formed by a combination with acids; but imperfect triture renders the practitioner often uncertain in their uſe. The triture with unguinous ſubſtances gives the advantage of its being introduced by unction upon the ſkin; and when it has been properly prepared, and is properly adminiſtered, it affords a mode of introducing mercury, which is often leſs liable to purging, and therefore more convenient than the employment of the ſaline preparations. Theſe latter are different according to the acid employed.

Thoſe made by the vegetable acid are milder and more manageable than thoſe formed with any of the foſſil acids. Of theſe, the combination with the muriatic acid, when the acid is in its full proportion to the mercury, as it is in the corroſive ſublimate, is certainly more active and powerful than any other ſaline preparation. The uſe of it has been often convenient and effectual; but its operation is ſo different in men of different conſtitutions, that the employment of it requires much management and diſcretion. It is rendered much milder in the preparation of the Mercurius dulcis, which has given occaſion to the frequent employment of this, which, according to Dr. Cullen, does not ſeem to be a very eligible preparation. It does not ſeem to be ſo readily diffuſible in the ſyſtem as many others, becauſe it is more ready than many others to operate upon the inteſtines, and run off by ſtool. This may give it ſome advantages for its being combined with purgatives; but for that reaſon it is leſs fit for being employed to act upon the ſalivary glands, or upon the other excretions of the ſyſtem. Dr. Duncan, in the "Edinburgh New Diſpenſatory," has given a table of officinal preparations of mercury, of which Mr. A. T. Todd has availed himſelf in the valuable "London Diſpenſatory," lately publiſhed. We ſhall take the liberty of inſerting his table for the ſatisfaction of our medical readers, recommending the work itſelf to their peruſal.

Officinal Preparations of Mercury.

I. By diſtillation to purify the metal.
  1. Hydrargyrus purificatus. L. D.
II. By trituration; (ſuboxidized).
a. With animal fat.
    2. Unguentum Hydrargyri fortius. L. Ung. Hydrargyri. D.
    3. Unguentum Hydrargyri. E.

4. Unguentum Hydrargyri mitius. L. D.
5. Linimentum Hydrargyri. L.
6. Emplaſtrum Ammoniaci cum Hydrargyro. L. D.
——— Hydrargyri. L. E.

b. With ſaccharine ſubſtances.
7. Pilulæ Hydrargyri. L. E. D.

c. With carbonate of lime.
8. Hydrargyrus cum Cretâ. L. D.

d. With carbonate of magneſia.
9. Hydrargyrum cum Magneſiâ. D.

III. By the action of heat and air: (oxidized).
10. Hydrargyri Oxydum rubrum. L. Oxydum Hydrargyri. D.

IV. By the action of acids.

a. With ſulphuric acid; (ſuboxidized).
11. Subſulphas Hydrargyri flavus. E. Oxydum Hydrargyri ſulphuricum. D.

b. With nitric acid; (ſuboxidized).
12. Unguentum Hydrargyri nitrati. L. E. Unguentum Supernitratis Hydrargyri. D.
13. Unguentum Nitratis Hydrargyri mitius. E.
——— ——— (oxidized).
14. Hydrargyri Nitrico-oxydum. L. Oxidum Hydrargyri rubrum per Acidum nitricum. E. Oxydum Hydrargyri nitricum. D.
15. Unguentum Hydrargyri nitrico-oxydi. L. Unguentum Oxidi Hydrargyri rubri. E. Unguentum Subnitratis Hydrargyri. D.

c. With muriatic acid.
† ſublimated; (oxidized).
16. Hydrargyri Submurias. L. E. Submurias Hydrargyri ſublimatum. D.
17. Pilulæ Hydrargyri Submuriatis. L.
——— ——— (oxidized and acidified).
18. Oxymurias Hydrargyri. L. Murias Hydrargyri. E. Murias Hydrargyri corroſivum. D.
19. Liquor Hydrargyri Oxymuriatis. L.
†† precipitated; (oxidized).
20. Submurias Hydrargyri præcipitatus. E. D.

d. With acetous acid; (ſuboxidized).
21. Acetis Hydrargyri. E. Acetas Hydrargyri. D.

V. By precipitation with earths and alkalies from acid ſolutions.

a. By lime-water from the nitric ſolution; (ſuboxidized).
22. Hydrargyri Oxydum cinereum. L.

b. By ammonia from the nitric ſolution; (ſuboxidized).
23. Oxydum Hydrargyri cinereum. E. Pulvis Hydrargyri cinereus. D.

c. By ammonia from the muriatic ſolution; (oxidized).
24. Submurias Hydrargyri ammoniatum. D. Hydrargyrus Præcipitatus albus. L.
25. Unguentum Submuriatis Hydrargyri ammoniati. D. Ung. Hydrargyri Præcipitati albi. L.

VI. Combined with ſulphur.

a. By trituration.
26. Sulphuretum Hydrargyri nigrum. E. D.

b. Sublimated.
27. Hydrargyri Sulphuretum rubrum. L. D.

We ſhall here ſubjoin a more particular account of theſe different preparations, as they occur in the London, Edinburgh, and Dublin diſpenſatories, annexing to the modern names the appellations by which they have been diſtinguiſhed in former, now ſuperſeded, nomenclatures.

Hydrargyrus purificatus. Argentum vivum purificatum, P. L. 1745.

Rub together 6lbs. of mercury, by weight, with 1lb. of iron filings, and diſtil the mercury from an iron retort, by the application of heat to it. The E. D. directs four parts of mercury, and one part of filings of iron, to be rubbed together and diſtilled from an iron retort. The Dub. D. procures it by diſtilling off ſlowly 4lbs. from 6lbs. of mercury.

Hydrargyri Acetis, acetite of mercury, is prepared, according to the E. D., by mixing 3 oz. of purified mercury with 4½ oz. or a little more than may be neceſſary for diſſolving the mercury, of diluted nitrous acid; and having diſſolved 3 oz. of acetite of potaſs in boiling water, by adding to this ſolution, while hot, the former, and mixing them by agitation. When the mixture has been ſet aſide to cryſtallize, the cryſtals are waſhed in a funnel with cold diſtilled water, and then dried with a gentle heat.

Hydrargyri Acetas, acetate of mercury, is obtained, according to the directions of the Dub. D., by adding three fluid-ounces of diluted nitrous acid to 3 oz. of purified mercury, and digeſting, when the efferveſcence ceaſes, upon hot ſand, for the complete diſſolution of the metal: then mixing this ſolution with eight pints of boiling diſtilled water in which 3 oz. of acetate of kali have been previouſly diſſolved, and paſſing the mixture immediately through a double linen cloth: afterwards cooling it that cryſtals may be formed, waſhing theſe with cold diſtilled water, and drying them upon paper with a very gentle heat.

All the veſſels in theſe two proceſſes muſt be of glaſs.

The acetate of mercury is antiſyphilitic, and alterative; but it is ſcarcely ever uſed, except as an active ingredient in Keyſer's pills. In ſome cutaneous affections a ſolution of it, in the proportion of two grains in f.℥ii of roſe water, is externally applied. The internal doſe is 1 gr. night and morning.

Hydrargyri oxymurias, oxymuriate of mercury, Hydrargyrus muriatus, P. L. 1787, Mercurius corroſivus ſublimatus, P. L. 1745, P. L. 1720, is prepared, according to the L. D. 1809, by boiling 2lbs. by weight of purified mercury with 30 oz. by weight of ſulphuric acid in a glaſs veſſel until the ſulphate of mercury is left dry: then, rubbing this, when cold, with 4lbs. of dried muriate of ſoda, in an earthenware mortar, and afterwards ſubliming it in a glaſs cucurbit, gradually increaſing the heat. The corroſive ſublimate is denominated *Murias hydrargyri*, or muriate of mercury, in the E. D. and prepared much in the ſame manner. In the Dub. D. it is denominated *Murias hydrargyri corroſivum.* It is prepared by diſſolving 2lbs. of purified mercury in 3lbs. of ſulphuric acid, gradually increaſing the heat until the matter becomes almoſt dry; when cold, rub it with 2½lbs. of dried muriate of ſoda in an earthenware mortar, and then ſublime it, in a proper veſſel, with a gradually increaſed heat. Mr. Chenevix found, that if a bit of copper be put into a ſolution of corroſive ſublimate, a white powder uſually falls to the bottom, and that powder is "calomel." When waſhed, it does not contain an atom of copper, nor of corroſive ſublimate.

This ſalt is a powerful ſtimulant and alterative; and in large doſes it is one of the moſt violent of the metallic poiſons. It was formerly much extolled as an antiſyphilitic; but Mr. Pearſon obſerves, that even in checking the progreſs of the ſecondary ſymptoms, relieving venereal pains, and healing ulcers of the throat, it never confers permanent benefit.

It is ſaid to be uſed with greater advantage in old ulcers, chronic rheumatiſm, and cutaneous diſeaſes, particularly *lepra.* (See LEPROSY.) The ſenſible operation of this ſalt is by urine, but ſometimes it occaſions the moſt violent nauſea, griping, and purging; in which caſe it ſhould be combined with opium; and during the uſe of it, it is neceſſary to take ſome mucilaginous fluid, in order to allay its irritation. It is alſo uſed as an external application. The doſe is from $\frac{1}{8}$th to $\frac{1}{4}$th of a grain, twice a day, formed into a pill with a crumb of bread or extract of poppies. Van Swieten brought this ſalt into more general uſe for the cure of venereal maladies: he diſſolves a grain of the ſublimate in 2 oz. of proof ſpirit, but rectified ſpirit diſſolves it more perfectly, and gives of this ſolution from one to two ſpoonfuls twice a day, continuing the medicine ſo long as any of the ſymptoms remain, with low diet, and plentiful dilution. There are many inſtances in the London Med. Obſ. and Enq. of the ſucceſs of this method.

Hydrargyri oxymuriatis Liquor, ſolution of oxymuriate of mercury, is prepared by diſſolving eight grains of oxymuriate of mercury in fifteen fluid-ounces of diſtilled water, and adding to it a fluid-ounce of rectified ſpirit. This ſolution is directed (P. L. 1809) in order to facilitate the adminiſtration of diviſions of the grain of this active medicine. Each fluid-drachm contains $\frac{1}{16}$th of a grain of the ſalt. This may be given as an antiſyphilitic in doſes of from f.ʒſs to f.ʒij, in f.℥ij of linſeed infuſion, or water and ſyrup, and in more minute doſes, when its effects as an alterative only are required. As a local application, this ſolution diluted with two parts of water forms an uſeful gargle in venereal ſore-throat, and without dilution it ſerves as a gargle for breaking the abſceſs in cynanche tonſillaris, when ſuppuration takes place. Diluted with an equal quantity of water, it is employed as a waſh againſt tetters and pſora; and very largely diluted, it may be uſed as an injection in gonorrhœa, or given in the form of enema, when the ſtomach will not bear it. This ſublimate is a violent eſcharotic, and eats away proud fleſh: half a drachm of it diſſolved in a pint of lime-water turns it yellow; it is then called "phagedænic water," and is uſed to waſh ulcerous and tetterous eruptions. A ſtrong ſolution, made by boiling the ſame quantity of powdered ſublimate with equal its weight of alum in a pint of common water, until half the liquor is waſted, is the "alluminous water" applied to the ſame purpoſe.

Hydrargyri ſubmurias, ſubmuriate of mercury, Calomelas, Hydrargyrus muriatus mitis, P. L. 1787, Mercurius dulcis ſublimatus, P. L. 1745, Aquila alba, Manna metallorum, Sublimatum dulce, is prepared, according to P. L. 1809, by rubbing together 1lb. of oxymuriate of mercury with 9 oz. by weight of purified mercury, until the metallic globules diſappear, then ſubliming, taking out the ſublimed maſs, pulverizing it, and ſubliming it in the ſame manner twice more ſucceſſively; and, laſtly, bringing it into the ſtate of very fine powder, by the ſame proceſs which is directed for the preparation of chalk. A very elegant and uſeful modification of this proceſs has lately been adopted by Mr. Howard, chemiſt, who ſublimes the ſubmuriate into water, with the vapour of which it mixes as it ariſes in its gaſeous form, and ſubſides at once as a fine impalpable precipitate to the bottom of the water. Formerly preparations of mercury analogous to this were diſtinguiſhed according to the number of ſublimations they had undergone. After three ſublimations it was mercurius dulcis, after ſix, calomelas, and after eight, panacea mercurialis; but, according to Beaumè, a ſmall portion of oxymuriate is formed by each of theſe repeated ſublimations, probably from the abſorption of oxygen by the heated preparation from the air of the veſſels, and hence no advantage, but rather the contrary, muſt ariſe from an increaſed number of the operations. The Pharmacopeia of 1745 had ſix ſublimations; that of 1787, as the directions ſeem to expreſs it, five; and now they are reduced to three, which are, in fact, fully ſufficient, eſpecially with that ſubſequent application of water which the mode adopted for reducing it to a fine powder requires.

Hydrargyri ſubmurias, ſive *Calomelas*, Edinb. D. Submuriate of mercury, or calomel; is obtained by rubbing together 4 oz. of muriate of mercury pulverized in a glaſs mortar with 3 oz. of purified mercury, in a glaſs mortar with a little water, to prevent the acrid powder from riſing, until the mercury be extinguiſhed; putting the dried powder in an oblong phial, one-third full, and ſubliming it in a ſand-bath. When the ſublimation is completed the phial is broken, and the red powder round its bottom, and the white at its neck, are rejected; the reſt of the maſs is ſublimed, and reduced to a fine powder, which is, laſtly, to be well waſhed with boiling diſtilled water.

Hydrargyri, Submurias ſublimatum, ſive *Calomelas*, Dub. D. is prepared much in the ſame manner with that of the Lond. Pharmac. The final trituration and levigation are intended to ſeparate any corroſive muriate that may have been formed; and in order to aſcertain this, the Dublin college preſcribes the following teſt; the ſublimed matter is pulverized and repeatedly waſhed with diſtilled water, until the ſolution poured off, no longer lets any ſediment fall on the addition of a few drops of carbonate of kali.

Calomel is the moſt uſeful and the moſt frequently employed of all the preparations of mercury. It is antiſyphilitic, antiſpaſmodic, alterative, deobſtruent, purgative, and errhine. As a remedy in ſyphilis, it can be fully confided in, when its diſpoſition to run off by the bowels is counteracted by opium; and in the ſame ſtate of combination it is alſo found efficacious in ſeveral convulſive affections, as epilepſy, triſmus, and tetanus; and in that ſpecies of ſpaſmodic ſtricture which occurs in virulent gonorrhœa. As an alterative and deobſtruent, it is employed with advantage in cutaneous eruptions, as lepra, ſcabies, and pſora, in which caſes it is combined with antimonials and guaiacum; and in hepatitis, and glandular obſtructions; in dropſies it aſſiſts the action of ſquill and foxglove; and as a purgative it may be employed with ſafety in almoſt every form of diſeaſe not attended with viſceral inflammation, or where there are not great irritability and delicacy of habit. Calomel, however, does not act with certainty as a purgative even in large doſes, and hence it is generally combined with ſcammony, jalap, or ſome other active cathartic. The uſual doſe to affect the habit and produce ptyaliſm is from gr. j to grs. ij, in a pill with opium, given night and morning; and from grs. iij to grs. viij act in general as a purgative: but in ſome complaints, as yellow fever and croup for example, in which it is ſuppoſed to exert a ſpecific effect, this doſe has been repeated every two or three hours, until upwards of 100 grains have been taken in a very ſhort ſpace of time.

On account of its inſolubility and great ſpecific gravity, it can be given only in the form of pills.

Hydrargyri Submurias precipitatus, precipitated ſubmuriate of mercury, Edinb. is prepared by mixing 8 oz. of purified mercury with the ſame quantity of diluted nitrous acid, and towards the end of the efferveſcence digeſting with a gentle heat, the veſſel being frequently ſhaken; at the ſame time let 4½oz. of the muriate of ſoda be diſſolved in 8lbs. of boiling water; and to this let the other ſolution be added while it is warm, and let them be mixed very quickly together. After the precipitate has ſubſided, pour off the ſaline fluid, and waſh the ſubmuriate of mercury by frequent affuſions of warm water, which are to be poured off each time after the precipitate ſubſides, until the water comes off taſteleſs.

Hydrargyri Submurias precipitatum is obtained by pouring five fluid-ounces of diluted nitrous acid on 7 oz. of purified mercury in a glaſs veſſel, and at the termination of the efferveſcence digeſting with a gentle heat for ſix hours, with frequent agitation. The heat, ſhould then be ſomewhat raiſed that the ſolution may boil a little, which being poured off from the reſidual mercury, ſhould be quickly mixed with 10lbs. of boiling water, in which 4 oz. of muriate of ſoda have been previouſly diſſolved; the ſubſiding powder is waſhed with warm diſtilled water, as long as the fluid poured off from it yields a precipitate on the addition of a few drops of the ſolution of ſubcarbonate of kali; and laſtly, it is to be dried. In reference to theſe proceſſes of the two colleges, we may here note, that Mr. Murray has aſcertained, that the quantity of mild muriate obtained from a ſolution of ℥j of mercury in the diluted nitric acid in the cold is a little more than ℥j; while from the ſame quantity diſſolved with the application of heat, the precipitate did not exceed ℥ſs, while the liquor held diſſolved much more corroſive muriate than the other. Hence it may be inferred, that the greateſt proportion of pure mild muriate of mercury by precipitation may be obtained, by preparing the nitrat ſlowly, and without the aid of heat, which ought not to be employed in any part of the proceſs.

The properties of this ſubſtance are eſſentially the ſame with thoſe of common calomel, and therefore it may be regarded as ſuperfluous.

Hydrargyrus precipitatus albus, white precipitated mercury, Calx hydrargyri alba, P. L. 1787, Mercurius precipitatus albus, P. L. 1745, is prepared, according to the directions of the London college, P. L. 1809, by firſt diſſolving ½lb. of muriate of ammonia, and then the ſame quantity of oxymuriate of mercury, in four pints of diſtilled water, and adding to it half a pint of the ſolution of ſubcarbonate of potaſs; then waſhing the precipitated powder until it becomes taſteleſs, and afterwards drying it.

Hydrargyri Submurias ammoniatum, ammoniated ſubmuriate of mercury, Dub. is obtained by adding to the fluid which has been poured off from the precipitated ſubmuriate of mercury a quantity of water of cauſtic ammonia ſufficient to precipitate the whole of the metallic ſalt; then waſhing the precipitate with cold diſtilled water, and drying it upon bibulous paper. This preparation is only uſed, in combination with lard, as an ointment for the cure of the itch, and ſome other cutaneous eruptions. See UNGUENTUM *Hydrargyri præcipitati albi.*

Hydrargyrus cum Creta, mercury with chalk, Mercurius alkalizatus, P. L. 1745, is prepared by rubbing together 3 oz. by weight of purified mercury with 5 oz. of prepared chalk, until the metallic globules diſappear. As this preparation is milder than any other mercurial one, and does not ſo eaſily act upon the bowels, it is very much uſed by many practitioners. It appears to be ſlightly oxydized by the trituration, as it contains, according to Fourcroy, only $\frac{4}{105}$ of oxygen.

Hydrargyrum cum Creta, mercury with chalk, of the Dublin college, is prepared in the ſame manner as the mercury with magneſia, employing precipitated chalk inſtead of magneſia. This ſubſtance is alterative, and occaſionally preſcribed in tinea capitis, and other cutaneous affections; but it merits very little attention. The doſe may be from 5 gr. to ʒſs, given twice a day, mixed in any viſcid ſubſtances.

Hydragyrum cum magneſia, mercury with magneſia, of the Dublin college, is prepared by triturating an ounce of mercury with the ſame quantity of manna in an earthen mortar, adding as many drops of water as will give to the mixture the thickneſs of ſyrup, and continuing the rubbing until the metallic globules diſappear; then adding, whilſt the trituration is continued, a drachm of magneſia, and after the whole is well mixed, a pint of hot water, agitating the mixture. When it has remained ſome time at reſt, that the ſediment may ſubſide, decant from it the fluid, repeat the waſhing a ſecond and a third time, that the whole of the manna may be removed; and add the remainder of the magneſia to the ſediment, while it is ſtill moiſt: and laſtly, dry the powder upon bibulous paper. The addition of the manna in this and the former proceſs is intended only to facilitate the oxydizement of the mercury; and it is afterwards removed by the ſubſequent waſhings, ſo that the product remains a grey or black oxyd of mercury mixed with magneſia. This preparation is of no great importance.

Hydrargyri nitrico-oxydum, nitric oxyd of mercury, Hydrargyrus nitratus ruber, P. L. 1787, Mercurius corroſivus ruber, P. L. 1745, Mercurius precipitatus corroſivus, P. L. 1720, is prepared by the directions of the Lond. Pharm. by mixing in a glaſs veſſel 3lbs. by weight of purified mercury, 1½ lb. by weight of nitric acid, in two pints of diſtilled water, and boiling the mixture in a ſand-bath until the mercury being diſſolved and the water evaporated, a white maſs remains. Rub this into powder, and put it into another ſhallow veſſel, then apply a moderate heat, and raiſe the fire gradually until the red vapour ceaſes to ariſe. The component parts of this oxyd are, according to Fourcroy, mercury 92, and oxygen 8; according to Chenevix, mercury 85, oxygen 15.

Hydrargyri Oxydum rubrum per acidum nitricum, olim, *Mercurius precipitatus ruber*, Edinb. red oxyd of mercury by nitric acid, formerly red precipitate of mercury. Diſſolve a pound of purified mercury in 16 oz. of diluted nitrous acid; and evaporate the ſolution over a gentle fire to a dry white maſs, which being rubbed to a powder, is to be put into a glaſs cucurbit, and covered with a thick plate of glaſs: then adapt a capital to the veſſel, and having placed it in a ſand-bath, let the contained matter be roaſted with a fire gradually raiſed until it paſs into very red ſmall ſcales.

Hydrargyri Oxydum nitricum, Dub. nitric oxyd of mercury. Mix 10 oz. of purified mercury, and ten fluid-ounces of diluted nitrous acid in a glaſs, and diſſolve the mercury with a gradually raiſed heat: then increaſe the fire until the reſiduary matter in the bottom of the veſſel be converted into red ſcales.

Nitric oxyd of mercury is ſtimulant and eſcharotic. It is merely uſed externally, when rubbed into a fine powder, as a ſtimulant to old ſores, and for deſtroying fungus. As a powder, in the proportion of gr. ſs. to grs. iv of ſugar, it is blown into the eye to remove ſpecks in the cornea; and formed into an ointment with lard, it is an uſeful application to ulcerations of the eye-lids, and to chancres. See UNGUENTUM *Hydrargyri nitrico-oxidi.*

Hydrargyri oxydum rubrum, red oxyd of mercury, Hydrargyrus calcinatus, P. L. 1787, Mercurius calcinatus, P. L. 1745, is prepared by pouring *e. g.* 1lb. by weight of purified mercury into a glaſs matraſs with a very narrow mouth and broad bottom: apply a heat of 600° to this veſſel, without ſtopping it, until the mercury has changed into red ſcales; then reduce theſe to a very fine powder. The whole proceſs may probably require an expoſure of ſix weeks.

Hydrargyri oxydum, Dubl. oxyd of mercury, is obtained by taking any quantity of purified mercury, and proceeding as in the laſt article.

According to Lavoiſier 100 parts of this oxyd contain 7 of oxygen; Fourcroy makes the proportion of oxygen 8, and Chenevix, 15 parts.

This is a very active preparation of mercury, and has been employed by ſome eminent practitioners, *e g.* John Hunter, as an internal remedy in ſyphilis. See LUES VENEREA. Its effects, however, are violent, ſo that it is now ſcarcely ever employed internally, or as an antiſyphilitic. The doſe may be gr.j combined with gr.ſs of opium, in the form of pill, night and morning. It is chiefly uſed as an external ſtimulant and eſcharotic in the ſame caſes as the nitric oxyd; being previouſly rubbed to a fine powder, and either ſprinkled over the ulcers, or united with lard, and applied as an ointment.

Hydrargyri oxydum cinereum, grey oxyd of mercury, is formed, according to the inſtructions of the Lond. Pharm., by boiling an ounce of ſubmuriate of mercury in a gallon of lime-water, conſtantly ſtirring until a grey oxyd of mercury is ſeparated; waſh this with diſtilled water, and then dry it. The ſame preparation of the Edinb. Diſp. is formed of four parts of purified mercury, five parts of diluted nitrous acid, 15 parts of diſtilled water, and a ſufficient quantity of water of carbonate of ammonia. Diſſolve the mercury in the acid; add gradually the diſtilled water, then pour in as much water of carbonate of ammonia as may be ſufficient for precipitating the whole of the oxyd of mercury, which is to be afterwards waſhed with pure water, and dried.

Hydrargyri Pulvis cinereus, Dubl. grey powder of mercury, is formed by diſſolving 2 oz. of mercury in two fluid-ounces of diluted nitrous acid, in a ſlow heat, and diluting the ſolution with eight fluid-ounces of cold water; then dropping into it 1½ oz. of the water of carbonate of ammonia, or as much as may be ſufficient for precipitating the whole of the metal, which is to be waſhed with boiling diſtilled water, until the fluid, poured off, yields no ſediment, when water of ſulphuret of ammonia is dropped into it: laſtly, let the precipitate be dried. The conſtituents of the grey oxyd of mercury are ſuppoſed to be 96 parts of mercury, and 4 of oxygen, in 100 parts.

The grey oxyd of mercury, when well prepared, may be uſed as a ſubſtitute for the oxyd prepared by trituration; and as it is more likely to be always of an uniform ſtrength, it may of courſe be more depended on than thoſe preparations. It has been objected to for forming ointment, in order to ſerve the purpoſes of mercurial frictions (ſee UNGUENTUM *Oxydi hydrargyri cinerei*); but the objection may have been owing to the uſe of that form of preparation which contains the triple ſalt. It has been uſed with advantage for fumigation, both locally applied towards the healing of venereal ulcers, and, generally, to bring the habit under the influence of mercury, when it could not be introduced by the ordinary mode. The doſe of this oxyd is from gr. i. to grs. iii. given in the form of pill twice a day.

Hydrargyri, Sulphuretum nigrum, olim, *Æthiops mineralis*, Edinb. Dubl. black ſulphuret of mercury, formerly æthiops mineral. This is prepared by rubbing together equal weights of purified mercury and ſublimed ſulphur in a glaſs mortar with a glaſs peſtle, until the globules of mercury altogether diſappear. It may alſo be made with double the quantity of mercury.

This mercurial preparation is alterative and anthelmintic; it is chiefly employed againſt ſcrophulous ſwellings, and in cutaneous affections; and has been found uſeful as an antidote to aſcarides. It muſt be long uſed to produce any ſenſible effects. The doſe is from grs. v. to f.ʒſs., given twice or three times a day. See ÆTHIOPS *Mineral*.

Hydrargyri ſulphuretum rubrum, red ſulphuret of mercury, Hydrargyrus ſulphuratus ruber, P. L. 1787, Cinnabaris factitia, P. L. 1745, is prepared by melting 8 oz. of ſublimed ſulphur over the fire, and mixing in 40 oz. by weight, of purified mercury; and as ſoon as the maſs begins to ſwell, removing the veſſel from the fire, and covering it with conſiderable force, to prevent inflammation; then rubbing the maſs into powder and ſubliming.

Hydrargyri, Sulphuretum rubrum, Dubl. red ſulphuret of mercury, is prepared as in the laſt proceſs. Red ſulphuret of mercury is alterative and deobſtruent. It was formerly much uſed in cutaneous diſeaſes, gouty and rheumatic affections, and in caſes of worms, but it is now ſcarcely ever employed. It has been recommended for fumigations in ſyphilis; but on account of the ſulphurous vapours it is leſs fit for this purpoſe than the grey oxyd. The doſe for internal uſe is from grs. x. to ʒſs. made into an electuary or bolus.

Hydrargyri Subſulphas flavus, olim, *Turpethum minerale*, Edinb. yellow ſubſulphate of mercury, formerly, Turbith mineral, Hydrargyrus vitriolatus, P. L. 1787; alſo Mercurius emeticus flavus. For preparing it, take of purified mercury 4 oz.; ſulphuric acid 6 oz.; put them into a glaſs cucurbit, placed in a ſand-bath, and boil them to dryneſs; pulverize the white maſs which is left at the bottom of the veſſel, and throw it into boiling water; it will be immediately converted into a yellow powder, which is to be waſhed with frequent affuſions of warm water.

Hydrargyri Oxydum ſulphuricum, Dubl. ſulphuric oxyd of mercury, is prepared by diſſolving in a glaſs veſſel 1 lb. of purified mercury, in 1½ lb. of ſulphuric acid, with a ſufficient degree of heat, and gradually raiſing the fire until the maſs be completely dried. This, by the affuſion of a large quantity of hot water, will immediately become yellow and fall into powder, which is to be well triturated with the water in an earthenware mortar. After pouring off the ſupernatant fluid, waſh the powder with repeated affuſions of hot diſtilled water, as long as any precipitate is produced in the decanted liquor on the addition of a few drops of water of ſubcarbonate of kali; and, laſtly, dry it.

This preparation is emetic, diſcutient, alterative, and errhine; but as its operation is violent, it is ſeldom adminiſtered as an internal remedy. As an errhine, it has been uſeful in chronic ophthalmia, and diſeaſes of the head; but in this caſe its acrimony ſhould be ſheathed by ſome bland powder, as ſtarch, or liquorice-root powder, in the proportion of grs. v. to gr. i. of the ſubſulphat. In doſes of gr. v. it operates as a very powerful emetic.

MERCURY, *Coralline*. See ARCANUM *Corallinum*.

MERCURY, *Fulminating*. This curious compound was diſcovered by Mr. Howard, who has given us the following proceſs for preparing it. Diſſolve 100 grains of mercury in 1½ ounce, by meaſure, of nitric acid, of the ſpecific gravity of 1.3, with the aſſiſtance of heat. When this ſolution is cold, pour it upon two ounces, by meaſure, of alcohol: let this mixture be expoſed to heat till an effervеſcence takes place, when the heat muſt be withdrawn. The effervеſcence continues with violence for ſome time, accompanied by the evolution of a denſe white vapour, which Mr. Howard conceived to be the etherized nitrous gas combined with oxyd of mercury. During this proceſs a white powder gradually ſubſides, which muſt be well waſhed, filtered, and dried on a ſand-bath heated by ſteam, as a temperature a little higher would cauſe its exploſion. The powder thus obtained is rather cryſtalline in its appearance. When it is heated to 368°, it explodes with great violence, producing a vivid flaſh of light, with but little heat. The ſame exploſion takes place by the blow of a hammer, by an electric ſpark, and by flint and ſteel. The ſurface of the body on which it is exploded becomes always covered with a white film, which is the reduced mercury. This indicates that the oxygen of the oxyd has had ſome ſhare in producing the effect. The exploſion by means of a blow is ſo violent, as frequently to indent the face of the hammer and the anvil. When concentrated ſulphuric acid is added to fulminating mercury, it inſtantly explodes. The dilute acid decompoſes it without exploſion. A gaſeous ſubſtance is given out, which conſiſts of carbonic acid mixed with an inflammable gas, which burns with a greeniſh flame. A white powder is at the ſame time precipitated, which is the oxalat of mercury mixed with a little running mercury. The compoſition of fulminating mercury is, therefore, found to be oxalat of mercury combined with the etherized nitrous gas. This ſubſtance has been ſince examined by other chemiſts. Fourcroy is of opinion that it may be varied in its properties by varying the proceſs. When heat is continued during the whole time of the effervescence, a ſubſtance is produced of a greeniſh colour, which detonates with leſs force, and emits a blue flame when laid on hot coals. In this caſe, Fourcroy ſuppoſes it to contain ammonia, and more of the vegetable matter of the alcohol. We have before noticed that the oxalat of mercury has the property of exploding with the blow of a hammer. Hence it would appear, that any ſubſtance holding oxygen with ſlight affinity, and at the ſame time combined with inflammable matter, particularly ſuch as contains hydrogen, may conſtitute an exploſive compound. It is ſaid by Brugnatelli, that a nitrat of ſilver with exceſs of acid being heated with alcohol, affords a fulminating ſubſtance more violent in its effects than the ſubſtance in queſtion. This no doubt ariſes from the oxygen of the ſilver giving up leſs of its ſpecific caloric when it combines with that ſubſtance, and of courſe has more to give up when it combines with the inflammable matter derived from the alcohol. Notwithſtanding the myſtery ſo much talked of in the firing of gunpowder, it might no doubt be proved that the light and heat given out when the exploſion takes place, is the difference between what would be afforded by the combuſtion of nitrogen, and the carbon and ſulphur of the gunpowder. See Nitric *Acid*.

M. Bayen was the firſt chemiſt who obſerved the fulminating property of the oxyds of mercury when heated with ſulphur; and hence mixtures of this kind have been denominated "Bayen's fulminating mercury." The moſt powerful of theſe mixtures is thus prepared; to a ſolution of nitrat of mercury add lime-water, as long as any precipitate falls down; decant the clear liquor, and waſh the pulverulent oxyd with repeated portions of water, after which dry it on a water bath, and then grind it carefully in a mortar, with $\frac{1}{6}$th of its weight of flower of ſulphur. This powder, when laid on a hot iron, explodes with conſiderable force, undoubtedly in conſequence of the ſudden oxydation of the mercury, and the rapid combuſtion of part of the ſulphur; for if it is performed in a cloſe veſſel, to prevent the diſſipation of the powder, the reſult of its decompoſition will be a reddiſh violet-coloured ſulphuret, ſimilar to that procured in the uſual manner. Aikin's Dict.

Mercury, *Incaleſcent*. See Incalescent.

Mercury, *Ointment of*. See Unguent.

Mercury, *Pills of*. See Pills.

Mercury, *Plaſter of*. See Emplastrum and Plaster.

Mercury, or *Mercury of Bodies*, has been uſed by alchemiſts to denote the third of the principles or elements of natural bodies, called alſo ſpirit.

In this ſenſe, mercury is defined the moſt ſubtile, light, volatile, penetrating, and active part of all bodies. See Spirit.

Mercury *of Life*, *Mercurius vitæ*, may, according to Mr. Boyle, be moderated in its evacuating quality, by continually ſtirring it in a flat glazed earthen veſſel, over a fire, till it emits no fumes, and turns of a grey colour; and he thinks this is the *mercurius vitæ purgans* ſo often mentioned by Riverius. Boyle, Works abr. vol. i. p. 74.

Mr. Godfrey obſerves, that what is called *mercurius vitæ*, prepared of ſublimate mercury and antimony, has no mercury in it, but is the reguline part of the antimony, with the acid of the ſublimate; and what remains is the mercury formed into cinnabar by the ſulphur of the antimony. See Algarot.

Mercury *of Metals*, or of the *philoſophers*, is a pure fluid ſubſtance in form of common running mercury, ſaid to be found in all mercury, and capable of being extracted from the ſame.

The notion of mercury of metals is founded on the common ſyſtem of the alchemiſts, that mercury or quickſilver is the baſis or matter of all metals; and that metals are only mercury fixed by a certain ſulphur.

Mr. Boyle aſſures us, he had a way of drawing a true running mercury, or quickſilver, from antimony.

Mercury alſo ſerves as a title for books, and papers of news; ſo called from the heathen deity Mercury, ſuppoſed the meſſenger of the gods.

In the like ſenſe, Mercury is always figuratively applied to perſons who make it their buſineſs to collect news, or to run about and diſtribute it.

Mercury, in *Heraldry*, denotes the purple colour in the coats of ſovereign princes. See Colour.

Mercury, in *Mythology*, the ſon of Jupiter and Maia. He was the god of merchandize, and therefore was ſometimes painted with a wand in his left hand, and a bag of money in his right. He was alſo the god of eloquence, and the meſſenger of the gods; and, as ſuch, concerned in all treaties of peace and alliance. He is pictured, therefore, with a herald's ſtaff in his hand, entwined with two ſnakes; wings on his feet, to ſhew his ſpeed; and a broad-brimmed beaver with wings. He had a general power delegated to him by Jupiter, of conducting the ſouls of men to their proper place, after their parting from the body; and re-conducting them to our world again, when there was any particular occaſion for it. He was, moreover, the god of all gainful arts; whence the proverb κοινὸς ἑρμῆς, i. e. *commune lucrum*; eſpecially of things found by chance, the inventor of the lyre, and of the exerciſe of wreſtling. He was the patron of thieves, having himſelf been expert that way; and the guide of travellers, for which reaſon he had ſtatues four-ſquare ſet up to him in croſs-roads. (See Terminus.) There are ſeveral marks whereby Mercury may be known; among which we may reckon the lightneſs and agility of his perſon as the chief; but the moſt remarkable of his diſtinguiſhing attributes are his petaſus, or winged cap; the talaria, or wings to his feet; and his wand, with two ſerpents about it, which they call his caduceus. Sometimes he is alſo repreſented with the chlamys, faſtened over his ſhoulders on his breaſt, and floating behind him in the air. He is likewiſe diſtinguiſhed by his ſword, with which he killed Argus, called Harpé. As the form of Mercury ſeems to be all intended for lightneſs and diſpatch, the ancients might borrow this idea of him from his planetary character: thus Lucan, Pharſal. i. v. 663, in ſpeaking of Mercury as the guiding intelligence of a planet, marks the ſwiftneſs of its motion.

It has been ſaid, and not without reaſon, that the Mercury of the Latins was the ſame deity with the Hermes of the Greeks, the Theutat of the Gauls, and the Thot or Thaut of the Egyptians, from whom ſome have thought they were derived. His name Hermes ſignified Interpreter, or, according to Proclus, Meſſenger, or, if we trace it to a Celtic original, it was the ſame with *arines*, which ſignifies divination, a character which belonged by way of eminence to Mercury, who was diſtinguiſhed by his knowledge and practice of this art. The Latin appellation was derived, according to Feſtus, from a term denoting merchants, or rather merchandize, *i. e. Mercurius a Mercibus ;* and among the Celts he obtained the name of Merk-ur, on account of his introduction of traffic among them. Lactantius, the grammarian, reckons four of this name, and according to Cicero there were five. Banier allows of none but the ancient Mercury, the Thot, Thaut, or Taautus of the Egyptians, and the Mercury, who, according to Heſiod, was the ſon of Jupiter and Maia. To this deity temples were built, and altars erected. There is no perſonage in profane antiquity more famous than the Egyptian Mercury. Being the ſoul of Oſiris's counſel, he was employed as his agent in the moſt important offices ; and during his abſence in India, he aſſiſted Iſis, the queen, with his advice, and exerted himſelf with great aſſiduity and zeal in cauſing arts and commerce to flouriſh through the whole country of Egypt. As he was a proficient in various ſciences, he communicated his knowledge to the Egyptians, and eſtabliſhed among them a variety of inſtitutions, which contributed to their reputation and proſperity. Such is the account which is given of him by Herodotus and Diodorus Siculus. The ſecond Mercury, or the ſon of Jupiter and Maia, became famous among the Titan princes, and took poſſeſſion of Italy, Gaul, Spain, and Mauritania in Africa. This prince is ſaid to have travelled more than once into Egypt, in order to acquaint himſelf with the arts and ſciences, the manners and cuſtoms, and particularly the theology and magic of that country. He was thus enabled, upon his return, to inſtruct his own ſubjects, and to acquire that high reputation for which he was diſtinguiſhed, by exhibiting thoſe qualities and performing thoſe ſervices, which we have above recited. After various conteſts with the other ſons of Jupiter, by whom he was repeatedly vanquiſhed, he is ſaid to have retired into Egypt, where he died ; though others ſay he ended his days in Spain, where his tomb was to be ſeen. Such, ſays Banier, is the hiſtory of Mercury, the Titan prince, which has been much diſguiſed by the Greeks, and blended with ſeveral fables. Mercury was worſhipped by the Gauls, as Cæſar informs us, but, as we learn from Kircher, (Œd. Ægypt.) in Egypt, where the prieſts conſecrated to him the ſtork, the animal moſt renowned among them next to the ox. It was chiefly in the month of May that his feſtival was celebrated, and the moſt ſolemn parts of his worſhip were performed.

The learned Bochart (Phaleg. l. i. c. 2.) traces the hiſtory of Mercury to that of Canaan. Both, he ſays, were the ſons of Jupiter, or Ammon, who was the ſame with Ham ; one taking his name from *Mercatura*, merchandize, and Canaan, he ſays, had in Hebrew the ſame ſignification. As Canaan was the ſervant of his brethren, Mercury was the meſſenger of the gods. This deity had the charge of the highways, becauſe the Phœnicians or Canaanites of the race of Canaan were great travellers, and ſettled colonies whereever they migrated. The wings of this god are the ſails of the Phœnician veſſels. He was the god of eloquence, and the inventor of letters, becauſe the Phœnicians brought the uſe of them into the Weſt. Others repreſent Mercury as the ſame with Moſes, and compare the miraculous rod of that legiſlator to the caduceus of this god. Such is the opinion of Huetius.

This pagan divinity had two very diſtinct names and characters ; the Egyptian, known by the title of Hermes, a grave and venerable perſonage, who received divine honours on account of his uſeful and extenſive talents for every thing that was conducive to the good of ſociety : the Mercury of the Greeks, on the contrary, was a profligate character ; the god of thieves, the intriguing meſſenger of Jupiter, and uſeful to him in all his amours. But to both theſe divinities is aſcribed the invention of muſic and the lyre.

Among the various opinions of the ſeveral ancient writers who have mentioned this circumſtance, and confined the invention to the Egyptian Mercury, that of Apollodorus is the moſt intelligible and probable. "The Nile," ſays this writer, "after having overflowed the whole country of Egypt, when it returned within its natural bounds, left on the ſhore a great number of dead animals of various kinds, and among the reſt, a tortoiſe, the fleſh of which being dried and waſted by the ſun, nothing was left within the ſhell, but nerves and cartilages, and theſe being braced and contracted by deſiccation, were rendered ſonorous ; Mercury, in walking along the banks of the Nile, happening to ſtrike his foot againſt the ſhell of this tortoiſe, was ſo pleaſed with the ſound it produced, that it ſuggeſted to him the firſt idea of a lyre, which he afterwards conſtructed in the form of a tortoiſe, and ſtrung it with the dried ſinews of dead animals."

Of the Grecian Mercury, Horace, Ode x. lib. 1. gives us the beſt part of his character :

" Thou god of wit, from Atlas ſprung,
Who by perſuaſive power of tongue,
And graceful exerciſe, refin'd
The ſavage race of human kind,
Hail ! winged meſſenger of Jove,
And all th' immortal powers above.
Sweet parent of the bending lyre,
Thy praiſe ſhall all its ſounds inſpire.
  Artful and cunning to conceal
Whate'er in ſportive theft you ſteal,
When from the god who gilds the pole,
E'en yet a boy, his herds you ſtole :
With angry voice the threat'ning pow'r
Bad thee thy fraudful prey reſtore,
But of his quiver too beguil'd,
Pleas'd with the theft, Apollo ſmil'd.
  You were the wealthy Priam's guide,
When ſafe from Agamemnon's pride,
Through hoſtile camps, which round him ſpread
Their watchful fires, his way he ſped.
Unſpotted ſpirits you conſign
To bliſsful ſeats and joys divine,
And, powerful with thy golden wand,
The light unbodied crowd command ;
Thus grateful does thy office prove
To gods below, and gods above." Francis.

This ode contains the ſubſtance of a very long hymn to Mercury, attributed to Homer. See HERMES.

MERCURY *Bay*, in *Geography*, a bay on the N.E. coaſt of the northernmoſt of New Zealand, ſo called by lieutenant Cook, who anchored here in 1769, examined the adjoining country, and in November of the ſame year obſerved the tranſit of Mercury over the ſun, from which planet it derived its name. Southward and northward of this bay, there are ſeveral iſlands, and a ſmall iſland or rock in the middle of the entrance ; within which iſland the depth of water no where exceeds nine fathoms. The beſt anchoring is in a ſandy bay, which lies juſt within the ſouth head, in five and four fathoms. This place is very convenient both for wooding and watering, and in the river there is an immenſe quantity of oyſters and other ſhell-fiſh, whence it was called by Cook the "Oyſter river." But for a ſhip that wants to ſtay here any time, the beſt and ſafeſt place is in the river at the head of the bay, which, from the number of mangrove trees about it, was called "Mangrove river." To ſail into this river, the ſouth ſhore muſt be kept all the way on board. The country on the eaſt ſide of the river and bay is very barren: its only produce being fern, and a few other plants that will grow in a poor ſoil. The land on the N.W. ſide is covered with wood, and the ſoil being much more fertile, would, with proper cultivation, produce all the neceſſaries of life; it is not, however, ſo fertile as the land obſerved by our navigators to the ſouthward; nor do the inhabitants, though numerous, make ſo good an appearance: they have no plantations; their canoes are mean, and without ornament; they ſleep in the open air; and ſay, that Teratu, whoſe ſovereignty they do not acknowledge, if he were to come among them, would kill them. This favoured an opinion of their being outlaws; though they had "Heppahs," or ſtrong holds, to which they retired in time of imminent danger. On the ſhore, in ſeveral parts of the bay, were found great quantities of iron ſand, which is brought down by every little rivulet of freſh water, that finds its way from the country; a circumſtance which demonſtrates that there is ore of that metal not far inland; nevertheleſs none of the inhabitants of this place, or any other part of the coaſt, obſerved by Cook and his companions, knew the uſe of iron, or ſet the leaſt value upon it: all of them preferring the moſt worthleſs trifle, not only to a nail, but to any tool of that metal. Our navigators, before they left the bay, cut upon one of the trees, near the watering place, the ſhip's name and that of the commander, with the date of the year, and month when they were there; and after diſplaying the Engliſh colours, took a formal poſſeſſion of it in the name of his Britannic majeſty king George III. S. lat. 36° 47′. W. long. 184° 4′. Hawkeſworth's Voyages, vol. ii.

Mercury *Point*, a cape on the E. coaſt of New Zealand, forming the N.E. point of Mercury bay.

Mercury *Iſles*, a cluſter of ſmall iſlands in the South Pacific ocean, near the E. coaſt of New Zealand, ſituated in a line, a little N.E. of Mercury Point.

MERCY, in *Ethics*, has the ſame general nature and ſources as *compaſſion*, which ſee; and ſeems to differ from it only in this, that the object of it has forfeited his title to happineſs, or the removal of miſery, by ſome demerit, particularly againſt ourſelves. Here, therefore, reſentment on account of an injury done to ourſelves, or what is called a juſt indignation againſt vice in general, interferes, and checks the otherwiſe natural courſe of our compaſſion, ſo as, in the unmerciful, entirely to put a ſtop to it. But in the merciful, the ſources of compaſſion prevail over thoſe of reſentment and indignation; whence it appears, that the compaſſion required in acts of mercy is greater than in common acts of mere compaſſion; agreeably to which it is obſervable, that mercy is held in higher eſteem than mere compaſſion. The mercy of God is that attribute of the divine nature, or that modification of benevolence, which reſpects the miſery of mankind in connection with their offences and demerit; and the exerciſe of it makes proviſion for their relief by affording them the means of recovery, by repentance and reformation, ſo that they may become fit objects of pardon and favour.

Mercy, in *Law*. See Misericordia.

Mercy, *Order of our Lady of*, was inſtituted, for the redemption of captives, as ſeveral writers affirm, by James I. king of Arragon, in 1218; but others, on better authority, attribute the inſtitution of the order to Peter Nolaſque, a native of Mar des Saintes Puelles, a town in the dioceſe of St. Papoule, one league diſtant from Caſtelnaudary. The badge worn by the knights at their breaſt was a ſmall ſhield per feſs gules and or; in chief, a croſs pattée argent; in baſe four pallets gules, for Arragon: the ſhield crowned with a ducal coronet.

Mercy, *Religious Order of*, is ſaid to have been inſtituted and liberally endowed, for ladies, in 1261, by Mary du Secours, a woman of quality born at Barcelona: the ladies of this order wore at their breaſt a ſmall ſhield of the arms of the order, exactly ſimilar to that worn by the knights.

Mercy-*Seat*, in *Scripture Hiſtory*. See Ark *of the Covenant*.

MERDDIN, in *Biography*, the ſon of Mervyn, a celebrated Welſh poet, who flouriſhed about A. D. 560. He ranked with Merddin Emyls, and Talieſſin, as the three principal Chriſtian bards of Britain. Merddin is ſaid to have ſlain his nephew in battle, on which account he ſecluded himſelf from ſociety in a wood, whence he is called Merddin the Wild, Owen's Camb. Biog.

MERDESENGI. See Mardac.

MERDIN, or Mardin, in *Geography*, a fortified town of Aſiatic Turkey, in the province of Diarbekir. It is ſituated at the top of a very lofty and rugged mountain, ſurrounded by a ſtrong and lofty wall of hewn ſtone, and guarded by a ſtrong fort on the ſummit of the mountain, furniſhed with a few cannon. This town is of a conſiderable ſize, and very populous. It is the ſee of a biſhop, and the greater part of its inhabitants conſiſts of Armenians, who are very induſtrious, and carry on ſeveral manufactures. They are hoſpitable and well diſpoſed, enjoy a pure air, and in general appear ruddy and healthy. Many of the women are beautiful. Proviſions, and particularly vegetables, are plentiful, good, and cheap; and they have alſo moſt kinds of fruits, of excellent quality, the climate being very hot in the vallies, and temperate on the mountains. It is the reſidence of a pacha, in whoſe train are 200 ſpahis and 500 janizaries. This town, which ſeems to have been called "Zibin" by Rauwolf, was taken and ſacked by Timur Bec, but the fortreſs was invincible; 50 miles S. of Diarbekir. N. lat. 37° 19′. E. long. 40°.

MERDIVORÆ, from *merda*, *dung*, and *voro*, *I devour*, the *dung-eaters*, in *Natural Hiſtory*, the name given by authors to ſeveral flies, which feed on excrements of different animals. Of theſe there are three kinds very common among us; 1. The coprophagos, which is of a dun colour, with a reddiſh head, and a white ſtreak along the middle of it: 2. The red dung-fly, which has ſilvery wings, a red body, and black ſhoulders: and, 3. The green one, which is of a very glittering hue, and has ſilvery wings.

MERDOO, in *Geography*, a town on the N. coaſt of the iſland of Sumatra. N. lat. 5°. E. long. 96° 20′.

MERDRIGNAC, a town of France, in the department of the Northern Coaſts, and chief place of a canton, in the diſtrict of Loudéac; 13 miles E. of Loudéac. The place contains 2134, and the canton 10,044 inhabitants, on a territory of 302½ kiliometres, in nine communes.

MERE, a town of Norway, in the government of Drontheim; 68 miles N. of Drontheim.

Mere, a ſmall market-town and pariſh, ſituated in the hundred of Mere, and county of Wilts, England. The pariſh is of an angular ſhape, and is bounded on two ſides by the counties of Somerſet and Dorſet. Hence it is ſuppoſed to have derived its name. *Mere*, in the Saxon language, is often uſed to denote a boundary or land mark. The appearance of the town is that of a ſtraggling village, the houſes being ill arranged and very indifferently built. In the middle of it ſtands a ſmall croſs or market-houſe, where a weekly market is held on Thurſdays, and two fairs annually. According to the parliamentary returns of 1801, it contained 181 houſes, and 381 inhabitants. A manufactory of bed-ticking and dowlas is carried on here chiefly by the women. The church is an extenſive edifice, ornamented at one end by a handſome tower. The living is vicarial, and in the gift of the dean of Saliſbury. In the parſonage houſe was born Francis Potter, one of the moſt ſingular mechanical geniuſes of his age.

On an eminence ſtill called Caſtle-hill, immediately adjoining the town, formerly ſtood a caſtle, but few traces of its walls can now be diſcovered. Some encampments appear in this neighbourhood, one of which, called by Leland “ Whiteſhole-hill,” is ſurrounded by a double trench, and was probably occupied by the Daniſh army, previous to ſome engagement with the celebrated Alfred.

About two miles N.W. of Mere is the pariſh of Stourton, in which is a noble ſeat, named Stourhead, the ſeat of ſir R. C. Hoare, bart. This gentleman has diſtinguiſhed himſelf in the literary annals of the preſent age, by the publication of ſome intereſting and handſome works on the topography and antiquities of Great Britain. One of theſe, entitled “ The Hiſtory of Ancient Wiltſhire,” contains much new and curious information reſpecting the characteriſtics of encampments, barrows, ſtonehenge, &c. and a particular account of ſome ſingular excavations, called Penn-pitts, in this neighbourhood. Stourhead is juſtly noted among the handſome ſeats of this county; and though the houſe has no prominent architectural beauties, yet it is ſtored with choice pictures, with drawings, and an extenſive and well ſelected library. The pleaſure grounds, woods, and water, diſplay many pictureſque and ſylvan beauties, and the whole demeſne is highly impreſſive and intereſting. See Britton's Beauties of Wiltſhire.

MERECZ, a town of Lithuania, in the palatinate of Troki, at the conflux of the Merecz and the Niemen; 28 miles N. of Grodno.

MEREDITH, Cape, a cape among the Falkland iſlands, in the South Atlantic ocean, between port Stephen's and cape Orford.

Meredith, a townſhip of America, in Strafford county, New Hampſhire, on the S.W. ſide of lake Winipiſcogee; 15 miles N. of Gelmantown, and nine S.E. of Plymouth; incorporated in 1768, and firſt called New Salem.—Alſo, a poſt-town in Delaware county, New York; 25 miles S. of Cooperſtown.

MEREEGA, Hammam, *i. e.* the baths of Mereega, formerly the “ Aquæ Calidæ Coloniæ,” a town of Algiers, in the province of Tlemſan or Tremecen, ſituated half way betwixt the ſhelliff and the ſea, eight miles E.N.E. of Maliana, and celebrated for its hot baths. The largeſt and the moſt frequented of them is a baſon 12 feet ſquare, and four deep: and the water, which bubbles up in a degree of heat ſcarcely ſupportable, after it has filled this ciſtern, paſſes on to a much ſmaller one uſed by the Jews, who are not permitted to bathe in company, or in the ſame place with the Mahometans. Theſe baths were formerly covered, and had corridores ſurrounding the baſons; but they now lie expoſed to the weather, and are half filled with ſtones and rubbiſh. Nevertheleſs they are reſorted to by a great concourſe of people in the ſpring, which is the ſeaſon of theſe waters; accounted very efficacious for curing the jaundice, rheumatic pains, and ſome of the moſt inveterate diſtempers. Higher up the hill is another bath, which being of too intenſe a heat for bathing, has its water conducted through a long pipe into another chamber, where it is uſed in “ Duccian,” an operation ſimilar in its nature and effect with pumping. Betwixt this and the lower bath are the ruins of an old Roman town equal to that of “ Herba; and at a little diſtance from it are tombs and coffins of ſtone, of an unuſual ſize; 24 miles S.E. of Sherſhell. Shaw's Travels.

MERENDERA, in *Botany*, a name given by the Spaniards to this plant and ſome that reſemble it, and which may perhaps be tolerated, like a few others of barbarous origin, as being ſufficiently harmonious. Ramond Bullet. Philomat. n. 47. 178. t. 12. f. 2. Redout. Liliac. v. 1. 25.—Claſs and order, *Hexandria Trigynia*. Nat. Ord. *Coronariæ*, Linn. *Junci*, Juſſ.

Cal. Sheath of one leaf. *Cor.* of ſix petals, funnel-ſhaped, equal; claws erect, long and linear; borders elliptic-lanceolate, ſpreading. *Stam.* Filaments ſix, thread-ſhaped, equal, inſerted into the claws of the petals, ſhorter than the limb, permanent; anthers terminal, erect, awl-ſhaped. *Piſt.* Germen three-lobed, ſuperior, ſomewhat ſtalked, oblong, acute; ſtyles thread-ſhaped, the length of the ſtamens; ſtigmas ſimple. *Peric.* Capſule ſtalked, oblong, three-lobed, acute, of three valves and three cells, opening at their inner edge. *Seeds* ſeveral in each cell, obovate, ſtalked, ranged along the margins of each valve.

Eſſ. Ch. Sheath of one valve. Petals ſix, with long claws. Anthers vertical. Capſule of three cells, opening at their inner edge. Seeds ſeveral.

1. M. *Bulbocodium* Pyrenean Merendera. Redout. Liliac. t. 25. (Bulbocodium vernum; Desfont. Atlant. v. 1. 284, excluding the ſynonyms, according to Redouté, but the deſcription does not entirely agree. Colchicum montanum minus, verſicolore flore; Cluſ. Hiſt. v. 1. 201. Ger. em. 160.)—Found in the graſſy paſtures of the higheſt of the Pyrenean mountains, flowering at the commencement of autumn, and ripening ſeed in the following ſpring. *Root* an ovate bulb. *Stem* none. *Leaves* three or four, produced after the flower is paſt, radical, ſpreading, linear, acute, channelled, ſmooth, a ſpan long. *Flower* ſolitary, radical, the ſize of a ſmall Crocus, with purpliſh roſe-coloured petals, white at their baſe, and yellow anthers. *Capſule* ſmall, brown, elevated on a ſtalk two inches high.—We have copied from Redouté the quotation of Ramond. This plant might perhaps, without violence to nature, be referred to *Colchicum*.

MERETRIX, among the Romans. The meretrices were the better ſort of courtezans, and differed much from the *proſtibulæ*, or common proſtitutes, who had bills or inſcriptions, *tituli*, over their doors, and were ready at all times to entertain their cuſtomers, whereas the meretrices entertained none but at night.

The meretrices were diſtinguiſhed from the matrons by their dreſs, being obliged to wear the *toga* and ſhort tunics, like thoſe of the men; whereas the matrons wore the *ſtola*, which was a garment that reached down to their feet, as did likewiſe their *palla*, or outer robe.

MEREVILLE, in *Geography*, a town of France, in the department of the Seine and Oiſe, and chief place of a canton, in the diſtrict of Corbeil; 10 miles from Eſtampes. The place contains 1307, and the canton 8012 inhabitants, on a territory of 240 kiliometres, in 20 communes.

MERG, a town of Africa; 30 miles N. of Fez.

MERGANSER, in *Ornithology*, the name of a large water-fowl, called in Engliſh the *gooſander*, and by ſome authors the *harle*.

This is the Mergus merganſer in the Linnæan ſyſtem: the bill of the male of this ſpecies is about three inches long, narrow, and finely ſerrated : the colour of the bill as well as of the irides is red; the head is large, and the feathers on the hind part long and looſe; the colour black, finely gloſſed with green; the upper part of the neck the ſame; the lower part and under ſide of the body of a fine pale yellow; the upper part of the back and inner ſcapulars are black; the lower part of the back and tail are aſh-coloured; the tail conſiſts of eighteen feathers; the greater quill-feathers are black, the leſſer white, ſome of which are edged with black; the coverts at the ſetting on of the wings are black; the reſt white; and the legs of a deep orange colour. Pennant. See Mergus.

MERGEN, a word uſed by ſome of the chemical writers to expreſs coral.

MERGENTHEIM, in *Geography*, a town of Germany, on the S. ſide of the Tauber; the reſidence of the grand maſter of the Teutonic order, and ſeat of the regency; 25 miles S.S.W. of Wurzburg. N. lat. 49° 21′. E. long. 9° 27′.

MERGER, in *Law*, is where a leſſer eſtate in lands, &c. is drowned in the greater; as, if the fee comes to tenant for years or life, the particular eſtates are merged in the fee: but an eſtate tail cannot be merged in an eſtate fee; for no eſtate in tail can be extinct, by the acceſſion of a greater eſtate to it. If a leſſor, who had the fee, marries with the leſſee for years, this is no merger, becauſe he hath the inheritance in his own, and the leaſe in right of his wife. And where a man hath a term in his own right, and the inheritance deſcends to his wife, ſo that he hath a freehold in her right, the term is not merged or drowned.

MERGIAN, in *Geography*, a town of Perſia, in the province of Segeſtan; 32 miles S.S.W. of Kin.

MERGUEN Hotun, a town of Chineſe Tartary; 670 miles N.N.E. of Peking. N. lat. 49° 12′. E. long. 142° 20′.

MERGUI, a ſea-port town of the kingdom of Siam, ſituated S. of Tavoy, on an iſland near the E. coaſt, with a harbour that is accounted one of the beſt in India. The ſea near the coaſt being full of iſlands, is denominated by captain Forreſt the Mergui Archipelago. N. lat. 12° 6′. E. long. 98° 23′.

MERGUS, in *Ornithology*, a genus of birds of the order Anſeres. The trivial name of this genus is *Merganſer:* the bill is toothed, ſlender, cylindrical, hooked at the point; noſtrils ſmall, oval, in the middle of the bill; feet four-toed, the outer toe longeſt. There are ten ſpecies, of which five are common to our country; the others are natives of Europe and America. The birds of this genus live on fiſh, and are very deſtructive in ponds.

Species.

Cucullatus, Creſted Merganſer. Creſt globular, white on each ſide; body above brown, beneath white. It inhabits North America; and is 17 inches long; it builds near lakes, forming its neſt of graſs, and down plucked from its own breaſt; lays from four to ſix eggs. The bill and legs are black; irids golden; creſt larger than the head, edged with black. The female is brown; creſt leſs, ferruginous.

* Merganser, Gooſander. Subcreſted; white head; neck, upper part of the breaſt, and wings gloſſy-black; tail cinereous. It weighs about four pounds when full grown; its length is two feet four inches. It is found in Europe, Aſia, and America. Sometimes the gooſander viſits our rivers and lakes in ſevere winters, but retires to the more northern latitudes to breed. It has been known to build on trees, like the cormorant, but more frequently among rocks or ſtones, and lays 14 eggs, which, with the bird itſelf, are eagerly devoured by the weazel. It ſwims with its head above the water; dives deep; remains a long time below, and riſes at a conſiderable diſtance. Its fleſh is rancid, though ſometimes eaten. In queſt of fiſh, it dives with great celerity, and holds its ſlippery prey with great ſecurity by means of its toothed bill, ſo admirably adapted to the purpoſe. Bill, legs, and irids red; greater quill-feathers black, leſſer white.

* Castor, Dun-diver. Creſted, cinereous; head and upper part of the neck bay; chin, middle quill-feathers, and belly white. It weighs about two pounds and a half, meaſures twenty-five inches in length. Inhabits the ſame countries with the preceding. It has been regarded by ſome naturaliſts as the female of another ſpecies, but the labyrinth, or enlargement at the bottom of the wind-pipe, ſeems to others to prove it to be a male, and conſequently a diſtinct ſpecies. Bill and irids red; belly ſometimes fleſh-colour.

* Serrator, Red-breaſted Merganſer. Creſt pendent; breaſt variegated with reddiſh; collar white; tail-feathers brown, varied with cinereous. It inhabits the northern parts of Europe, Aſia, and America; and is 21 inches long. The bill beneath and legs are red; feathers of the ſides of the breaſt large, white, edged with black, covering the fore-part of the folded wings. In the *male* the hind-head is creſted; head and upper part of the neck green. The *female* is ſcarcely creſted at all; the head and beginning of the neck rufous. There are two other varieties diſtinguiſhed by differences of colouring marks; the *ſecond* above is black, beneath white; greater quill-feathers black; tail brown; variety of the male: the *third* is above black, beneath white; neck bay; wings with a tranſverſe white ſtripe; greater quill-feathers and tail black; variety of the female.

Imperialis, Imperial Gooſander. Varied with black, brown, and grey; head ſmooth; firſt quill-feathers black; it has no wing-ſpot; bill and legs reddiſh-white. It inhabits Sardinia; is the ſize of a gooſe; and the tongue fringed.

* Albellus, Smew or White Nun. Creſt pendent; hind-head black; body white; back and temples black; wings variegated. Inhabits Europe and America; breeds in the Arctic regions, and is driven to the ſouth only by ſevere weather. Bill and legs black; wing-ſpot white; oval ſpot from the bill ſurrounding the eyes, back, and two arched lines on each ſide near the beginning of the wings, black. Female, head ſmooth, grey; band acroſs the eyes black, and under the eyes a white ſpot; body above blackiſh-brown, beneath white; upper part of the head bay; chin white.

* Minutus, Minute Merganſer. Brown-aſh, beneath and chin white; head and upper part of the neck ferruginous; wing-ſpot white before and behind. There is a variety having a ſmooth head; black back; belly white; bill and legs blood-red; firſt quill-feathers black; tail cinereous.

Furcifer, Fork-tailed Merganſer. Black; head ſmooth; hind-head, neck, vent, belly, and lateral tail-feathers white; front and cheeks pale brown; the tail is forked. Bill black; dirty-red at the ſides; from the ears on each ſide, through the ſides of the neck to the breaſt, there is a black band.

Fuscus, Brown Merganſer. Creſted; brown, beneath white; chin and breaſt ſpotted with black; wings black with a white band. It is found in Hudſon's bay, and is 17 inches long. Hind-head creſted; behind the eyes a white band extending to the nape ; lower part of the creſt black ; breaſt blueiſh waved with whitiſh ; legs yellowiſh.

Cæruleus, Blue Merganſer. Creſted ; blue ; crown and tail black ; chin, belly, and ſpot on the wings white. It inhabits Hudſon's bay, and is 14 inches long. The bill of this ſpecies is long and black ; legs are blue. We ſhall now conclude this article with ſome general obſervations on the whole genus.

Theſe birds, with few exceptions, are of a middle ſize, between that of a gooſe and of a duck. The edges of both mandibles are ſerrated, the tongue is thick, ſet with ſmall briſtles pointing backward ; an happy contrivance for holding the ſlippery fiſhes which form their prey, and conducting it into the bird's throat. They ſwallow with an undiſtinguiſhable voracity, fiſhes, that are by far too large to enter entire into the ſtomach ; and hence, while the one end is digeſting in the œſophagus, the other often remains in the throat.

The head and back of the merganſer are black, beautified with a gloſs of green. The lower parts of the body are white, the breaſt tending to a pale yellow. The tail is grey, the eyes, feet, and part of the bill, are red. As this bird is obliged to ſearch for its food by diving, it is capable of remaining a long time under water ; and for this purpoſe, is furniſhed with a quantity of air, lodged in a cavity of its body, to ſerve the purpoſe of reſpiration while it remains below.

The merganſers, from their voracity, and their expertneſs in ſwimming, are perhaps the moſt deſtructive of all birds that plunder the waters ; while their fleſh, which is dry, and of a bad flavour, makes but a ſmall compenſation for the devaſtations which they commit.

Some of them build in trees ; but the greater part in rocks, jutting over precipitous forelands. One or two ſpecies are ſaid to have been found as high up the North ſeas as Iceland, but this is uncommon. In all the ſpecies, the female is of a ſmaller ſize than the male, and differs conſiderably in the diſtribution of her colours. Her head is red ; and the mantle or back and neck-feathers grey. The white nun is the moſt beautiful of the whole tribe ; the white plumage of the fore parts, and the black mantle that covers its back, are each perfect in their kind ; the tuft of ſmall detached feathers white upon the crown, but of a dark green ſhaded with purple upon the hind part, produces a very elegant effect ; while to complete this modeſt and religious dreſs of the white nun, the lower part of the neck is half ſurrounded with a collar of long ſilky feathers like velvet.

Mergus *cirratus minor*, in *Ornithology*, a name by which Geſner calls the *capo negro*, a ſpecies of duck, called in Engliſh the *tufted duck*.

MERIANA, and Merianella, in *Botany*. See Antholyza and Watsonia.

MERIANIA, named by Swartz in memory of Maria Sybilla Merian, daughter of a German engraver, who was born at Frankfort on the Maine, April 12th 1647, and was the wife of John Andrew Graff. This lady is celebrated for her zeal in the purſuit of natural hiſtory, eſpecially in what relates to the metamorphoſes of inſects, and for her great ſkill in the uſe of the pencil. She publiſhed a work, of which there have been ſeveral editions, in folio or quarto, with plates, on European inſects, and the plants they feed upon ; but her moſt famous book, detailing the metamorphoſes of Surinam inſects, is a ſplendid folio, of which original coloured copies are very rare and valuable. Botany was with her a ſecondary object, nor are her delineations, however magnificent, always remarkable for accuracy. She performed ſeveral voyages in purſuit of her favourite object. Sir Hans Sloane purchaſed what were ſuppoſed to be her original drawings on vellum, but the copy exhibited in the Britiſh Muſeum, has certainly marks of the graver, though it may have been coloured by her hand. She died at Amſterdam in 1717.—Swartz Ind. Occ. 823. Willd. Sp. Pl. v. 2. 600.—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Calycanthemæ*, Linn. *Melaſtomæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, campanulate, permanent, its margin in five, ſhort, obtuſe, membranous ſegments, each accompanied by a long, external tooth. *Cor.* Petals five, inſerted below the throat of the calyx, ovate, ſomewhat leathery, ſpreading, deciduous. *Stam.* Filaments ten, fixed internally to the five-ſided margin of the calyx, within the petals, broad at the baſe, bent in the upper part ; anthers long, broadiſh, bent backward, pointed at the ſummit, opening there by two pores. *Piſt.* Germen ſuperior, roundiſh, five-ſided, in the bottom of the calyx ; ſtyle thick, club-ſhaped, bent downward ; ſtigma obtuſe. *Peric.* Capſule in the bottom of the bell-ſhaped calyx, covered by the calyx ; but unconnected with it, naked above, roundiſh, five-ſided, five-celled, five-valved ; the partitions contrary to the valves. *Seeds* numerous, minute. *Recept.* creſcent-ſhaped.

Eſſ. Ch. Calyx bell-ſhaped, five-cleft. Petals five, inſerted into the calyx. Stamens declining. Capſule diſtinct, of five cells ; the partitions contrary to the valves. Seeds numerous.

1. M. *leucantha*. White-flowered Meriania. Swartz Ind. Occ. 826. t. 15. f. *a*. (Rhexia leucantha ; Swartz Prod. 61.)—Leaves oblong, ſhining. Flowers with two bracteas.—Native of the higheſt mountains of Jamaica, flowering in the ſummer and autumn.—This is a ſhining, elegant *tree*, whoſe ſtraight *trunk*, covered with a ſmooth *bark*, is from 15 to 30 feet in height. *Branches* erect, roundiſh, ſmooth ; ſmaller ones quadrangular, compreſſed, furrowed, brittle. *Leaves* oppoſite, croſſing each other in pairs, ovate-oblong, pointed, three-nerved, toothed and cartilaginous at the margin, paler, and beautifully veined like net-work beneath ; ſmooth on both ſides ; very ſhining, four or five inches long ; on angulated ſmooth *footſtalks* which are channelled above. *Flower-ſtalks* at the axils of the terminal leaves, oppoſite, ſolitary, remote, an inch and a half long, round, compreſſed, erect, ſingle-flowered, ſmooth. *Bracteas* two, oppoſite, nearly ſeſſile, ovato-lanceolate, pointed, entire, three-nerved, pale. *Flowers* large and handſome, white, or ſlightly fleſh-coloured, inodorous, ſomewhat drooping.

2. M. *purpurea*. Purple Meriania. Swartz Ind. Occ. 829. t. 15. f. *b*. (Rhexia purpurea ; Swartz Prod., 61.)—Leaves ovato-lanceolate. Flowers with four bracteas.—Grows in ſimilar ſituations to the laſt, and flowers in autumn. The preſent ſpecies differs chiefly from *M. leucantha* in being conſiderably ſmaller, in having its *leaves* of a browniſh-green, its ſmaller branches round, not quadrangular, and its *flowers* of a deep blood or purple colour, accompanied by four *bracteas* inſtead of two. The corolla in each ſpecies is as large as that of a ſingle wild roſe. We find the ſecond ſpecies, in the herbarium of the younger Linnæus, marked *Wrightia ſuperba*, and we recollect to have ſeen the ſame name at Sir Joſeph Banks's, which, when the genus was eſtabliſhed, ought to have been retained in juſtice to a very indefatigable collector and botaniſt who firſt ſent the ſpecimens to Europe, Dr. Wm. Wright, now of Edinburgh.

MERJAPOUR, in *Geography*, a town of Hindooſtan, in Bahar ; 28 miles S.S.W. of Bahar.

MERIBASA, a river of Aſiatic Turkey, which runs into the Mediterranean, near Adana.

MERICHSWAND, a fertile tract of Switzerland, in the canton of Luccon, four miles long, and two broad, ſeparated from the reſt of the canton. In it is a parochial village near the Rufz.

MERIDA, an ancient town of Spain, in Eſtramadura, ſeated on an eminence, near the Guadiana. It was anciently large, populous, and flouriſhing, and much embelliſhed by the Romans, ſo that it now only preſents an image of its former grandeur and magnificence. This town became a colony under the emperor Auguſtus, and being peopled, after the war with the Cantabrians, with ſoldiers of the 5th and 10th legions, took the name of that prince, and was called "Emerita Auguſta." (See AUGUSTA.) Writers differ about its extent; ſome aſſigning to it eight miles, and others ſix leagues of circumference. It was, however, the largeſt in Spain, under the Romans. Under the dominion of the Goths, it preſerved its monuments; but when it was taken by the Moors, A.D. 713, it was very much ranſacked and deſtroyed. From them it was retaken by Alphonſo IX., king of Caſtile and Leon, in 1230; and from that period it has been always attached to the kingdom of Caſtile. It lies in that part of Spain which the Romans called Vetonia; but notwithſtanding its former extent and populouſneſs, the number of its preſent inhabitants ſcarcely amounts to 5000. Under the Gothic kings it was the ſee of an archbiſhop, and the ſeat of ſome provincial councils. The archiepiſcopal ſee was removed to Compoſtella by pope Calixtus II., under king Alphonſo VII., whilſt this town was in the poſſeſſion of the Moors. When it was retaken by Alphonſo IX., he gave it to the military order of St. James, and it ſtill belongs to this order. Merida took as arms the reverſe of a medal ſtruck under Auguſtus for commemorating its erection into a Roman colony; this is a gate of a town formed by two arches with two towers, and a ſemicircular encloſure, which extended from one to the other. It ſtill affords conſiderable wrecks of its ancient magnificence under the Romans. Here they built ſuperb bridges and magnificent temples; triumphal arches and beautiful aqueducts; here they raiſed edifices for public feaſts and games; a circus, a theatre, and a naumachia. The veſtiges of theſe grand public monuments are ſtill viſible; of which ſome are in and others out of the town. The baths are in a better ſtate of preſervation than moſt of the other monuments. In its vicinity are two large reſervoirs of water, reſembling lakes, called Albafera and Albuera. One is 90 feet long, and 51 deep, ſurrounded by thick walls, and ornamented with two beautiful towers; about a league from the town. The other is at the diſtance of two leagues; it is ſmall, but the walls which contain the waters, and the great tower which ſerves as an aperture for air, are much finer. The environs of Merida are pleaſant and fertile; abounding in wine, good fruits, and grain, with excellent paſture; nine leagues from Badajoz. N. lat. 38° 48′. W. long. 6° 3′.

MERIDA, the capital of Yucatan, in the audience of Mexico; lying near the N. ſide of the province between the gulfs of Mexico and Honduras; the reſidence of a governor, and ſee of a biſhop; 130 miles N.E. of Campeachy. N. lat. 21° 38′. W. long. 90° 36′.—Alſo, a town of South America, in the government of Caraccas, founded in 1558 by John Rodriguez Suarez, under the name of Santiago de los Caballeros, and ſituated in a valley three leagues long, and about three quarters of a league wide in its broadeſt part. It is ſurrounded by three rivers, Mucujun, Albarregas, and Chama, neither of which is navigable. At ſome diſtance from the city are plantations of ſugar, cacao, and coffee. All the environs of Merida abound with fruits, maize, beans, peas, potatoes, caſſada, wheat of the fineſt quality, barley, &c. Excellent meat is purchaſed here at a very moderate price. The climate is variable, ſo that every day it experiences the four ſeaſons of the year. The weſt wind is particularly inſalubrious; the rains are heavy, and fall through the year, but with peculiar violence from the month of March to November. This city is the ſee of a biſhop and a chapter. It poſſeſſes a college and ſeminary for the education of miniſters who conduct the Catholic worſhip; and for other claſſes of inhabitants. The orders of St. Dominic and of St. Auguſtin, and alſo of St. Clair, have each a convent; and beſides the cathedral, they have ſeveral places of worſhip. The number of inhabitants at Merida amounts to 11,500, of all colours and of all claſſes. No claſs here diſdains labour; the white are employed in agriculture, the rearing of cattle, and the offices of the eccleſiaſtical ſtate. The people of colour fabricate different articles of cotton and wool. Merida is diſtant from Maracaibo 80 leagues to the S.; from Caraccas 140 leagues to the S.E., and from Varinas 25 leagues S.E. N. lat. 8° 10′. W. long. 73° 45′.

MERIDIAN, in *Aſtronomy*, a great circle of the ſphere, paſſing through the zenith, nadir, and poles of the world, croſſing the equinoctial at right angles, and dividing the ſphere into two hemiſpheres, the one eaſtern, and the other weſtern.

It is called meridian, from the Latin *meridies*, *noon*, or *mid-day*, becauſe when the ſun is in this circle, it is noon in thoſe places ſituated under it.

MERIDIAN, in *Geography*, is a great circle, as P A Q D, (*Plate* I. *Geography*, *fig.* 9.) paſſing through the poles of the earth P and Q: and any given place at Z. So that the plane of the terreſtrial meridian is in the plane of the celeſtial one.

Hence, 1, as the meridian inveſts the whole earth, there are ſeveral places ſituated under the ſame meridian. And, 2, as it is noon-tide whenever the centre of the ſun is in the meridian of the heavens; and as the meridian of the earth is in the plane of the former; it follows, that it is noon at the ſame time, in all places ſituate under the ſame meridian. 3. There are as many meridians on the earth as there are points conceived in the equator. In effect, the meridians always change, as you change the longitude of the place; and may be ſaid to be infinite; each reſpective place from eaſt to weſt having its reſpective meridian.

MERIDIAN, *Firſt*, is that from which the reſt are accounted, reckoning from weſt to eaſt. The firſt meridian is the beginning of longitude.

The fixing of the firſt meridian is a matter merely arbitrary; and hence different perſons, nations, and ages, have fixed it differently; whence ſome confuſion has ariſen in geography. The rule among the ancients was, to make it paſs through the place fartheſt to the weſt that was known. But the moderns knowing that there is no ſuch place in the earth as can be eſteemed the moſt weſterly, the way of computing the longitudes of places from one fixed point is much laid aſide.

Ptolemy aſſumed the meridian that paſſes through the fartheſt of the Canary iſlands as his firſt meridian; that being the moſt weſtern place of the world then known. After him, as more countries were diſcovered in that quarter, the firſt meridian was removed farther off. The Arabian geographers choſe to fix the firſt meridian upon the utmoſt ſhore of the weſtern ocean. Some fixed it to the iſland of St. Nicholas, near Cape Verd; Hondius to the iſle of St. James; others to the iſland of Del Corvo, one of the

Azores; becauſe on that iſland the magnetic needle, at that time, pointed directly north, without any variation; and it was not then known that the variation of the needle is itſelf ſubject to variation. The lateſt geographers, particularly the Dutch, have pitched on the Pike of Teneriffe; others on the iſle of Palm, another of the Canaries; and, laſtly, the French, by command of their king, on the iſland of Ferro, another of the Canaries.

But, without much regard to any of theſe rules, our geographers and map-makers frequently aſſume the meridian of the place where they live, or the capital of their country, for a firſt meridian; and thence reckon the longitudes of their places.

The aſtronomers in their calculations uſually chooſe the meridian of the place where their obſervations are made, for their firſt meridian; as Ptolemy, at Alexandria; Tycho Brahe, at Uranibourg; Riccioli, at Bologna; Mr. Flamſteed, at the Royal Obſervatory at Greenwich; and the French, at the Obſervatory at Paris.

MERIDIAN *of a Globe*, or *Sphere*, is the brazen circle in which the globe hangs and turns. See GLOBE.

It is divided into four nineties, or three hundred and ſixty degrees, beginning at the equinoctial: on it, each way, from the equinoctial, on the celeſtial globe, is counted the ſouth and north declination of the ſun or ſtars; and on the terreſtrial globe, the latitude of places north and ſouth. There are two points on this circle, called the *poles*; and a diameter, continued from thence through the centre of either globe, is called the axis of the earth, or heavens, on which they are ſuppoſed to turn round.

On the terreſtrial globes there are uſually thirty-ſix meridians drawn, one through every tenth degree of the equator, or through every tenth degree of longitude.

The uſes of this circle are, to ſet the globes to any particular latitude, to ſhew the ſun's or a ſtar's declination, right aſcenſion, greateſt altitude, &c.

MERIDIAN *Line*, an arc, or part of the meridian of the place, terminated each way by the horizon.

Or, a meridian line is the interſection of the plane of the meridian of the place with the plane of the horizon, vulgarly called a *north and ſouth line*, becauſe its direction is from one pole towards the other.

The uſe of a meridian line in aſtronomy, geography, dialling, &c. is very great, and on its exactneſs all depends; whence infinite pains have been taken by divers aſtronomers to fix it to the utmoſt preciſion. M. Caſſini has diſtinguiſhed himſelf by a meridian line drawn on the pavement of the church of S. Petronio, at Bologna, the largeſt and moſt accurate in the world; being 120 feet in length. In the roof of this church, a thouſand inches above the pavement, is a little hole, through which the ſun's image, when in the meridian, falling upon the line, marks his progreſs all the year. When finiſhed, M. Caſſini, by a public writing, informed the mathematicians of Europe, of a new oracle of Apollo, or the ſun, eſtabliſhed in a temple, which might be conſulted, with entire confidence, as to all difficulties in aſtronomy. See GNOMON.

To draw a Meridian Line.—Knowing the ſouth quarter pretty nearly, obſerve the altitude F E (*Plate* XVII. *Aſtronomy*, *fig.* 3.) of ſome ſtar on the eaſtern ſide thereof, not far from the meridian H Z R N: then, keeping the quadrant firm on its axis, ſo as the plummet may ſtill cut the ſame degree, only directing it to the weſtern ſide of the meridian, wait till you find the ſtar has the ſame altitude as before, *f*, *e*. Laſtly, biſect the angle E C *e*, formed by the interſection of the two planes wherein the quadrant is placed at the time of the two obſervations, by the right line H R. This H R is a meridian line.

Or thus: on the horizontal plane, from the ſame centre C (*fig.* 4.) deſcribe ſeveral arcs of circles B A, *b a*, &c. and on the ſame centre, C, erect a ſtyle, or gnomon, perpendicular to the plane A C B, a foot or half a foot long. About the twenty-firſt of June, between the hours of nine and eleven in the morning, and between one and three in the afternoon, obſerve the points B, *b*, &c. A, *a*, wherein the ſhadow of the ſtyle terminates. Biſect the arcs A B, *a b*, &c. in D, *d*, &c. If then the ſame right line D E biſect all the arcs A B, *a b*, &c. it will be the meridian line ſought.

As it is difficult to determine the extremity of the ſhadow exactly, it is beſt to have the ſtyle flat at top, and to drill a little hole, noting the lucid ſpot projected by it on the arcs A B and *a b*, inſtead of the extremity of the ſhadow. Otherwiſe the circles may be made with yellow, inſtead of black, &c.

A good meridian line for regulating clocks and watches may be had by the following method: make a round hole, almoſt a quarter of an inch in diameter, in a thin plate of metal; and fix the plate in the top of a ſouth window in ſuch a manner, that it may recline from the zenith at an angle equal to the co-latitude of your place, as nearly as you can gueſs; for then the plate will face the ſun directly at noon on the equinoctial days. Let the ſun ſhine freely through the hole into the room, previouſly darkened; and hang a plumb-line to the ceiling of the room, at leaſt five or ſix feet from the window, in ſuch a place as that the ſun's rays, tranſmitted through the hole, may fall upon the line when it is noon by the clock; and having marked the ſaid place on the ceiling, take away the line. Having adjuſted a ſliding-bar to a dove-tail groove, in a piece of wood about eighteen inches long, and fixed a hook into the middle of the bar, nail the wood to the above-mentioned place in the ceiling, parallel to the ſide of the room in which the window is; the groove and bar being towards the floor. Then hang the plumb-line upon the hook in the bar, the weight or plummet reaching almoſt to the floor: when this is done, find the true ſolar time, and thereby regulate your clock or watch. Then, at the moment of next noon by the clock, when the ſun ſhines, move the ſliding-bar in the groove until the ſhadow of the plumb-line biſects the image of the ſun on the floor, wall, or on a white ſcreen placed on the north ſide of the line; the plummet, or weight at the end of the line, hanging freely in a pail of water, placed below it on the floor. By repeated corrections, on the following days, with the ſun and clock, this method may be brought to a very great exactneſs. This meridian line will not only be ſufficient for the regulation of clocks and watches, to the true mean time, by equation tables, but alſo for moſt aſtronomical purpoſes. Ferguſon's Lect. on ſelect Subjects, &c. lect. x.

Several authors have invented particular inſtruments and methods for the deſcribing of meridian lines, or rather for determining equal altitudes of the ſun in the eaſtern and weſtern parts of the heavens; as Mr. Grey, Dr. Derham, &c. in the Philoſophical Tranſactions. But as the former of the methods above delivered ſuffices for aſtronomical obſervations, and the latter for more ordinary occaſions, we ſhall forbear to give any deſcriptions of them.

From what has been ſhewn, it is evident, that whenever the ſhadow of the ſtyle covers the meridian line, the centre of the ſun is in the meridian; and, therefore, it is then noon. And hence the uſe of a meridian line in adjuſting the motion of clocks, &c. to the ſun.

Hence alſo, if the meridian line be biſected by a right line O V, drawn perpendicularly through the point C, O V will be the interſection of the meridian, and firſt vertical; and, conſequently, O will ſhew the eaſt point, and V the weſt.

Laſtly, if a ſtyle be erected perpendicularly in any other horizontal plane, and a ſignal be given when the ſhadow of the ſtyle covers the meridian line drawn in another plane, noting the apex, or extremity, of the ſhadow projected by the ſtyle, a line drawn from that point through that wherein the ſtyle is raiſed, will be a meridian line.

One meridian line being given, another may be drawn upon another horizontal plane by the following method: hang a thread with a plummet exactly over the ſouth end of the meridian line given, and another thread with a plummet over the ſouth end of the plane upon which the meridian line is to be drawn; let one perſon obſerve at noon the moment when the ſhadow of the firſt thread falls exactly upon the meridian given, and let another obſerver, at the ſame time, mark two diſtant points in the ſhadow of the ſecond thread: a line drawn through thoſe points is the meridian line required. By the ſame method may a meridian line be found upon a ſouth wall, by making two points in the ſhadow of a thread hung at a little diſtance from it: if the meridians are near, he, that obſerves the ſhadow of the firſt thread, may let the other know the moment it falls upon the meridian line, by ſaying *now:* if they are far diſtant, it ſhould be done by the motion of the hand, becauſe ſound takes ſome time to paſs from one place to another. The meridian line is the baſis of aſtronomical obſervations: a meridian line being found, there may be placed over it a quadrant or ſextant in ſuch a manner, that though it be moved up or down to give it different elevations, in order to view through the ſights of it the celeſtial bodies at their different altitudes; yet the plane of that ſide of the inſtrument upon which the degrees are marked ſhall continue all the while in the plane of the meridian. Of this kind is the mural arc in the royal obſervatory at Greenwich. See MERIDIAN *Altitude.*

MERIDIAN *Line,* on a dial, is a right line ariſing from the interſection of the meridian of the place with the plane of the dial. This is the line of twelve o'clock, and from hence the diviſion of the hour-line begins.

MERIDIAN, *Magnetical,* is a great circle, paſſing through or by the magnetical poles; to which the magnetic needle, or needle of the mariner's compaſs, if not otherwiſe hindered, conforms itſelf.

MERIDIAN *Altitude* of the ſun or ſtars is, their altitude when in the meridian of the place where they are obſerved. See ALTITUDE.

To take the Meridian Altitude of the Stars.—Aſtronomers make two principal kinds of obſervations of the ſtars, the one when they are in the meridian, and the other when in vertical circles.

For meridian obſervations there are two inſtruments principally uſed, the quadrant and gnomon.

To take the Meridian Altitude with a Quadrant.—If the poſition of the meridian be known, and the plane of an aſtronomical quadrant be placed in the meridian line, by means of the plumb-line ſuſpended at the centre, the meridian altitudes of the ſtars, which are the principal obſervations whereon the whole art of aſtronomy is founded, may eaſily be determined.

The meridian altitude of a ſtar may likewiſe be had by means of a pendulum-clock, if the exact time of the ſtar's paſſage by the meridian be known. Now it muſt be obſerved, that the ſtars have the ſame altitude for a minute before and after their paſſage by the meridian, if they be not in or near the zenith; but if they be, their altitudes muſt be taken every minute, when they are near the meridian; and then their greateſt altitudes will be the meridian altitudes ſought.

As to the manner of obſerving, it is found very difficult to place the vane of the quadrant in the meridian exact enough to take the meridian altitude of a ſtar; for, unleſs there be a convenient place, and a wall, where the quadrant may be firmly faſtened in the plane of the meridian, which is not eaſily had, we ſhall not have the true poſition of the meridian proper to obſerve the ſtars. It will be much eaſier, therefore, on ſeveral accounts, to uſe the portable quadrant, by which the altitude of the ſtar may be obſerved a little before its paſſage over the meridian, every minute, till its greateſt altitude be found. Here, though we have not the true poſition of the meridian by this means, yet we have the apparent meridian altitude of the ſtar.

Though this method, in the general, be very good, and free from any ſenſible error; yet, in caſe a ſtar paſſes by the meridian near the zenith, it proves ſomewhat defective: for in theſe kinds of obſervations, the inconvenient ſituation of the obſerver, the variation of the ſtar's azimuth ſeveral degrees in a little time, the alteration of the inſtrument, and the difficulty of replacing it vertically, will prevent the obſervations being made oftener than in every four minutes; but in each minute the altitude varies about 15 minutes of a degree, ſo that there will be the difference of a degree in the ſtar's altitude between each obſervation. In ſuch caſes, therefore, it will be better to have the true poſition of the meridian, or the exact time wherein the ſtar paſſes the meridian, in order either to place the inſtrument in the meridian, or to obſerve the altitude of the ſtar the moment it paſſes the meridian.

To find the Meridian Altitude of the Sun, &c. by a Gnomon, ſee GNOMON. By other means, ſee ALTITUDE.

MERIDIAN *Teleſcope.* See TELESCOPE.

To meaſure the Degrees of the Meridian, ſee DEGREE.

To obſerve the Tranſits or Paſſages of the heavenly Bodies acroſs the Plane of the Meridian.—A meridian line being found, hang two threads with plummets exactly over it, at a little diſtance from one another, and they will be in the plane of the meridian: if you place your eye cloſe to one of the threads in ſuch a manner that you make it cover the other, and both appear as one thread; when a ſtar is behind the threads, it is in the meridian. By the ſame method the ſun may be viewed through a ſmoaked glaſs; when the threads paſs through his centre, he is in the meridian: but the beſt way of obſerving the ſun, moon, ſtars, or planets, is through a teleſcope placed in the meridian, with two croſs hairs, one of which is in a vertical, the other in a horizontal poſition; when the vertical hair paſſes through the centre of the ſun, he is in the meridian.

MERIDIAN, from *Meridies,* the hour for ſleeping, which was allowed to the ancient monks, in this and other countries, about noon, during the ſummer months.

MERIDIANI, in *Antiquity,* is a name which the Romans gave to a kind of gladiators, who entered the arena about noon, after the beſtiarii (who fought in the morning againſt beaſts) had finiſhed. See GLADIATOR.

They were thus called from *meridies,* i. e. *noon,* the time when they exhibited their ſhows.

The meridiani were a ſort of artleſs combatants, who fought man with man, ſword in hand: hence Seneca takes occaſion to obſerve, that the combats of the morning were full of humanity, compared with thoſe which followed.

MERIDIONAL Distance, in *Navigation*, the ſame with departure, or eaſting and weſting; being the difference of longitude between the meridian, under which the ſhip now is, and any other meridian, which ſhe was under before.

Meridional *Parts*, *Miles*, or *Minutes*, are the parts by which the meridians in a Mercator's chart increaſe, as the parallels of latitude decreaſe.

The coſine of the latitude of any place being equal to the radius, or ſemidiameter, of that parallel; therefore, in the true ſea-chart, or nautical planiſphere, this radius being the radius of the equinoctial, or whole ſine, of 90 degrees, the meridional parts at each degree of latitude muſt increaſe, as the ſecants of the arc contained between that latitude, and the equinoctial decreaſe.

In order to underſtand this, it is neceſſary to conſider, 1. That the diſtance between any two meridians at the equator is to their diſtance in any parallel of latitude as radius is to the coſine of that latitude. Let P D F E (*Plate* I. *Navigation*, *fig*. 8.) repreſent the fourth part of a ſphere; E being the centre, P the pole, E D the radius of the equator, A B the radius of a parallel of latitude: then each of the arcs P B D, P C *d*, will repreſent a quadrant of a meridian; D *d* an arc of the equator; and B C an arc of a parallel of latitude: D B expreſſes the latitude, and P B the complement of the latitude, whoſe right ſine is B A. But the circumference of a circle, whoſe radius is E D, is to the circumference of a circle, whoſe radius is A B, and conſequently like arcs D *d*, B C, intercepted between the ſame two meridians, as E D is to A B, *i. e.* as radius to the coſine of the latitude. Whence it is eaſy to conſtruct a table ſhewing in what proportion the degrees of longitude diminiſh in every latitude. See ſuch a table under article Degree *of Latitude*.

2. Any part of a parallel of latitude is to a like part of a meridian, as radius is to the ſecant of the latitude of that parallel. Let P D E (*Plate* I. *Navigation*, *fig*. 9.) repreſent a quadrant of a meridian, where P is the pole, and D E the radius of the equator; A B is the radius of a parallel of latitude, or the coſine of the latitude, whoſe ſine is B F, and ſecant E C. Then E F : E B :: E D : E C; or coſine latitude : rad. : : rad. : ſecant of the latitude, in that parallel. Therefore, part of a parallel of latitude is to a like part of the equator as the radius is to the ſecant of the latitude to that parallel: conſequently, ſince like parts of the meridian and equator are equal, as great circles, any part of a parallel of latitude is to a like part of a meridian, as radius to the ſecant of the latitude to that parallel.

3. The diſtance of any parallel of latitude, A, from the equator, is expreſſed by the ſum of the ſecants of all the arcs between the equator and that parallel. For, as radius to the ſecant of the latitude A, ſo is a diminiſhed degree of longitude in the latitude A, or a degree of that parallel, to a degree of the meridian: but the degrees of latitude, or of the meridian, are to be lengthened in proportion as the degrees of longitude decreaſe: therefore, as radius to the ſecant of the latitude A, ſo is a natural degree of the meridian to a lengthened degree in the latitude A, radius being here as unity, and one natural degree as unity alſo: therefore, the length of a degree in any latitude is as the ſecant of that latitude, or may be expreſſed by that ſecant: but the diſtance of any parallel from the equator is the ſum of all the ſucceſſive arcs between the equator and that parallel: conſequently, the diſtance of that parallel is expreſſed by the ſum of the ſecants of all theſe arcs between the equator and that parallel of latitude: and, therefore, by the addition of the ſecants of ſmall arcs, the diſtances of the parallels of latitude from the equator are obtained.

The tables, therefore, of meridional parts, in books of navigation, are to be made by a continual addition of ſecants, calculated in ſome books, as in ſir Jonas Moor's Tables, Robertſon's Navigation, &c. for every degree and minute of latitude; and theſe will ſerve either to make or graduate a Mercator's chart, or to work the Mercator's ſailing.

Mr. Wright, to whom we are indebted for this excellent diſcovery, made his table for the diviſion of the nautical meridian, or the table of meridional parts, as follows: the meridional parts for 1 minute he made equal to the ſecant of 1 minute; thoſe of 2′ equal to the ſum of the ſecants of 1′ and 2′; thoſe of 3′ equal to the ſum of the ſecants of 1′, 2′, and 3′; thoſe of 4′ equal to the ſum of the meridional parts of 3′ and the ſecant of 4′; and ſo on by a conſtant addition of the ſecants: Mr. Oughtred, ſir Jonas Moor, Dr. Wallis, Dr. Halley, and others, have endeavoured to find methods of conſtructing theſe tables with greater accuracy than by the addition of the ſecants to every minute. As the reader may not have immediate acceſs to ſuch a table, we have here annexed one, extracted from Robertſon's "Elements of Navigation."

The following is a Table of meridional parts to every degree and minute of the quadrant, eſtabliſhed on a ſuppoſition that the earth is a perfect ſphere.

MERIDIONAL PARTS.

D. l.	0	1	2	3	4	5	6	7	8	9	10	11	12	D. l.
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
0	0.0	60.0	120.0	180.1	240.2	300.4	360.7	421.1	481.6	542.2	603.1	664.1	725.3	0
1	1.0	61.0	121.0	181.1	241.2	301.4	361.7	422.1	482.6	543.3	604.1	665.1	726.4	1
2	2.0	62.0	122.0	182.1	242.2	302.4	362.7	423.1	483.6	544.3	605.1	666.1	727.4	2
3	3.0	63.0	123.0	183.1	243.2	303.4	363.7	424.1	484.6	545.3	606.1	667.1	728.4	3
4	4.0	64.0	124.0	184.1	244.2	304.4	364.7	425.1	485.6	546.3	607.1	668.1	729.4	4
5	5.0	65.0	125.0	185.1	245.2	305.4	365.7	426.1	486.6	547.3	608.2	669.2	730.5	5
6	6.0	66.0	126.0	186.1	246.2	306.4	366.7	427.1	487.6	548.3	609.2	670.2	731.5	6
7	7.0	67.0	127.0	187.1	247.2	307.4	367.7	428.1	488.6	549.3	610.2	671.2	732.5	7
8	8.0	68.0	128.0	188.1	248.2	308.4	368.7	429.1	489.6	550.3	611.2	672.2	733.5	8
9	9.0	69.0	129.0	189.1	249.2	309.4	369.7	430.1	490.7	551.4	612.2	673.2	734.5	9
10	10.0	70.0	130.0	190.1	250.2	310.4	370.7	431.1	491.7	552.4	613.2	674.3	735.6	10
11	11.0	71.0	131.0	191.1	251.2	311.4	371.7	432.1	492.7	553.4	614.2	675.3	736.6	11
12	12.0	72.0	132.0	192.1	252.2	312.4	372.7	433.1	493.7	554.4	615.3	676.3	737.6	12
13	13.0	73.0	133.0	193.1	253.2	313.4	373.7	434.2	494.7	555.4	616.3	677.3	738.6	13
14	14.0	74.0	134.0	194.1	254.2	314.4	374.7	435.2	495.7	556.4	617.3	678.4	739.6	14
15	15.0	75.0	135.0	195.1	255.2	315.4	375.7	436.2	496.7	557.4	618.3	679.4	740.7	15
16	16.0	76.0	136.0	196.1	256.2	316.4	376.8	437.2	497.7	558.4	619.3	680.4	741.7	16
17	17.0	77.0	137.0	197.1	257.2	317.5	377.8	438.2	498.7	559.4	620.3	681.4	742.7	17
18	18.0	78.0	138.0	198.1	258.2	318.5	378.8	439.2	499.8	560.5	621.3	682.4	743.7	18
19	19.0	79.0	139.0	199.1	259.2	319.5	379.8	440.2	500.8	561.5	622.4	683.4	744.8	19
20	20.0	80.0	140.0	200.1	260.2	320.5	380.8	441.2	501.8	562.5	623.4	684.5	745.8	20
21	21.0	81.0	141.0	201.1	261.3	321.5	381.8	442.2	502.8	563.5	624.4	685.5	746.8	21
22	22.0	82.0	142.0	202.1	262.3	322.5	382.8	443.2	503.8	564.5	625.4	686.5	747.8	22
23	23.0	83.0	143.0	203.1	263.3	323.5	383.8	444.2	504.8	565.5	626.4	687.5	748.9	23
24	24.0	84.0	144.0	204.1	264.3	324.5	384.8	445.2	505.8	566.6	627.4	688.5	749.9	24
25	25.0	85.0	145.0	205.1	265.3	325.5	385.8	446.3	506.8	567.6	628.5	689.6	750.9	25
26	26.0	86.0	146.0	206.1	266.3	326.5	386.8	447.3	507.8	568.6	629.5	690.6	751.9	26
27	27.0	87.0	147.0	207.7	267.3	327.5	387.8	448.3	508.9	569.6	630.5	691.6	753.0	27
28	28.0	88.0	148.0	208.1	268.3	328.5	388.8	449.3	509.9	570.6	631.5	692.6	754.0	28
29	29.0	89.0	149.0	209.1	269.3	329.5	389.8	450.3	510.9	571.6	632.5	693.6	755.0	29
30	30.0	90.0	150.0	210.1	270.3	330.5	390.8	451.3	511.9	572.6	633.5	694.7	756.0	30
31	31.0	91.0	151.0	211.1	271.3	331.5	391.8	452.3	512.9	573.7	634.6	695.7	757.1	31
32	32.0	92.0	152.0	212.1	272.3	332.5	392.9	453.3	513.9	574.7	635.6	696.7	758.1	32
33	33.0	93.0	153.1	213.1	273.3	333.5	393.9	454.3	514.9	575.7	636.6	697.7	759.1	33
34	34.0	94.0	154.1	214.1	274.3	334.5	394.9	455.3	515.9	576.7	637.6	698.7	760.1	34
35	35.0	95.0	155.1	215.1	275.3	335.5	395.9	456.3	516.9	577.7	638.6	699.8	761.1	35
36	36.0	96.0	156.1	216.1	276.3	336.5	396.9	457.3	518.0	578.7	639.6	700.8	762.2	36
37	37.0	97.0	157.1	217.1	277.3	337.5	397.9	458.4	519.0	579.7	640.7	701.8	763.2	37
38	38.0	98.0	158.1	218.1	278.3	338.5	398.9	459.4	520.0	580.8	641.7	702.8	764.2	38
39	39.0	99.0	159.1	219.1	279.3	339.6	399.9	460.4	521.0	581.8	642.7	703.8	765.2	39
40	40.0	100.0	160.1	220.2	280.3	340.6	400.9	461.4	522.0	582.8	643.7	704.9	766.3	40
41	41.0	101.0	161.1	221.2	281.3	341.6	401.9	462.4	523.0	583.8	644.7	705.9	767.3	41
42	42.0	102.0	162.1	222.2	282.3	342.6	402.9	463.4	524.0	584.8	645.8	706.9	768.3	42
43	43.0	103.0	163.1	223.2	283.3	343.6	403.9	464.4	525.0	585.8	646.8	707.9	769.3	43
44	44.0	104.0	164.1	224.2	284.3	344.6	404.9	465.4	526.0	586.8	647.8	709.0	770.4	44
45	45.0	105.0	165.1	225.2	285.3	345.6	405.9	466.4	527.1	587.9	648.8	710.0	771.4	45
46	46.0	106.0	166.1	226.2	286.3	346.6	407.0	467.4	528.1	588.9	649.8	711.0	772.4	46
47	47.0	107.0	167.1	227.2	287.3	347.6	408.0	468.4	529.1	589.9	650.8	712.0	773.4	47
48	48.0	108.0	168.1	228.2	288.3	348.6	409.0	469.5	530.1	590.9	651.9	713.0	774.5	48
49	49.0	109.0	169.1	229.2	289.3	349.6	410.0	470.5	531.1	591.9	652.9	714.1	775.5	49
50	50.0	110.0	170.1	230.2	290.3	350.6	411.0	471.5	532.1	592.9	653.9	715.1	776.5	50
51	51.0	111.0	171.1	231.2	291.3	351.6	412.0	472.5	533.1	593.9	654.9	716.1	777.5	51
52	52.0	112.0	172.1	232.2	292.4	352.6	413.0	473.5	534.1	595.0	655.9	717.1	778.6	52
53	53.0	113.0	173.1	233.2	293.4	353.6	414.0	474.5	535.1	596.0	657.0	718.2	779.6	53
54	54.0	114.0	174.1	234.2	294.4	354.6	415.0	475.5	536.2	597.0	658.0	719.2	780.6	54
55	55.0	115.0	175.1	235.2	295.4	355.6	416.0	476.5	537.2	598.0	659.0	720.2	781.7	55
56	56.0	116.0	176.1	236.2	296.4	356.6	417.0	477.5	538.2	599.0	660.0	721.2	782.7	56
57	57.0	117.0	177.1	237.2	297.4	357.6	418.0	478.5	539.2	600.0	661.0	722.3	783.7	57
58	58.0	118.0	178.1	238.2	298.4	358.6	419.0	479.5	540.2	601.0	662.1	723.3	784.7	58
59	59.0	119.0	179.1	239.2	299.4	359.6	420.0	480.5	541.2	602.1	663.1	724.3	785.8	59
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
D. l.	0	1	2	3	4	5	6	7	8	9	10	11	12	D. l.

D. l.	13	14	15	16	17	18	19	20	21	22	23	24	25	D. l.
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
0	786.8	848.5	910.5	972.8	1035.3	1098.2	1161.5	1225.1	1289.2	1353.7	1418.6	1484.1	1550.0	0
1	787.8	849.5	911.5	973.8	1036.3	1099.3	1162.5	1226.2	1290.3	1354.8	1419.7	1485.2	1551.1	1
2	788.8	850.5	912.6	974.8	1037.4	1100.3	1163.6	1227.3	1291.3	1355.8	1420.8	1486.3	1552.2	2
3	789.9	851.6	913.6	975.9	1038.4	1101.4	1164.7	1228.3	1292.4	1356.0	1421.9	1487.3	1553.3	3
4	790.9	852.6	914.6	976.9	1039.5	1102.4	1165.7	1229.4	1293.5	1358.0	1423.0	1488.4	1554.4	4
5	791.9	853.6	915.7	978.0	1040.5	1103.5	1166.8	1230.4	1294.5	1359.0	1424.1	1489.5	1555.5	5
6	792.9	854.7	916.7	979.0	1041.6	1104.5	1167.8	1231.5	1295.6	1360.2	1425.1	1490.6	1556.6	6
7	794.0	855.7	917.7	980.0	1042.6	1105.6	1168.9	1232.6	1296.7	1361.2	1426.2	1491.7	1557.7	7
8	795.0	856.7	918.8	981.1	1043.7	1106.6	1170.0	1233.6	1297.8	1362.3	1427.3	1492.8	1558.8	8
9	796.0	857.8	919.8	982.1	1044.7	1107.7	1171.0	1234.7	1298.8	1363.4	1428.4	1493.9	1559.9	9
10	797.0	858.8	920.8	983.2	1045.8	1108.7	1172.1	1235.8	1299.9	1364.5	1429.5	1495.0	1561.0	10
11	798.1	859.8	921.9	984.2	1046.8	1109.8	1173.1	1236.8	1301.0	1365.6	1430.6	1496.1	1562.1	11
12	799.1	860.9	922.9	985.2	1047.9	1110.8	1174.2	1237.9	1302.0	1366.6	1431.7	1497.2	1563.2	12
13	800.2	861.9	923.9	986.3	1048.9	1111.9	1175.2	1239.0	1303.1	1367.7	1432.8	1498.3	1564.3	13
14	801.2	862.9	925.0	987.3	1049.9	1112.9	1176.3	1240.0	1304.2	1368.8	1433.9	1499.4	1565.4	14
15	802.2	864.0	926.0	988.4	1051.0	1114.0	1177.4	1241.1	1305.3	1369.9	1434.9	1500.5	1566.5	15
16	803.2	865.0	927.0	989.4	1052.0	1115.0	1178.4	1242.2	1306.3	1370.9	1436.0	1501.6	1567.6	16
17	804.2	866.0	928.1	990.4	1053.1	1116.1	1179.5	1243.2	1307.4	1372.0	1437.1	1502.7	1568.7	17
18	805.3	867.1	929.1	991.5	1054.1	1117.1	1180.5	1244.3	1308.5	1373.1	1438.2	1503.8	1569.8	18
19	806.3	868.1	930.1	992.5	1055.2	1118.2	1181.6	1245.4	1309.6	1374.2	1439.3	1504.9	1571.0	19
20	807.3	869.1	931.2	993.6	1056.2	1119.2	1182.7	1246.4	1310.6	1375.3	1440.4	1506.0	1572.1	20
21	808.4	870.1	932.2	994.6	1057.3	1120.3	1183.7	1247.5	1311.7	1376.4	1441.5	1507.1	1573.2	21
22	809.4	871.2	933.2	995.6	1058.3	1121.3	1184.8	1248.6	1312.8	1377.4	1442.6	1508.2	1574.3	22
23	810.4	872.2	934.3	996.7	1059.4	1122.4	1185.8	1249.6	1313.8	1378.5	1443.7	1509.3	1575.4	23
24	811.4	873.2	935.3	997.7	1060.4	1123.4	1186.9	1250.7	1314.9	1379.6	1444.8	1510.4	1576.5	24
25	812.5	874.3	936.3	998.8	1061.4	1124.5	1188.0	1251.8	1316.0	1380.7	1445.8	1511.5	1577.6	25
26	813.5	875.3	937.4	999.8	1062.5	1125.5	1189.0	1252.8	1317.1	1381.8	1446.9	1512.6	1578.7	26
27	814.5	876.3	938.4	1000.8	1063.5	1126.6	1190.1	1253.9	1318.1	1382.8	1448.0	1513.7	1579.8	27
28	815.5	877.4	939.4	1001.9	1064.6	1127.6	1191.1	1255.0	1319.2	1383.9	1449.1	1514.8	1580.9	28
29	816.6	878.4	940.5	1002.9	1065.6	1128.7	1192.2	1256.0	1320.3	1385.0	1450.2	1515.9	1582.0	29
30	817.6	879.4	941.5	1004.0	1066.7	1129.7	1193.2	1257.1	1321.4	1386.1	1451.3	1517.0	1583.2	30
31	818.6	880.5	942.5	1005.0	1067.7	1130.8	1194.3	1258.2	1322.5	1387.2	1452.4	1518.1	1584.3	31
32	819.6	881.5	943.6	1006.1	1068.8	1131.8	1195.4	1259.2	1323.5	1388.3	1453.5	1519.2	1585.4	32
33	820.7	882.5	944.6	1007.1	1069.8	1132.9	1196.4	1260.3	1324.6	1389.4	1454.6	1520.3	1586.5	33
34	821.7	883.6	945.6	1008.1	1070.9	1134.0	1197.5	1261.4	1325.7	1390.4	1455.6	1521.4	1587.6	34
35	822.7	884.6	946.7	1009.2	1072.0	1135.1	1198.5	1262.4	1326.7	1391.5	1456.7	1522.5	1588.7	35
36	823.8	885.6	947.7	1010.2	1073.0	1136.1	1199.6	1263.5	1327.8	1392.6	1457.8	1523.6	1589.8	36
37	824.8	886.7	948.7	1011.3	1074.1	1137.2	1200.7	1264.6	1328.9	1393.7	1458.9	1524.7	1590.9	37
38	825.8	887.7	949.8	1012.3	1075.1	1138.2	1201.7	1265.6	1330.0	1394.8	1460.0	1525.8	1592.0	38
39	826.8	888.7	950.8	1013.4	1076.2	1139.3	1202.8	1266.7	1331.0	1395.8	1461.1	1526.9	1593.2	39
40	827.9	889.8	951.9	1014.4	1077.2	1140.3	1203.9	1267.8	1332.1	1396.9	1462.2	1528.0	1594.3	40
41	828.9	890.8	952.9	1015.4	1078.3	1141.4	1204.9	1268.8	1333.2	1398.0	1463.3	1529.1	1595.4	41
42	829.9	891.8	953.9	1016.5	1079.3	1142.4	1206.0	1269.9	1334.3	1399.1	1464.4	1530.2	1596.5	42
43	831.0	892.9	955.0	1017.5	1080.4	1143.5	1207.1	1271.0	1335.3	1400.2	1465.5	1531.3	1597.6	43
44	832.0	893.9	956.0	1018.6	1081.4	1144.6	1208.1	1272.1	1336.4	1401.3	1466.6	1532.4	1598.7	44
45	833.0	894.9	957.1	1019.6	1082.5	1145.6	1209.2	1273.1	1337.5	1402.4	1467.7	1533.5	1599.8	45
46	834.1	896.0	958.1	1020.6	1083.5	1146.7	1210.2	1274.2	1338.6	1403.4	1468.8	1534.6	1600.9	46
47	835.1	897.0	959.2	1021.7	1084.6	1147.7	1211.3	1275.3	1339.7	1404.5	1469.8	1535.7	1602.0	47
48	836.1	898.0	960.2	1022.7	1085.6	1148.8	1212.4	1276.3	1340.7	1405.6	1470.9	1536.8	1603.1	48
49	837.2	899.1	961.3	1023.8	1086.7	1149.8	1213.4	1277.4	1341.8	1406.7	1472.0	1537.9	1604.3	49
50	838.2	900.1	962.3	1024.8	1087.7	1150.9	1214.5	1278.5	1342.9	1407.8	1473.1	1539.0	1605.4	50
51	839.2	901.1	963.4	1025.9	1088.8	1152.0	1215.5	1279.5	1344.0	1408.8	1474.2	1540.1	1606.5	51
52	840.2	902.2	964.4	1026.9	1089.8	1153.0	1216.6	1280.6	1345.1	1409.9	1475.3	1541.2	1607.6	52
53	841.3	903.2	965.5	1028.0	1090.9	1154.1	1217.7	1281.7	1346.1	1411.0	1476.4	1542.3	1608.7	53
54	842.3	904.3	966.5	1029.0	1091.9	1155.1	1218.7	1282.8	1347.2	1412.1	1477.5	1543.4	1609.8	54
55	843.4	905.3	967.6	1030.1	1093.0	1156.2	1219.8	1283.8	1348.3	1413.2	1478.6	1544.5	1610.9	55
56	844.4	906.3	968.6	1031.1	1094.0	1157.2	1220.9	1284.9	1349.4	1414.3	1479.7	1545.6	1612.0	56
57	845.4	907.4	969.6	1032.2	1095.1	1158.3	1221.9	1286.0	1350.4	1415.4	1480.8	1546.7	1613.1	57
58	846.5	908.4	970.7	1033.2	1096.1	1159.4	1223.0	1287.0	1351.5	1416.5	1481.9	1547.8	1614.2	58
59	847.5	909.4	971.7	1034.3	1097.2	1160.4	1224.1	1288.1	1352.6	1417.6	1483.0	1548.9	1615.4	59
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
D. l.	13	14	15	16	17	18	19	20	21	22	23	24	25	D. l.

D. l.	26	27	28	29	30	31	32	33	34	35	36	37	38	D. l.
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
0	1616.5	1683.5	1751.2	1819.5	1888.4	1958.0	2028.4	2099.6	2171.5	2244.3	2318.0	2392.7	2468.3	0
1	1617.6	1684.6	1752.3	1820.6	1889.5	1959.2	2029.6	2100.7	2172.7	2245.5	2319.3	2393.9	2469.6	1
2	1618.7	1685.8	1753.4	1821.7	1890.7	1960.4	2030.7	2101.9	2173.9	2246.8	2320.5	2395.2	2470.8	2
3	1619.8	1686.9	1754.6	1822.9	1891.9	1961.6	2031.9	2103.1	2175.1	2248.0	2321.7	2396.4	2472.1	3
4	1620.9	1688.0	1755.7	1824.0	1893.0	1962.7	2033.1	2104.3	2176.3	2249.2	2323.0	2397.7	2473.4	4
5	1622.0	1689.1	1756.8	1825.2	1894.1	1963.9	2034.3	2105.5	2177.5	2250.4	2324.2	2398.9	2474.6	5
6	1623.2	1690.3	1758.0	1826.3	1895.3	1965.0	2035.5	2106.7	2178.7	2251.6	2325.4	2400.2	2475.9	6
7	1624.3	1691.4	1759.1	1827.5	1896.5	1966.2	2036.7	2107.9	2180.0	2252.9	2326.7	2401.4	2477.1	7
8	1625.4	1692.5	1760.2	1828.6	1897.6	1967.4	2037.8	2109.1	2181.2	2254.1	2327.9	2402.7	2478.5	8
9	1626.5	1693.6	1761.4	1829.7	1898.8	1968.5	2039.0	2110.3	2182.4	2255.3	2329.2	2403.9	2479.7	9
10	1627.6	1694.8	1762.5	1830.9	1899.9	1969.7	2040.2	2111.5	2183.6	2256.5	2330.4	2405.2	2481.0	10
11	1628.7	1695.9	1763.6	1832.0	1901.1	1970.9	2041.4	2112.7	2184.8	2257.8	2331.6	2406.4	2482.3	11
12	1629.8	1697.0	1764.8	1833.2	1902.3	1972.0	2042.6	2113.9	2186.0	2259.0	2332.9	2407.7	2483.5	12
13	1631.0	1698.1	1765.9	1834.3	1903.4	1973.2	2043.8	2115.1	2187.2	2260.2	2334.1	2409.0	2484.8	13
14	1632.1	1699.3	1767.0	1835.5	1904.6	1974.4	2044.9	2116.3	2188.4	2261.4	2335.3	2410.2	2486.1	14
15	1633.2	1700.4	1768.2	1836.6	1905.7	1975.6	2046.1	2117.5	2189.6	2262.7	2336.6	2411.5	2487.4	15
16	1634.3	1701.5	1769.3	1837.8	1906.9	1976.8	2047.3	2118.7	2190.8	2263.9	2337.8	2412.7	2488.6	16
17	1635.4	1702.6	1770.5	1838.9	1908.1	1977.9	2048.5	2119.8	2192.0	2265.1	2339.0	2414.0	2489.9	17
18	1636.5	1703.8	1771.6	1840.1	1909.2	1979.1	2049.7	2121.0	2193.3	2266.3	2340.3	2415.2	2491.2	18
19	1637.7	1704.9	1772.7	1841.2	1910.4	1980.3	2050.8	2122.2	2194.5	2267.6	2341.5	2416.5	2492.5	19
20	1638.8	1706.0	1773.9	1842.4	1911.5	1981.4	2052.0	2123.4	2195.7	2268.8	2342.8	2417.8	2493.7	20
21	1639.9	1707.1	1775.0	1843.5	1912.7	1982.6	2053.2	2124.6	2196.9	2270.0	2344.0	2419.0	2495.0	21
22	1641.0	1708.3	1776.1	1844.6	1913.8	1983.7	2054.4	2125.8	2198.1	2271.2	2345.3	2420.3	2496.3	22
23	1642.1	1709.4	1777.2	1845.8	1915.0	1984.9	2055.6	2127.0	2199.3	2272.5	2346.5	2421.5	2497.6	23
24	1643.2	1710.5	1778.4	1846.9	1916.2	1986.1	2056.8	2128.2	2200.5	2273.7	2347.8	2422.8	2498.8	24
25	1644.3	1711.6	1779.5	1848.1	1917.3	1987.3	2058.0	2129.4	2201.7	2274.9	2349.0	2424.0	2500.1	25
26	1645.5	1712.8	1780.6	1849.2	1918.5	1988.4	2059.1	2130.6	2203.0	2276.1	2350.2	2425.3	2501.4	26
27	1646.6	1713.9	1781.8	1850.4	1919.6	1989.6	2060.3	2131.8	2204.2	2277.4	2351.5	2426.5	2502.7	27
28	1647.7	1715.0	1783.0	1851.5	1920.8	1990.8	2061.5	2133.0	2205.4	2278.6	2352.7	2427.8	2503.9	28
29	1648.8	1716.1	1784.1	1852.7	1921.9	1992.0	2062.7	2134.2	2206.6	2279.8	2354.0	2429.1	2505.2	29
30	1649.9	1717.3	1785.2	1853.8	1923.1	1993.1	2063.9	2135.4	2207.8	2281.0	2355.2	2430.3	2506.5	30
31	1651.0	1718.4	1786.4	1855.0	1924.3	1994.3	2065.1	2136.6	2209.0	2282.3	2356.5	2431.6	2507.8	31
32	1652.2	1719.5	1787.5	1856.1	1925.4	1995.5	2066.2	2137.8	2210.2	2283.5	2357.7	2432.9	2509.0	32
33	1653.3	1720.7	1788.6	1857.2	1926.6	1996.6	2067.4	2139.0	2211.4	2284.7	2358.9	2434.1	2510.3	33
34	1654.4	1721.8	1789.8	1858.4	1927.8	1997.8	2068.6	2140.2	2212.7	2286.0	2360.2	2435.4	2511.6	34
35	1655.5	1722.9	1790.9	1859.6	1928.9	1999.0	2069.8	2141.4	2213.9	2287.2	2361.4	2436.7	2512.9	35
36	1656.6	1724.0	1792.1	1860.7	1930.1	2000.2	2071.0	2142.6	2215.1	2288.4	2362.7	2437.9	2514.2	36
37	1657.8	1725.2	1793.2	1561.9	1931.3	2001.3	2072.2	2143.8	2216.3	2289.7	2363.9	2439.2	2515.4	37
38	1658.9	1726.3	1794.3	1863.0	1932.4	2002.5	2073.4	2145.0	2217.5	2290.9	2365.2	2440.4	2516.7	38
39	1660.0	1727.4	1795.5	1864.2	1933.6	2003.7	2074.6	2146.2	2218.7	2292.1	2366.4	2441.7	2518.0	39
40	1661.1	1728.6	1796.6	1865.3	1934.7	2004.9	2075.7	2147.4	2219.9	2293.3	2367.7	2443.0	2519.3	40
41	1662.2	1729.7	1797.8	1866.5	1935.9	2006.0	2076.9	2148.6	2221.2	2294.6	2368.9	2444.2	2520.6	41
42	1663.4	1730.8	1798.9	1867.6	1937.1	2007.2	2078.1	2149.8	2222.4	2295.8	2370.2	2445.5	2521.8	42
43	1664.5	1731.9	1800.0	1868.8	1938.2	2008.4	2079.3	2151.0	2223.6	2297.0	2371.4	2446.8	2523.1	43
44	1665.6	1733.1	1801.2	1869.9	1939.4	2009.6	2080.5	2152.2	2224.8	2298.3	2372.7	2448.0	2524.4	44
45	1666.7	1734.2	1802.3	1871.1	1940.5	2010.7	2081.7	2153.4	2226.0	2299.5	2373.9	2449.3	2525.7	45
46	1667.8	1735.3	1803.5	1872.2	1941.7	2011.9	2082.9	2154.6	2227.2	2300.7	2375.2	2450.6	2527.0	46
47	1669.0	1736.5	1804.6	1873.4	1942.9	2013.1	2084.1	2155.8	2228.5	2302.0	2376.4	2451.8	2528.3	47
48	1670.1	1737.6	1805.7	1874.5	1944.0	2014.3	2085.3	2157.0	2229.7	2303.2	2377.7	2453.1	2529.5	48
49	1671.2	1738.7	1806.9	1875.7	1945.2	2015.4	2086.5	2158.2	2230.9	2304.4	2378.9	2454.3	2530.8	49
50	1672.3	1739.9	1808.0	1876.8	1946.4	2016.6	2087.7	2159.4	2232.1	2305.7	2380.1	2455.6	2532.1	50
51	1673.4	1741.0	1809.2	1878.0	1947.5	2017.8	2088.9	2160.7	2233.3	2306.9	2381.4	2456.9	2533.4	51
52	1674.5	1742.1	1810.3	1879.2	1948.7	2019.0	2090.1	2161.9	2234.6	2308.1	2382.6	2458.1	2534.7	52
53	1675.7	1743.2	1811.4	1880.3	1949.9	2020.2	2091.3	2163.1	2235.8	2309.4	2383.9	2459.4	2536.0	53
54	1676.8	1744.4	1812.6	1881.5	1951.0	2021.3	2092.5	2164.3	2237.0	2310.6	2385.1	2460.7	2537.2	54
55	1678.0	1745.5	1813.7	1882.6	1952.2	2022.5	2093.7	2165.5	2238.2	2311.8	2386.4	2461.9	2538.5	55
56	1679.1	1746.6	1814.9	1883.8	1953.4	2023.7	2094.9	2166.7	2239.4	2313.1	2387.6	2463.2	2539.8	56
57	1680.2	1747.8	1816.0	1884.9	1954.5	2024.9	2096.1	2167.9	2240.7	2314.3	2388.9	2464.5	2541.1	57
58	1681.3	1748.9	1817.2	1886.1	1955.7	2026.0	2097.3	2169.1	2241.9	2315.5	2390.2	2465.8	2542.4	58
59	1682.4	1750.0	1818.3	1887.2	1956.9	2027.2	2098.5	2170.3	2243.1	2316.7	2391.4	2467.0	2543.7	59
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
D. l.	26	27	28	29	30	31	32	33	34	35	36	37	38	D. l.

D. l.	39	40	41	42	43	44	45	46	47	48	49	50	51	D. l.
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
0	2545.0	2622.7	2701.6	2781.7	2863.1	2945.7	3030.0	3115.6	3202.8	3291.6	3382.1	3474.5	3568.8	0
1	2546.2	2624.0	2702.9	2783.1	2864.5	2947.2	3031.4	3117.0	3204.2	3293.1	3383.6	3476.1	3570.4	1
2	2547.5	2625.3	2704.3	2784.4	2865.8	2948.6	3032.8	3118.5	3205.7	3294.6	3385.2	3477.6	3572.0	2
3	2548.8	2626.6	2705.6	2785.8	2867.2	2950.0	3034.2	3119.9	3207.2	3296.1	3386.7	3479.2	3573.6	3
4	2550.1	2627.9	2706.9	2787.1	2868.5	2951.4	3035.6	3121.4	3208.6	3297.5	3388.2	3480.7	3575.2	4
5	2551.4	2629.2	2708.3	2788.5	2870.0	2952.8	3037.0	3122.8	3210.1	3299.0	3389.7	3482.3	3576.8	5
6	2552.7	2630.5	2709.6	2789.8	2871.3	2954.2	3038.4	3124.2	3211.6	3300.5	3391.3	3483.9	3578.4	6
7	2554.0	2631.9	2710.9	2791.2	2872.7	2955.6	3039.8	3125.7	3213.0	3302.0	3392.8	3485.4	3580.0	7
8	2555.3	2633.2	2712.2	2792.5	2874.1	2957.0	3041.3	3127.1	3214.5	3303.5	3394.3	3487.0	3581.6	8
9	2556.6	2634.5	2713.6	2793.8	2875.4	2958.4	3042.7	3128.6	3216.0	3305.0	3395.9	3488.5	3583.2	9
10	2557.8	2635.8	2714.9	2795.1	2876.8	2959.8	3044.1	3130,0	3217.4	3306.5	3397.4	3490.1	3584.8	10
11	2559.1	2637.1	2716.2	2796.5	2878.2	2961.1	3045.5	3131.5	3218.9	3308.0	3398.9	3491.7	3586.4	11
12	2560.4	2638.4	2717.5	2797.9	2879.5	2962.5	3047.0	3132.9	3220.4	3309.5	3400.4	3493.2	3588.0	12
13	2561.7	2639.7	2718.9	2799.3	2880.9	2963.9	3048.4	3134.3	3221.9	3311.0	3402.0	3494.8	3589.5	13
14	2563.0	2641.0	2720.2	2800.6	2882.3	2965.3	3049.8	3135.8	3223.3	3312.5	3403.5	3496.3	3591.1	14
15	2564.3	2642.3	2721.5	2802.0	2883.7	2966.7	3051.2	3137.2	3224.8	3314.0	3405.0	3497.9	3592.7	15
16	2565.6	2643.6	2722.9	2803.3	2885.0	2968.1	3052.6	3138.7	3226.3	3315.5	3406.6	3499.5	3594.3	16
17	2566.9	2644.9	2724.2	2804.7	2886.4	2969.5	3054.1	3140.1	3227.7	3317.0	3408.1	3501.0	3595.9	17
18	2568.2	2646.3	2725.5	2806.0	2887.8	2970.9	3055.5	3141.6	3229.2	3318.5	3409.6	3502.6	3597.5	18
19	2569.5	2647.6	2726.9	2807.4	2889.2	2972.3	3056.9	3143.0	3230.7	3320.0	3411.2	3504.2	3599.1	19
20	2570.7	2648.9	2728.2	2808.8	2890.5	2973.7	3058.3	3144.5	3232.2	3321.5	3412.7	3505.7	3600.7	20
21	2572.0	2650.2	2729.5	2810.1	2891.9	2975.1	3059.7	3145.9	3233.6	3323.1	3414.2	3507.3	3602.3	21
22	2573.3	2651.5	2730.8	2811.4	2893.3	2976.5	3061.2	3147.4	3235.1	3324.6	3415.8	3508.9	3603.9	22
23	2574.6	2652.8	2732.2	2812.8	2894.7	2977.9	3062.6	3148.8	3236.6	3326.1	3417.3	3510.5	3605.5	23
24	2575.9	2654.1	2733.5	2814.1	2896.0	2979.3	3064.0	3150.3	3238.1	3327.6	3418.8	3512.0	3607.1	24
25	2577.2	2655.5	2734.8	2815.5	2897.4	2980.7	3065.4	3151.7	3239.5	3329.1	3420.4	3513.6	3608.7	25
26	2578.5	2656.8	2736.2	2816.8	2898.8	2982.1	3066.9	3153.2	3241.0	3330.6	3421.9	3515.1	3610.3	26
27	3579.7	2658.1	2737.5	2818.2	2900.2	2983.5	3068.3	3154.6	3242.5	3332.1	3423.5	3516.7	3611.9	27
28	2581.1	2659.4	2738.8	2819.5	2901.5	2984.9	3069.7	3156.1	3244.0	3333.6	3425.0	3518.3	3613.6	28
29	2582.4	2660.7	2740.2	2820.9	2902.9	2986.3	3071.1	3157.5	3245.5	3335.1	3426.5	3519.8	3615.2	29
30	2583.7	2662.0	2741.5	2822.3	2904.3	2987.7	3072.6	3159.0	3246.9	3336.6	3428.1	3521.4	3616.8	30
31	2585.0	2663.3	2742.9	2823.6	2905.7	2989.1	3074.0	3160.4	3248.4	3338.1	3429.6	3523.0	3618.4	31
32	2586.3	2664.6	2744.2	2825.0	2907.1	2990.5	3075.4	3161.9	3249.9	3339.6	3431.2	3524.6	3620.0	32
33	2587.6	2666.0	2745.5	2826.3	2908.4	2991.9	3076.9	3163.3	3251.4	3341.1	3432.7	3526.1	3621.6	33
34	2588.9	2667.3	2746.9	2827.7	2909.7	2993.3	3078.3	3164.8	3252.9	3342.7	3434.2	3527.7	3623.2	34
35	2590.2	2668.6	2748.2	2829.0	2911.2	2994.7	3079.7	3166.2	3254.4	3344.2	3435.8	3529.3	3624.8	35
36	2591.5	2669.9	2749.5	2830.4	2912.6	2996.1	3081.1	3167.7	3255.8	3345.7	3437.3	3530.9	3626.4	36
37	2592.8	2671.2	2750.9	2831.8	2914.0	2997.5	3082.6	3169.1	3257.3	3347.2	3438.9	3532.4	3628.0	37
38	2594.1	2672.5	2752.2	2833.1	2915.3	2998.9	3084.0	3170.6	3258.8	3348.7	3440.4	3534.0	3629.6	38
39	2595.4	2673.9	2753.5	2834.5	2916.7	3000.3	3085.4	3172.1	3260.3	3350.1	3442.0	3535.6	3631.1	39
40	2596.7	2675.1	2754.9	2835.8	2918.1	3001.8	3086.9	3173.5	3261.8	3351.7	3443.5	3537.2	3632.9	40
41	2598.0	2676.5	2756.2	2837.2	2919.5	3003.2	3088.3	3175.0	3263.3	3353.2	3445.0	3538.8	3634.5	41
42	2599.3	2677.8	2757.6	2838.6	2920.9	3004.6	3089.7	3176.4	3264.7	3354.8	3446.6	3540.3	3636.1	42
43	2600.6	2679.1	2758.9	2839.9	2922.3	3006.0	3091.2	3177.9	3266.2	3356.3	3448.1	3541.9	3637.7	43
44	2601.9	2680.5	2760.2	2841.3	2923.6	3007.4	3092.6	3179.3	3267.7	3357.8	3449.7	3543.5	3639.3	44
45	2603.2	2681.8	2761.5	2842.6	2925.0	3008.8	3094.0	3180.8	3269.2	3359.3	3451.2	3545.1	3640.9	45
46	2604.5	2683.1	2762.9	2844.0	2926.4	3010.2	3095.5	3182.3	3270.7	3360.8	3452.8	3546.7	3642.5	46
47	2605.8	2684.4	2764.3	2845.4	2927.8	3011.6	3096.9	3183.7	3272.2	3362.3	3454.3	3548.2	3644.2	47
48	2607.1	2685.7	2765.6	2846.7	2929.2	3013.0	3098.3	3185.2	3273.7	3363.9	3455.9	3549.8	3645.8	48
49	2608.4	2687.1	2766.9	2848.1	2930.6	3014.4	3099.8	3186.6	3275.2	3365.4	3457.4	3551,4	3647.4	49
50	2609.7	2688.4	2768.3	2849.5	2932.0	3015.8	3101.2	3188.1	3276.6	3366.9	3459.0	3553.0	3649.0	50
51	2611.0	2689.7	2769.6	2850.8	2933.3	3017.2	3102.6	3189.6	3278.1	3368.4	3460.5	3554.6	3650.6	51
52	2612.3	2691.0	2771.0	2852.2	2934.7	3018.7	3104.1	3191.0	3279.6	3369.9	3462.1	3556.1	3652.3	52
53	2613.6	2692.3	2772.3	2853.6	2936.1	3020.1	3105.6	3192.5	3281.1	3371.5	3463.6	3557.7	3653.9	53
54	2614.9	2693.7	2773.7	2854.9	2937.5	3021.5	3107.0	3194.0	3282.6	3373.0	3465.2	3559.3	3655.5	54
55	2616.2	2695.0	2775.0	2856.3	2938.9	3022.9	3108.4	3195.4	3284.1	3374.5	3466.7	3560.9	3657.1	55
56	2617.5	2696.3	2776.4	2857.7	2940.3	3024.3	3109.8	3196.9	3285.6	3376.0	3468.3	3562.5	3658.7	56
57	2618.8	2697.6	2777.7	2859.1	2941.7	3025.7	3111.2	3198.4	3287.1	3377.6	3469.8	3564.1	3660.4	57
58	2620.1	2699.0	2779.0	2860.5	2943.1	3027.1	3112.7	3199.8	3288.6	3379.1	3471.4	3565.7	3662.0	58
59	2621.4	2700.3	2780.4	2861.8	2944.4	3028.5	3114.1	3201.3	3290.1	3380.6	3473.0	3567.3	3663.6	59
min.	M. P	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P	M. P.	M. P.	M. P.	M. P.	M. P.	min.
D. l.	39	40	41	42	43	44	45	46	47	48	49	50	51	D. l.

D. l.	52	53	54	55	56	57	58	59	60	61	62	63	64	D. l.
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
0	3665.2	3763.8	3864.7	3968.0	4073.9	4182.6	4294.3	4409.2	4527.4	4649.2	4475.0	4905.0	5039.4	0
1	3666.9	3765.5	3866.4	3969.7	4075.7	4184.5	4296.2	4411.1	4529.4	4651.3	4777.1	4907.2	5041.7	1
2	3668.5	3767.1	3868.1	3971.5	4077.5	4186.3	4298.1	4413.1	4531.4	4653.4	4779.3	4909.4	5044.0	2
3	3670.1	3768.8	3869.8	3973.2	4079.3	4188.2	4300.0	4415.0	4533.4	4655.5	4781.4	4911.6	5046.3	3
4	3671.7	3770.4	3871.5	3975.0	4081.1	4190.0	4301.9	4417.0	4535.4	4657.5	4783.5	4913.8	5048.6	4
5	3673.4	3772.1	3873.2	3976.7	4082.9	4191.8	4303.8	4418.9	4537.4	4659.6	4785.7	4916.0	5050.8	5
6	3675.0	3773.8	3874.9	3978.4	4084.7	4193.7	4305.7	4420.8	4539.4	4661.7	4787.8	4918.2	5053.2	6
7	3676.6	3775.4	3876.6	3980.2	4086.5	4195.5	4307.6	4422.8	4541.4	4663.7	4790.0	4920.4	5055.5	7
8	3678.2	3777.1	3878.3	3982.0	4088.3	4197.4	4309.5	4424.7	4543.4	4665.8	4792.1	4922.6	5057.7	8
9	3679.9	3778.8	3880.0	3983.7	4090.1	4199.2	4311.4	4426.7	4545.4	4667.9	4794.2	4924.8	5060.0	9
10	3681.5	3780.4	3881.7	3985.5	4091.9	4201.1	4313.2	4428.6	4547.5	4669.9	4796.4	4927.1	5062.3	10
11	3683.1	3782.1	3883.4	3987.2	4093.7	4202.9	4315.1	4430.6	4549.5	4672.0	4798.5	4929.3	5064.6	11
12	3684.8	3783.8	3885.1	3989.0	4095.5	4204.7	4317.0	4432.5	4551.5	4674.1	4800.7	4931.5	5066.9	12
13	3686.4	3785.5	3886.8	3990.7	4097.3	4206.6	4318.9	4434.5	4553.5	4676.2	4802.8	4933.7	5069.2	13
14	3688.0	3787.1	3888.6	3992.5	4099.1	4208.4	4320.8	4436.4	4555.5	4678.2	4804.9	4935.9	5071.5	14
15	3689.7	3788.8	3890.3	3994.2	4100.9	4210.3	4322.7	4438.4	4557.5	4680.3	4807.1	4938.1	5073.8	15
16	3691.3	3790.5	3892.0	3996.0	4102.7	4212.1	4324.6	4440.4	4559.5	4682.4	4809.2	4940.4	5076.1	16
17	3692.9	3792.1	3893.7	3997.7	4104.5	4214.0	4326.5	4442.3	4561.5	4684.5	4811.4	4942.6	5078.4	17
18	3694.6	3793.8	3895.4	3999.5	4106.3	4215.8	4328.4	4444.3	4563.6	4686.6	4813.5	4944.8	5080.7	18
19	3696.2	3795.5	3897.1	4001.3	4108.1	4217.7	4330.3	4446.2	4565.6	4688.6	4815.7	4947.0	5083.0	19
20	3697.8	3797.2	3898.8	4003.0	4109.9	4219.5	4332.2	4448.2	4567.6	4690.7	4817.8	4949.3	5085.3	20
21	3699.5	3798.8	3900.5	4004.8	4111.7	4221.4	4334.2	4450.2	4569.6	4692.8	4820.0	4951.5	5087.7	21
22	3701.1	3800.5	3902.3	4006.5	4113.5	4223.2	4336.1	4452.1	4571.6	4694.9	4822.2	4953.7	5090.0	22
23	3702.7	3802.2	3904.0	4008.3	4115.3	4225.1	4338.0	4454.1	4573.7	4697.0	4824.3	4956.0	5092.3	23
24	3704.4	3803.9	3905.7	4010.0	4117.1	4227.0	4339.9	4456.0	4575.7	4699.1	4826.5	4958.2	5094.6	24
25	3706.0	3805.5	3907.4	4011.8	4118.9	4228.8	4341.8	4458.0	4577.7	4701.2	4828.6	4960.4	5096.9	25
26	3707.7	3807.2	3909.1	4013.6	4120.7	4230.7	4343.7	4460.0	4579.7	4703.2	4830.8	4962.7	5099.2	26
27	3709.3	3808.9	3910.9	4015.3	4122.5	4232.5	4345.6	4461.9	4581.8	4705.3	4832.9	4964.9	5101.5	27
28	3710.9	3810.6	3912.6	4017.1	4124.3	4234.4	4347.5	4463.9	4583.8	4707.4	4835.1	4967.1	5103.9	28
29	3712.6	3812.3	3914.3	4018.9	4126.1	4236.2	4349.4	4465.9	4585.8	4709.5	4837.3	4969.4	5106.2	29
30	3714.2	3813.9	3916.0	4020.6	4127.9	4238.1	4351.3	4467.8	4587.8	4711.6	4839.4	4971.6	5108.5	30
31	3715.9	3815.6	3917.7	4022.4	4129.7	4240.0	4353.3	4469.8	4589.9	4713.7	4841.6	4973.9	5110.8	31
32	3717.5	3817.3	3919.5	4024.2	4131.6	4241.8	4355.2	4471.8	4591.9	4715.8	4843.8	4976.1	5113.1	32
33	3719.2	3819.0	3921.2	4025.9	4133.4	4243.7	4357.1	4473.8	4593.9	4717.9	4845.9	4978.3	5115.5	33
34	3720.8	3820.7	3922.9	4027.7	4135.2	4245.6	4359.0	4475.7	4596.0	4720.0	4848.1	4980.6	5117.8	34
35	3722.4	3822.3	3924.6	4029.5	4137.0	4247.4	4360.9	4477.7	4598.0	4722.1	4850.3	4982.8	5120.1	35
36	3724.1	3824.0	3926.4	4031.2	4138.8	4249.3	4362.8	4479.7	4600.1	4724.2	4852.5	4985.1	5122.5	36
37	3725.7	3825.7	3928.1	4033.0	4140.6	4251.2	4364.8	4481.7	4602.1	4726.3	4854.6	4987.3	5124.8	37
38	3727.4	3827.4	3929.8	4034.8	4142.5	4253.0	4366.7	4483.6	4604.1	4728.4	4856.8	4989.6	5127.1	38
39	3729.0	3829.1	3931.5	4036.6	4144.3	4254.9	4368.6	4485.6	4606.2	4730.5	4859.0	4991.8	5129.5	39
40	3730.7	3830.8	3933.3	4038.3	4146.1	4256.8	4370.5	4487.6	4608.2	4732.6	4861.2	4994.1	5131.8	40
41	3732.3	3832.5	3935.0	4040.1	4147.9	4258.6	4372.5	4489.6	4610.3	4734.7	4863.3	4996.3	5134.1	41
42	3734.0	3834.2	3936.7	4041.9	4149.7	4260.5	4374.4	4491.6	4612.3	4736.9	4865.5	4998.6	5136.5	42
43	3735.6	3835.8	3938.5	4043.6	4151.6	4262.4	4376.3	4493.5	4614.3	4739.0	4867.7	5000.9	5138.8	43
44	3737.3	3837.5	3940.2	4045.4	4153.4	4264.3	4378.2	4495.5	4616.4	4741.1	4869.9	5003.1	5141.2	44
45	3738.9	3839.2	3941.9	4047.2	4155.2	4266.1	4380.1	4497.5	4618.4	4743.2	4872.1	5005.4	5143.5	45
46	3740.6	3840.9	3943.7	4049.0	4157.0	4268.0	4382.1	4499.5	4620.5	4745.3	4874.3	5007.6	5145.9	46
47	3742.2	3842.6	3945.4	4050.8	4158.8	4269.9	4384.0	4501.5	4622.5	4747.4	4876.4	5009.9	5148.2	47
48	3743.9	3844.3	3947.1	4052.5	4160.7	4271.8	4385.9	4503.5	4624.6	4749.5	4878.6	5012.2	5150.6	48
49	3745.6	3846.0	3948.9	4054.3	4162.5	4273.6	4387.9	4505.5	4626.6	4751.7	4880.8	5014.4	5152.9	49
50	3747.2	3847.7	3950.6	4056.1	4164.3	4275.5	4389.8	4507.5	4628.7	4753.8	4882.0	5016.7	5155.3	50
51	3748.9	3849.4	3952.3	4057.9	4166.2	4277.4	4391.7	4509.4	4630.7	4755.9	4885.2	5019.0	5157.6	51
52	3750.5	3851.1	3954.1	4059.7	4168.0	4279.3	4393.7	4511.4	4632.8	4758.0	4887.4	5021.2	5160.0	52
53	3752.2	3852.8	3955.8	4061.4	4169.8	4281.1	4395.6	4513.4	4634.8	4760.1	4889.6	5023.5	5162.3	53
54	3753.8	3854.5	3957.6	4063.2	4171.7	4283.0	4397.5	4515.4	4636.9	4762.3	4891.8	5025.8	5164.7	54
55	3755.5	3856.2	3959.3	4065.0	4173.5	4284.9	4399.5	4517.4	4639.0	4764.4	4894.0	5028.1	5167.0	55
56	3757.2	3857.9	3961.0	4066.8	4175.3	4286.8	4401.4	4519.4	4641.0	4766.5	4896.2	5030.3	5169.4	56
57	3758.8	3859.6	3962.8	4068.6	4177.2	4288.7	4403.4	4521.4	4643.1	4768.6	4898.4	5032.6	5171.8	57
58	3760.5	3861.3	3964.5	4070.4	4179 0	4290.6	4405.3	4523.4	4645.1	4770.8	4900.6	5034.9	5174.1	58
59	3762.2	3863.0	3966.3	4072.1	4180.8	4292.5	4407.2	4525.4	4647.2	4772.9	4902.8	5037.2	5176.5	59
min.	M. P	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
D. l.	52	53	54	55	56	57	58	59	60	61	62	63	64	D. l.

MERIDIONAL PARTS.

D. l.	65	66	67	68	69	70	71	72	73	74	75	76	77	D. l.
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
0	5178.8	5323.6	5474.0	5630.9	5794.6	5966.0	6145.7	6334.9	6534.5	6745.7	6970.3	7210.1	7467.2	0
1	5181.2	5326.0	5476.6	5633.5	5797.4	5968.9	6148.8	6338.1	6537.9	6749.4	6974.2	7214.2	7471.7	1
2	5183.6	5328.5	5479.2	5636.2	5800.2	5971.8	6151.9	6341.4	6541.3	6753.0	6978.1	7218.3	7476.1	2
3	5186.0	5330.9	5481.7	5638.9	5803.0	5974.7	6155.0	6344.6	6544.7	6756.6	6981.9	7222.5	7480.6	3
4	5188.3	5333.4	5484.3	5641.5	5805.8	5977.7	6158.0	6347.8	6548.2	6760.3	6985.8	7226.6	7485.0	4
5	5190.7	5335.9	5486.9	5644.2	5808.6	5980.6	6161.1	6351.1	6551.6	6763.9	6989.7	7230.8	7489.5	5
6	5193.1	5338.3	5489.4	5646.9	5811.4	5983.5	6164.2	6354.3	6555.0	6767.6	6993.6	7234.9	7494.0	6
7	5195.4	5340.8	5492.0	5649.6	5814.2	5986.5	6167.3	6357.6	6558.5	6771.2	6997.5	7239.1	7498.5	7
8	5197.8	5343.3	5494.6	5652.3	5817.0	5989.4	6170.4	6360.9	6561.9	6774.9	7001.4	7243.3	7502.9	8
9	5200.2	5345.7	5497.1	5655.0	5819.8	5992.4	6173.5	6364.1	6565.4	6778.5	7005.3	7247.5	7507.4	9
10	5202.6	5348.2	5499.7	5657.6	5822.6	5995.3	6176.6	6367.4	6568.8	6782.2	7009.2	7251.6	7511.9	10
11	5205.0	5350.7	5502.3	5660.3	5825.4	5998.3	6179.7	6370.6	6572.3	6785.8	7013.1	7255.8	7516.4	11
12	5207.3	5353.2	5504.9	5663.0	5828.2	6001.2	6182.8	6373.9	6575.7	6789.5	7017.0	7260.0	7520.9	12
13	5209.7	5355.6	5507.4	5665.7	5831.0	6004.2	6185.9	6377.2	6579.2	6793.2	7020.9	7264.2	7525.4	13
14	5212.1	5358.1	5510.0	5668.4	5833.9	6007.1	6189.0	6380.5	6582.6	6796.9	7024.8	7268.4	7530.0	14
15	5214.5	5360.6	5512.6	5671.1	5836.7	6010.1	6192.1	6383.7	6586.1	6800.5	7028.7	7272.6	7534.5	15
16	5216.9	5363.1	5515.2	5673.8	5839.5	6013.0	6195.2	6387.0	6589.5	6804.2	7032.7	7276.8	7539.0	16
17	5219.3	5365.6	5517.8	5676.5	5842.3	6016.0	6198.3	6390.3	6593.0	6807.9	7036.6	7281.0	7543.6	17
18	5221.7	5368.1	5520.4	5679.2	5845.2	6019.0	6201.4	6393.6	6596.5	6811.6	7040.5	7285.2	7548.1	18
19	5224.1	5370.5	5523.0	5681.9	5848.0	6021.9	6204.6	6396.9	6600.0	6815.3	7044.5	7289.4	7552.7	19
20	5226.5	5373.0	5525.6	5684.6	5850.8	6024.9	6207.7	6400.2	6603.4	6819.0	7048.4	7293.7	7557.2	20
21	5228.9	5375.5	5528.2	5687.3	5853.7	6027.9	6210.8	6403.5	6606.9	6822.7	7052.4	7297.9	7561.8	21
22	5231.3	5378.0	5530.8	5690.0	5856.5	6030.8	6213.9	6406.8	6610.4	6826.4	7056.3	7302.1	7566.3	22
23	5233.7	5380.5	5533.4	5692.8	5859.3	6033.8	6217.1	6410.1	6613.9	6830.1	7060.3	7306.4	7570.9	23
24	5236.1	5383.0	5536.0	5695.5	5862.2	6036.8	6220.2	6413.4	6617.4	6833.8	7064.2	7310.6	7575.5	24
25	5238.5	5385.5	5538.6	5698.2	5865.0	6039.8	6223.3	6416.7	6620.9	6837.6	7068.2	7314.9	7580.1	25
26	5240.9	5388.0	5541.2	5700.9	5867.9	6042.7	6226.5	6420.0	6624.4	6841.3	7072.2	7319.1	7584.7	26
27	5243.3	5390.5	5543.8	5703.6	5870.7	6045.7	6229.6	6423.3	6627.9	6845.0	7076.2	7323.4	7589.3	27
28	5245.7	5393.0	5546.4	5706.3	5873.5	6048.7	6232.7	6426.6	6631.4	6848.7	7080.1	7327.7	7593.9	28
29	5248.1	5395.5	5549.0	5709.1	5876.4	6051.7	6235.9	6429.9	6635.0	6852.5	7084.1	7332.0	7598.5	29
30	5250.5	5398.0	5551.6	5711.8	5879.3	6054.7	6239.0	6433.2	6638.5	6856.2	7088.1	7336.2	7603.1	30
31	5252.9	5400.5	5554.2	5714.5	5882.1	6057.7	6242.2	6436.6	6642.0	6860.0	7092.1	7340.4	7607.7	31
32	5255.3	5403.0	5556.8	5717.3	5885.0	6060.7	6245.3	6439.9	6645.5	6863.7	7096.1	7344.8	7612.3	32
33	5257.7	5405.6	5559.5	5720.0	5887.8	6063.7	6248.5	6443.2	6649.1	6867.5	7100.1	7349.1	7617.0	33
34	5260.1	5408.1	5562.1	5722.7	5890.7	6066.7	6251.7	6446.6	6652.6	6871.2	7104.1	7353.4	7621.6	34
35	5262.6	5410.6	5564.7	5725.5	5893.6	6069.7	6254.8	6449.9	6656.1	6875.0	7108.2	7357.7	7626.3	35
36	5265.0	5413.1	5567.3	5728.2	5896.4	6072.7	6258.0	6453.3	6659.7	6878.7	7112.2	7362.0	7630.9	36
37	5267.4	5415.6	5569.9	5731.0	5899.3	6075.7	6261.2	6456.6	6663.2	6882.5	7116.2	7366.4	7635.6	37
38	5269.8	5418.1	5572.6	5733.7	5902.2	6078.8	6264.4	6460.0	6666.8	6886.3	7120.2	7370.7	7640.2	38
39	5272.3	5420.7	5575.2	5736.4	5905.1	6081.8	6267.5	6463.3	6670.3	6890.1	7124.3	7375.0	7644.9	39
40	5274.7	5423.2	5577.8	5739.2	5907.9	6084.8	6270.7	6466.7	6673.9	6893.8	7128.3	7379.4	7649.6	40
41	5277.1	5425.7	5580.5	5741.9	5910.8	6087.8	6273.9	6470.0	6677.4	6897.6	7132.3	7383.7	7654.3	41
42	5279.5	5428.2	5583.1	5744.7	5913.7	6090.8	6277.1	6473.4	6681.0	6901.4	7136.4	7388.0	7659.0	42
43	5282.0	5430.8	5585.7	5747.5	5916.6	6093.9	6280.3	6476.8	6684.6	6905.2	7140.4	7392.4	7663.7	43
44	5284.4	5433.3	5588.4	5750.2	5919.5	6096.9	6283.5	6480.1	6688.1	6909.0	7144.5	7396.8	7668.4	44
45	5286.8	5435.8	5591.0	5753.0	5922.4	6099.9	6286.6	6483.5	6691.7	6912.8	7148.6	7401.1	7673.1	45
46	5289.3	5438.4	5593.7	5755.7	5925.2	6103.0	6289.8	6486.9	6695.3	6916.6	7152.6	7405.5	7677.8	46
47	5291.7	5440.9	5596.3	5758.5	5928.1	6106.0	6293.0	6490.3	6698.9	6920.4	7156.7	7409.9	7682.6	47
48	5294.2	5443.5	5599.0	5761.3	5931.0	6109.1	6296.2	6493.6	6702.4	6924.2	7160.8	7414.2	7687.3	48
49	5296.6	5446.0	5601.6	5764.0	5933.9	6112.1	6299.4	6497.0	6706.0	6928.1	7164.9	7418.6	7692.0	49
50	5299.0	5448.5	5604.3	5766.8	5936.8	6115.1	6302.7	6500.4	6709.6	6931.9	7169.0	7423.0	7696.8	50
51	5301.5	5451.1	5606.9	5769.6	5939.7	6118.2	6305.9	6503.8	6713.2	6935.7	7173.0	7427.4	7701.5	51
52	5303.9	5453.6	5609.6	5772.3	5942.6	6121.2	6309.1	6507.2	6716.8	6939.5	7177.1	7431.8	7706.3	52
53	5306.3	5456.2	5612.2	5775.1	5945.5	6124.3	6312.3	6510.6	6720.4	6943.4	7181.2	7436.2	7711.0	53
54	5308.8	5458.7	5614.9	5777.9	5948.5	6127.4	6315.5	6514.0	6724.0	6947.2	7185.3	7440.6	7715.8	54
55	5311.3	5461.3	5617.5	5780.7	5951.4	6130.4	6318.7	6517.4	6727.6	6951.1	7189.5	7445.0	7720.6	55
56	5313.7	5463.8	5620.2	5783.5	5954.3	6133.5	6322.0	6520.8	6731.2	6954.9	7193.6	7449.5	7725.4	56
57	5316.2	5466.4	5622.9	5786.2	5957.2	6136.5	6325.2	6524.2	6734.9	6958.8	7197.7	7453.9	7730.2	57
58	5318.6	5468.9	5625.5	5789.0	5960.1	6139.6	6328.4	6527.6	6738.5	6962.6	7201.8	7458.3	7735.0	58
59	5321.1	5471.5	5628.2	5791.8	5963.0	6142.7	6331.7	6531.0	6742.1	6966.5	7205.9	7462.8	7739.8	59
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
D. l.	65	66	67	68	69	70	71	72	73	74	75	76	77	D. l.

MERIDIONAL PARTS.

D. l.	78	79	80	81	82	83	84	85	86	87	88	89	D. l.
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
0	7744.6	8045.7	8375.3	8739.1	9145.5	9605.9	10137.0	10764.7	11532.6	12522.3	13916.6	16299.8	0
1	7749 4	8051.0	8381.0	8745.5	9152.7	9614.1	10146.6	10776.2	11547.0	12541.4	13945.4	16357.5	1
2	7754.2	8056.2	8386.8	8751.9	9159.9	9622.4	10156.2	10787.7	11561.4	12560.7	13974.4	16416.3	2
3	7759.0	8061.5	8392.6	8758.3	9167.2	9630.6	10165.8	10799.3	11575.9	12580.0	14003.7	16476.1	3
4	7763.9	8066.8	8398.3	8764.8	9174.4	9638.9	10175.4	10810.8	11590.5	12599.5	14033.2	16537.0	4
5	7768.7	8072.0	8404.1	8771.2	9181.6	9647.2	10185.1	10822.6	11605.0	12619.1	14063.0	16598.9	5
6	7773.5	8077.3	8409.9	8777.7	9188.9	9655.5	10194.8	10834.2	11619.7	12638.8	14093.0	16662.0	6
7	7778.4	8082.6	8415.8	8784.1	9196.2	9663.8	10204.6	10845.9	11634.5	12658.6	14123.3	16726.2	7
8	7783.2	8087.9	8421.6	8790.6	9203.5	9672.2	10214.4	10857.7	11649.3	12678.6	14153.9	16791.7	8
9	7788.1	8093.2	8427.4	8797.1	9210.8	9680.6	10224.2	10869.6	11664.1	12698.6	14184.7	16858.5	9
10	7793.0	8098.5	8433.3	8803.6	9218.1	9689.0	10234.0	10881.4	11679.1	12718.8	14215.8	16926.5	10
11	7797.8	8103.8	8439.1	8810.1	9225.4	9697.4	10243.8	10893.3	11694.0	12739.1	14247.2	16995.6	11
12	7802.7	8109.2	8445.0	8816.6	9232.7	9705.8	10253.7	10905.2	11709.1	12759.5	14278.9	17066.9	12
13	7807.6	8114.5	8450.9	8823.2	9240.2	9714.2	10263.6	10917.2	11724.2	12780.0	14310.9	17140.3	13
14	7812.5	8119.8	8456.8	8829.7	9247.6	9722.7	10273.5	10929.1	11739.4	12800.7	14343.2	17213.2	14
15	7817.4	8125.2	8462.6	8836.3	9255.0	9731.2	10283.5	10941.2	11754.7	12821.5	14375.8	17288.7	15
16	7822.3	8130.6	8468.6	8842.8	9262.4	9739.7	10293.5	10953.3	11770.0	12842.5	14408.7	17366.0	16
17	7827.2	8135.9	8474.5	8849.4	9269.9	9748.3	10303.5	10965.5	11785.4	12863.5	14441 9	17444.0	17
18	7832.2	8141.3	8480.4	8856.0	9277.3	9756.8	10313.6	10977.7	11800.9	12884.7	14475.4	17525.9	18
19	7837.1	8146.7	8486.3	8862.6	9284.8	9765.4	10323.7	10989.9	11816.4	12906.0	14509.3	17608.7	19
20	7842.0	8152.1	8492.3	8869.3	9292.3	9774.0	10333.8	11002.2	11832.0	12927.4	14543.5	17694.6	20
21	7847.0	8157.5	8498.2	8875.9	9299.8	9782.7	10344.0	11014.5	11847.6	12948.9	14578.1	17780.5	21
22	7851.9	8162.9	8504.2	8882.6	9307.3	9791.3	10354.1	11026.9	11863.4	12970.6	14613.0	17869.9	22
23	7856.9	8168.3	8510.2	8889.2	9314.8	9800.0	10364.3	11039.3	11879.2	12992.5	14648.3	17961.6	23
24	7861.9	8173.7	8516.2	8895.9	9322.4	9808.6	10374.5	11051.7	11895.1	13014.4	14683.9	18055.8	24
25	7866.8	8179.2	8522.2	8902.6	9330.0	9817.3	10384.8	11064.2	11911.0	13036.6	14719.9	18152.6	25
26	7871.8	8184.6	8528.2	8909.3	9337.6	9826.1	10395.0	11076.8	11927.1	13058.8	14756.3	18252.3	26
27	7876.8	8190.1	8534.2	8916.0	9345.2	9834.8	10405.3	11089.3	11943.1	13081.2	14793.0	18354.9	27
28	7881.8	8195.5	8540.2	8922.7	9352.8	9843.6	10415.7	11102.0	11959.3	13103.8	14830.2	18460.7	28
29	7886.8	8201.0	8546.2	8929.5	9360.4	9852.4	10426.2	11114.6	11975.6	13126.5	14867.8	18569.8	29
30	7891.8	8206.5	8552.3	8936.2	9368.1	9861.3	10436.6	11127.4	11991.9	13149.3	14905.8	18682.5	30
31	7896.8	8212.0	8558.4	8943.0	9375.8	9870.1	10447.1	11140.1	12008.4	13172.3	14944.2	18799.1	31
32	7901.9	8217.5	8564.4	8949.8	9383.5	9879.0	10457.5	11152.9	12024.9	13195.5	14983.0	18919.7	32
33	7906.9	8223.0	8570.5	8956.6	9391.2	9887.8	10468.0	11165.8	12041.5	13218.8	15022.3	19044.7	33
34	7911.9	8228.5	8576.6	8963.4	9398.9	9896.7	10478.5	11178.7	12058.2	13242.3	15062.1	19174.4	34
35	7917.0	8234.1	8582.7	8970.2	9406.6	9905.7	10489.1	11191.7	12074.9	13265.9	15102 3	19309.2	35
36	7922.1	8239.6	8588.9	8977.1	9414.4	9914.6	10499.7	11204.7	12091.7	13289.7	15143.0	19449.5	36
37	7927.1	8245.1	8595.0	8983.9	9422.1	9923.6	10510.4	11217.7	12108.6	13313.7	15184.2	19595.8	37
38	7932.2	8250.7	8601.1	8990.8	9429.9	9932.7	10521.1	11230.8	12125.6	13337.8	15225.8	19748.6	38
39	7937.3	8256.3	8607.3	8997.7	9437.8	9941.7	10531.8	11244.0	12142.7	13362.1	15268.0	19908.5	39
40	7942.4	8261.8	8613.5	9004.6	9445.6	9950.8	10542.6	11257.2	12159.9	13386.6	15310.7	20076.4	40
41	7947.5	8267.4	8619.6	9011.5	9453.4	9959.8	10553.3	11270.5	12177.1	13411.2	15353.8	20252.5	41
42	7952.6	8273.0	8625.8	9018.4	9461.3	9968.9	10564.1	11283.8	12194.4	13436.1	15397.8	20483.3	42
43	7957.7	8278.6	8632.0	9025.4	9469.1	9978.0	10574.9	11297.1	12211.8	13461.1	15442.1	20635.1	43
44	7962.8	8284.2	8638.2	9032.3	9477.0	9987.2	10585.8	11310.5	12229.3	13486.3	15486.9	20843.5	44
45	7968.0	8289.9	8644.5	9039.3	9484.9	9996.3	10596.7	11324.0	12246.9	13511.6	15532.6	21065.4	45
46	7973.1	8295.5	8650.7	9046.3	9492.9	10005.5	10607.6	11337.6	12264.6	13537.0	15578.7	21302.5	46
47	7978.2	8301.1	8656.9	9053.3	9500.8	10014.8	10618.6	11351.1	12282.4	13562.8	15625.5	21557.3	47
48	7983.4	8306.8	8663.2	9060.3	9508.8	10024.0	10629.7	11364.8	12300.2	13588.9	15672.7	21832.5	48
49	7988.5	8312.4	8669.5	9067.3	9516.8	10033.3	10640.8	11378.4	12318.1	13615.1	15721.0	22131.6	49
50	7993.7	8318.1	8675.7	9074.4	9524.8	10042.6	10651.9	11392.2	12336.3	13641.4	15769.8	22459.3	50
51	7998.9	8323.8	8682.0	9081.4	9532.9	10051.9	10663.0	11406.0	12354.4	13667.8	15819.3	22821.5	51
52	8004.0	8329.4	8688.3	9088.5	9540.9	10061.3	10674.1	11419.8	12372.7	13694.5	15869.4	23226.4	52
53	8009.2	8335.1	8694.6	9095.6	9548.9	10070.6	10685.3	11433.7	12391.0	13721.5	15920.4	23685.4	53
54	8014.4	8340.8	8701.0	9102.7	9557.0	10080.0	10696.5	11447.7	12409.5	13748.9	15972.1	24215.3	54
55	8019.6	8346.6	8707.3	9109.8	9565.1	10089.4	10707.7	11461.7	12428.0	13776.1	16024.6	24842.1	55
56	8024.8	8352.3	8713.6	9116.9	9573.2	10098.9	10719.1	11475.8	12446.5	13803.7	16077.9	25609.2	56
57	8030.0	8358.0	8720.0	9124.0	9581.4	10108.4	10730.4	11489.9	12465.3	13831.5	16132.0	26598.2	57
58	8035.3	8363.7	8726.4	9131.2	9589.5	10117.9	10741.8	11504.1	12484.2	13859.6	16187.0	27992.1	58
59	8040.5	8369.5	8732.7	9138.4	9597 7	10127.4	10753.3	11518.3	12503.1	13887.8	16242.9	30375.0	59
min.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	M. P.	min.
D. l.	78	79	80	81	82	83	84	85	86	87	88	89	D. l.

N.B. In this table D. l. ſtands for degree of lat. and M. P. for meridional parts. In uſing it, ſeek the degrees of latitude at the top or bottom, and the minutes in the right or left hand columns; and the correſponding meridional parts will ſtand right againſt the minutes, and in the column ſigned with the degree propoſed.

Having the latitude of two places, to find the meridional miles or minutes between them; conſider whether the places be one under the equinoctial, and the other wide of it; or the one on the one ſide of the equinoctial, and the other on the other; or whether they both lie on the ſame ſide.

If one place lie under the equator, the meridional minute next under the degree of latitude of the other place, is the meridional difference of latitude, or latitude enlarged. If one be in north, and the other in ſouth latitude, the meridional minutes, correſponding to the two latitudes, added together, give the meridional minutes between them.

Both places lying towards the ſame pole, ſubtract the meridional parts anſwering to the leſs latitude from thoſe of the greater, the remainder gives the meridional minutes. See Sailing.

In the Philoſophical Tranſactions, No. 219, Dr. Halley has given a very curious paper relating to the diviſion of the nautical meridian, by a quite different method from Mr. Wright's; and containing a method of performing the problems of ſailing according to the true chart, by the help of Briggs's, or the common table of logarithmic tangents, without a table of meridional parts. Dr. Halley avails himſelf of a principle, firſt accidentally diſcovered by Mr. Henry Bond, and publiſhed about the year 1645, that the meridian line was analogous to a ſcale of logarithmic tangents of half the complements of the latitude. This analogy was firſt demonſtrated by Mr. James Gregory, in his "Exercitationes Geometricæ," publiſhed in 1688, and more elegantly and conciſely by Dr. Halley himſelf; who has alſo ſhewn (ubi ſupra) how to apply this analogy, by means of any ſyſtem of logarithms, for computing the interval of the meridional parts anſwering to any two given latitudes. The reader may find this ſubject well illuſtrated by Mr. Robertſon in his Elements of Navigation, book viii. p. 142, &c. See alſo Phil. Tranſ. vol. xlvi. p. 559, &c.

To find the meridional parts to any ſpheroid, with the ſame exactneſs as in a ſphere.

Let the ſemi-diameter of the equator be to the diſtance of the focus of the generating ellipſe from the centre, as m to 1. Let A repreſent the latitude for which the meridional parts are required, s the ſine of the latitude, the radius being unit; find the arc B, whoſe ſine is $\frac{s}{m}$; take the logarithmic tangent of half the complement of B, from the common tables; ſubtract this logarithmic tangent from 10.0000000, or the logarithmic tangent of 45°: multiply the remainder by $\frac{7915.7044678978}{m}$, &c. and the product ſubtracted from the meridional parts in the ſphere, computed in the uſual manner for the latitude A, will give the meridional parts expreſſed in minutes for the ſame latitude in the ſpheroid, provided it be oblate.

Example:—If $m\ m : 1 :: 1000 : 22$, then the greateſt difference of the meridional parts in the ſphere and ſpheroid is 76.0929 minutes; in other caſes it is found by multiplying the remainder above mentioned by 1174.078.

When the ſpheroid is oblong, the difference of the meridional parts in the ſphere and ſpheroid, for the ſame latitude, is then determined by a circular arc. Phil. Tranſ. No. 461. ſect. 14. See alſo Maclaurin's Fluxions, art. 195—899.

Mr. Murdoch has ſolved this problem by infinite ſeries, and has computed a table of meridional parts for an oblate ſpheroid, ſuch as is mentioned in the foregoing example. See his treatiſe, intitled "Mercator's Sailing applied to the true Figure of the Earth," Lond. 1741, 4to. See the article Degree.

MERJEIAH, in *Geography*, a town of Algiers; 80 miles E. of Oran.

MERIGHI, La Signora, in *Biography*, was announced in Handel's advertiſements, on his return from Italy in 1729, where he had been to engage ſingers, as "a woman of a very fine preſence, an excellent actreſs, and a very good ſinger, with a counter-tenor voice." We find afterwards, however, that ſhe was only engaged as ſecond woman under the Strada.

MERJIAN, in *Geography*, a town of Perſia, in the province of Kerman; 55 miles N. of Kabis.

MERIM, a large lake of S. America, in Paraguay, near the coaſt of the S. Atlantic ocean. At the S. end ſtands fort St. Miguel, and at its northern extremity fort Mangaveira. Parallel to it, and between it and the ocean, is another lake nearly as long. The forts command the extremities of the peninſula.

MERIMEG, or **Maramag**, a large river of Louiſiana, which runs into the Miſſiſippi, below the mouth of the Miſſouri.

MERINDAPILLY, a town of Hindooſtan, in Baramaul; 25 miles N.W. of Darempoury.

MERINO-Sheep, in *Agriculture*, a breed of fine-woolled ſheep lately introduced from Spain, hence ſometimes termed the *Spaniſh breed*. They are characteriſed by the males having horns, but the females being ſometimes without them, by having white faces and legs, the latter rather long, the body not very perfect in ſhape, fine in the bone, ſome degree of thriftineſs, the pelt fine and clear. The weight, when fattened in ſome degree, in the rams about 17lbs., in the ewes 11lbs. the quarter. The wool is very fine. They are ſaid to be hardy, and to have the property of fattening in a pretty expeditious manner. See Mesta, and Sheep.

MERION, Upper and **Lower**, in *Geography*, two townſhips of America, in Montgomery county, Pennſylvania; the firſt has 993, and the latter 1422 inhabitants.

MERIONETHSHIRE, one of the counties of North Wales, is bounded on the W. by the extenſive bay of Cardigan, which forms part of the Iriſh ſea; on the N. by Denbighſhire and Caernarvonſhire; on the E. by Montgomeryſhire; and on the S. by the river Dovey, which divides it from Cardiganſhire. This county extends in length, from Beddgelert, near Snowdon, to Bwlch y Vedwen, on the confines of Montgomeryſhire, 43 miles; in breadth, from Harlech to the extreme boundary of Llangollen pariſh, 38. It is called by the natives Meironydd, and is the only county in Wales which, with the addition of the word ſhire, ſtill retains its ancient appellation. This name is ſaid to be derived from Meirion, the ſon of Tibrawn, and grandſon of Cunedda, a diſtinguiſhed Britiſh chieftain of the fifth century, who, having aſſiſted the Welſh in reſcuing their country from the depredations of a band of Iriſh marauders, received from them a large extent of territory as the reward of his ſervices.

The early hiſtory of this county is equally as obſcure as that of any other in Wales. That it was known to the Romans is evident from the many veſtiges of their cuſtoms which are yet to be diſcovered in different parts of it. Of theſe the principal are, the fortifications of Tommen-y-Bala, near Bala town; Caer-Gai, in the vicinity of Llanuwchllyn; Cefn-Caer, in the pariſh of Penul, and Tommen-y-Mur, near Feſtiniog. The Roman road, denominated Sarn-Helen, can eaſily be traced from the fine ſtation laſt mentioned, ſtretching itſelf towards Dinas Emryſm, Caernarvonſhire. From this road two branches appear to have ſtruck off in this neighbourhood, one of which led to Conovium, and the other to Segontium. During the Saxon and Norman dynaſties, hiſtory is nearly ſilent concerning Merionethſhire, but the numerous fortifications which cover its hills plainly evince that it did not in theſe ages eſcape the ravages of war. At a later period it was the ſcene of many of the daring exploits of the celebrated Owen Glyndyr, who ſo vigorouſly eſpouſed the cauſe of the unfortunate Richard II.

The general aſpect of Merionethſhire differs in ſome reſpects from that of the other counties in North Wales. For the moſt part it is extremely mountainous, but its mountains are leſs elevated, with the exception of a few points, than thoſe of the adjacent county of Caernarvon. The higheſt hill, however, called Cader-Idris, is inferior in height only to Snowdon. This mountain, according to tradition, was ſo called from being the favourite ſeat of Idris, who was a great prince, poet, aſtronomer, and philoſopher in ancient times. Its higheſt peak is ſaid to be two thouſand eight hundred and fifty feet above the level of the town of Dolgellau, which is ſituated near its baſe. The other principal eminences are Aren-Vowdhwy, Aren-Benllyn, Arennig, Moelwyn, Manod, &c.: theſe rear their lofty heads over a profuſion of lower hills, which are interſected by ſome beautiful vallies, and are interſperſed with woods, lakes, rivers, rivulets, and cataracts.

The principal river in this county is the Dee, which takes its riſe from ſeveral ſprings on the declivity of the lofty Aren. Theſe quickly uniting their ſtreams enter the lake, called by the Welſh Llyn-tegid, and by the Engliſh Pimblemeer, and from thence flow through the beautiful vale of Edernion, towards Corwen, a little below which town it enters Denbighſhire. The Dee, in its courſe through this county, forms ſeveral fine cataracts. That called Rhaiadr-du, or the Black-Cataract, from the colour of its waters, is ſituated in the vicinity of Dolgellau, and is a double fall about ſixty feet in height, where the river daſhes rapidly over a ſeries of black rugged rocks, which are covered in many places with white lichens, and thus give a peculiar appearance to the ſcene. The other rivers of importance beſides the Dee are the Maw or Mawddach, the Dovey or Duff, and the Glaſlyn and Dwy'rid, the two laſt of which form a junction, and paſſing Traeth-Mawr and Traeth-Bychan, empty their waters into the Iriſh ſea. There is in this county a variety of lakes: the principal ones are Llyn-tegid near Bala, and Llyn Talyllyn at the ſouthern foot of Cader Idris.

From the mountainous nature of Merionethſhire it may naturally be ſuppoſed that it is not deſtined to reach any high degree of agricultural improvement. Mr. Davies, in his enlightened Survey of North Wales, eſtimates the number of acres in the whole county at 430,000, and ſtates that out of theſe not above 146,000 acres are incloſed. The ſoil is various, but in general extremely poor. The hilly diſtricts, where covered with ſoil, are in general too ſteep and rugged to admit of culture. By far the greater proportion of the low grounds conſiſts of peat earth, forming bogs and turbaries. In ſome few places attempts have been made by different individuals to bring a part of theſe waſte lands into cultivation, but their progreſs has by no means anſwered their expectations, though ſome advantages have certainly been gained. The attention of the inhabitants therefore is chiefly directed to the rearing and feeding of cattle, ſheep, and goats, of which a great number are exchanged for the commodities of more fertile, or more commercial diſtricts. The cultivated ſpots lie chiefly on the ſea-coaſt, and on the ſkirts of the county. In the vallies, and on the ſides of the hills, in many parts there appear conſiderable plantations of wood, both natural and raiſed by art.

Notwithſtanding the apparently favourable character of this county for the productions of the mineral kingdom, it is remarkable that few mines of any importance have been diſcovered in it. The diſtrict abounds indeed with numerous veins, both of lead and copper ore, but they are generally either ſo peculiarly placed, or ſo limited in extent, as to deprive the adventurer of any fair proſpect of remuneration for the expence and trouble of opening them. Sulphat of copper, in particular, is found at Aberdyſo, and at Buddugre and Clogiau mines near Dolgellau. The two latter are the principal in Merionethſhire, and perhaps the only ones which are wrought with any degree of ſpirit or profit. At Moel-Iſbri, in the pariſh of Llanellyd, Pont-yr-avon-ddu, Bulch-y-plwm, and Craig-wen, near Dinas-mowddwy, are the chief veins of lead. The ſame metal alſo abounds at Melin, Illyw-y-pair, in the pariſh of Tywyn, and at Bryndinas, near Dyffryn-gwyn.

This county poſſeſſes no iron ores, and can only boaſt of one inſulated white lime rock at Gwerclas, near Corwen, in which about 50,000 buſhels are annually burnt. Merionethſhire affords no coal, ſo that peat forms the chief article for fuel.

But if the practical miner does not diſcover here ſuch exhauſtleſs ſtores of uſeful metals as he might be led to expect upon a general view of the county, the ſcientific mineralogiſt will find ample materials for the illuſtration of his geological inquiries. The lofty mountain of Cader-Idris poſſeſſes numerous peculiarities, both of ſtructure and compoſition; and affords ſeveral facts tending to ſupport the Huttonian hypotheſis. This eminence is the commencement of a chain of primitive mountains, which extend in a north-north-eaſterly direction towards the Arens and Arrenig. It is extremely ſteep, and more craggy than the hills of ſecondary formation which ſurround it, and conſiſts of ſiliceous porphyry, quartz, and feldſpar, incloſed in a green paſte, with ſiliceous ſchiſtoſe porphyry, interſected with veins of quartz and argillaceous porphyry in a maſs, and a dark grey paſte. Beſides theſe ſpecies, ſome of the rocks likewiſe contain the component parts of granite and porphyry, together with the granitell in maſs of Mr. Kirwan, compoſed of quartz and ſchorl. On the ſides of the mountain lie a conſiderable quantity of ſtones, reſembling lava; and hence ſome writers ſuppoſe it to have been at one time volcanic. But this ſuppoſition is unqueſtionably erroneous. The porous appearance of theſe ſtones has ariſen from the circumſtance of the feldſpar which interſected the quartz having been decompoſed. On the ſouth ſide of the mountain, and near its apex, is a large lake, from which the rocks riſe almoſt perpendicularly. On the north ſide is another lake: and at the ſummit is a maſs of large ſtones, called Idris's chair. See Aikin's Tour in Wales.

In a level part of the county, called Towyn Meironydd, riſes a very ſingular rock of immenſe ſize, and terminating in a conical form. Quartz conſtitutes the chief matrix of the lead and copper ores here. In ſome places ſeveral veins conſiſt entirely of this mineral upon the ſurface. A line of dark coloured argillaceous limeſtone can be traced in a ſouth-weſtern direction, ſtretching through the whole extent of the county to Cadair-Ddinmael, near Cerrig-Druidion. This lime is of little value, either as a cement or a manure.

Beſides the Roman roads already mentioned, Merionethſhire contains many intereſting monuments of remote ages. Above Nannua, in the neighbourhood of Dolgellau, on a rocky eminence, is a vaſt collection of looſe ſtones, which have evidently formed the rampart of a Britiſh poſt. The hill on which theſe ſtones are placed is emphatically denominated Moel-orthrwm, or the hill of oppreſſion. The remains of a caſtle, formerly of great ſtrength and extent, occupy the top of the inſulated rock near Towyn-Meironydd, already noticed. It appears to have ſtretched longitudinally over the whole ſurface of the ſummit. One of the apartments, thirty feet in diameter, is excavated in the rock. In ſome parts, the lines of circumvallation conſiſt of ſtones looſely piled on the edges of the precipices, but on other parts appear well built walls of ſquared ſtones, cemented with mortar compoſed of calcined ſhells and gravel. According to Mr. Pennant, this caſtle was anciently called Caſtle-bere, and was granted by Edward I. to the cuſtody of Robert Fitzwalter. The ſame author likewiſe ſuppoſes, from its preſent name Teberri, that it may have been the fortreſs belonging to the laſt Llewellin, which was taken only a ſhort time previous to the final conqueſt of Wales by William de Valence, earl of Pembroke. This conjecture, however, is extremely queſtionable. St. Cadwan's ſtone, in the church-yard of Towyn, is traditionally reported to have been erected, in honour of that ſaint, in the ſixth century. In the pariſh of Llanelltyd are the ruins of Cynmer-abbey, founded by two Welſh princes in 1198. On the mountain called Mikneint, near Rhyd-ar-Helen, ſtand ſome remarkable ſtone monuments, at leaſt thirty in number. Each ſeparate grave has four ſtones, one at each corner, reſembling ſmall ſquare pillars, two or three feet high, and about nine inches broad. Tradition ſays they ſerve to commemorate ſome perſons of note, who fell in the battle fought here between the men of Dyffryn-Ardwdwy, and ſome of Denbighſhire. A conſiderable number of ſimilar monuments are found likewiſe in the pariſh of Trawsfynudd. Several ſtone circles appear in the vicinity of theſe graves, the largeſt about fifty-two feet in diameter, and a vaſt carnedd, with two upright ſtones; alſo ſeveral ſmaller circles, the whole apparently ſurrounded by one of much greater circumference. Near Rhuw-goch is a ſmall fort, in a ſingular poſition, on a circular iſolated rock, reſembling an artificial mount, between the hills, evidently intended for the defence of the paſs. Some perſons have ſuppoſed that this was of Britiſh conſtruction, but the regularity of its facings, and the numerous coins which have been found in its neighbourhood, ſeem to imply that it was of Roman formation. Beſides, in the incloſed country immediately adjacent, is a large encampment, undoubtedly the work of that illuſtrious people. This commands a variety of paſſes, which are defended by minor poſts. At one extremity of the vale of Maentwrog is a large upright ſtone, called Maen-twrog, which is ſuppoſed to be the monument of a ſaint ſo named, who was contemporary with St. Beuno. The large artificial mount called Tomen-y-Bala, near the lake of Bala, is ſuppoſed to have been originally Roman, but afterwards to have been occupied by the Welſh during their conflicts with the Engliſh. Situated on an eminence fronting the town of Corwen, is the Britiſh poſt called Caer-Drewin, which conſiſts of a circular wall, about a mile and a half in circumference, and is ſuppoſed by Mr. Pennant to have been one of thoſe ſtrong holds in which the Welſh ſecured their families and their property, in the event of an invaſion. Lyttelton conjectures that Owen Gwynnedd occupied this poſt, while Henry II. encamped on the oppoſite ſide of the vale, from whence however he was forced to return to England in chagrin, without being able to ſtrike a ſingle blow. It was afterwards the retreat of the brave and heroic Owen Glyndwr, whoſe memory continues to be highly revered by the inhabitants of the ſurrounding diſtrict. Harlech caſtle has been already deſcribed under the word HARLECH. This county is not diſtinguiſhed for its manufactures; but at Bala and Dolgellau, ſome ſtrong cloths, druggets, kerſimeres, flannels, &c. are made. Bala is particularly noted for its ſtockings and wigs.

The political diviſions of this county have varied at different periods. At preſent it comprehends five comots, or hundreds, *viz.* Ardwdwy, Penllyn, Eſtumaner, Edernion, and Talybont; 37 pariſhes, and ſeven market-towns; *viz.* Harlech, Bala, Dolgellau, Dinas-y-Mowddu, Corwen, Tywen or Towyn, and Barmouth. Harlech, the county-town, is but a poor place, though governed by a mayor. Barmouth is the only port in the county. Dolgellau is diſtinguiſhed as the place where the ſummer aſſizes are held, and is perhaps the moſt thriving town in Merionethſhire. Bala is likewiſe a thriving town. Dinas-Mowddu, although now a mean town, was anciently a fortified city, and the reſidence of a Welſh prince or chieftain. It is ſtill a corporate town, with a mayor, alderman, recorder, and ſeveral burgeſſes. The mayor has the right of trying criminals, but of late years that privilege has not been put in practice. He ſtill, however, retains all the inſignia of his magiſterial office. Beſides theſe towns there is a variety of villages diſperſed through different parts of the county. Of theſe, Feſtiniog and Mallwyd are remarkable for the beauty of their ſituations, and noble proſpects which they command. Feſtiniog has been celebrated by ſeveral authors, but more eſpecially by lord Lyttelton. The vale in which this ſtands has been compared to the celebrated vale of Tempe, and it muſt be confeſſed that few ſpots in this iſland can boaſt of ſuch varied and romantic ſcenery.

According to the parliamentary return of 1801, this county contained 5980 houſes, and 29,506 inhabitants, of whom 13,896 were males, and 15,6 0 females. The number engaged in agriculture was 10,308, and in commerce and manufactures 2711. Pennant's Tour in Wales. Carliſle's Topographical Dictionary of Wales. Aikin's Tour in Wales.

MERIS, μερις, *a part*, in *Muſic*, an appellation given by Mr. Sauveur to the forty-third part of an octave. See Mem. Acad. Scienc. 1701.

MERISMA, in *Botany*, from μερισμος, *a diviſion*, alluding to the divided or branched nature of this fungus.—Perſ. Syn. 582.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi.*

Eſſ. Ch. Branching, leathery, compreſſed, even; for the moſt part hairy at the top.

This genus conſiſts of ſeven ſpecies in Perſoon, differing from *Clavaria* chiefly in their compreſſed dilated form, for the hairineſs is avowedly not conſtant. Examples may be ſeen in

M. *criſtatum.* Perſ. n. 3. (Clavaria laciniata; Bull. t. 415. f. 1. Sowerb. t. 158.)—Somewhat decumbent, incruſting other plants, pale; its branches laciniated, tumid, rugoſe. Found in woods, running over every thing that comes in its way, like a ſtalactitical concretion, and throwing out variouſly dilated, ſharply jagged, fan-like branches. The whole is of a pale whitiſh hue, and faint ſmell and taſte.

M. *fœtidum.* Perſ. n. 7. (Clavaria anthocephala; Bull. t. 452. f. 1. Sowerb. t. 156)—Purpliſh-brown. Branches palmate, crowded, whitiſh and poliſhed at their tips.—Not unfrequent on the ground in fir woods. It is of a tough woody texture, and about two inches high, of a nauſeous ſcent when freſh. The whole is of a palmate figure, ſtalked, with many crowded, fan-like *branches*, various in diameter, whitiſh at their ſummits, which are abrupt and notched.

MERIT, in *Theology*, is uſed to ſignify the moral goodneſs of the actions of men, and the reward due to them.

The Romiſh ſchoolmen diſtinguiſh two kinds of merit towards God: the one of *congruity*, the other of *condignity*.

Merit *of Congruity* is when there is no juſt proportion between the action and the reward; but he who beſtows the reward ſupplies, by his goodneſs or liberality, what was wanting in the action. Such is the merit of a ſon towards his father: but this is only merit in an improper ſenſe.

Merit *of Condignity* is when there is an abſolute equality and a juſt eſtimation between the action and the reward: as in the wages of a workman.

Thoſe of the reformed religion diſclaim all merit of condignity towards God; even their beſt works, they own, do not merit at his hands. Hence the doctrine of condign merits makes one of the great articles of controverſy between the Romiſh and reformed churches.

Merit, *Order of*, was inſtituted by Frederick, king of Pruſſia. The enſign of the order is a ſtar of eight points enamelled blue, and edged with gold; on the centre the letters F.R. in a cypher; in each angle an eagle diſplayed ſable; on the upper two points, the regal crown of Pruſſia; on the reverſe, in enamel, this motto, POUR LE MERITE. It is worn round the neck, pendent to a black ribbon, edged with ſilver.

Merit, *Military Order of*, in Heſſe Caſſel, was inſtituted by the late landgrave. The badge is a gold ſtar of eight points enamelled white; on the centre this motto, VIRTUTE ET FIDELITATE. It is worn at the button-hole, pendent to a blue ribbon, edged with ſilver.

Merit, *Military, the Order of*, was inſtituted in France, in the year 1759, by Louis XV. in favour of thoſe officers of his army who were Proteſtants. The marks of honour are the ſame with thoſe of the order of *St. Louis*. The enſign of the order is alſo of the ſame form as that of St. Louis, with this difference, that on one ſide is "a ſword in pale," within this motto, PRO VIRTUTE BELLICA: and on the reverſe is a chaplet of laurel: within this inſcription, LUD. XV. INSTITUIT, 1759.

MERKA, in *Geography*, a town of Pruſſia, in the palatinate of Culm; 10 miles N.N.E. of Thorn.

MERKENDORF, a town of Germany, in the margravate of Anſpach; 7 miles S.E. of Anſpach.

MERKET Islands, a cluſter of ſmall iſlands in the Red ſea, near the coaſt of Arabia. N. lat. 18° 10′.

MERKLIN, a town of Bohemia, in the circle of Pilſen; 15 miles S.S.W. of Pilſen.

MERLANGUS, in *Ichthyology*, a name given by Bellonius and ſome other authors, to a ſmall ſpecies of whiting, or *aſellus mollis*, called by the Venetians *mollo*, and by ſome other nations the *capelon*. See Gadus *minutus*.—Alſo, the name of the common whiting, a ſpecies of *Gadus*; which ſee.

MERLENGO, in *Geography*, a town of Italy, in the department of the Mincio; 10 miles N. of Mantua.

MERLERA, a ſmall iſland in the Mediterranean, four miles from cape Sidero, on the N. coaſt of Corfu.

MERLERAULT, a town of France, in the department of the Orne, and chief place of a canton, in the diſtrict of Argentan; 18 miles N.N.E. of Alençon. The place contains 1222, and the canton 8098 inhabitants, on a territory of 177½ kiliometres, in 19 communes.

MERLIN, Ambrose, in *Biography*, a Britiſh writer, who flouriſhed in the fifth century, was regarded as a prophet and magician. Strange ſtories are told of him by ancient writers, ſome of whom have aſſumed that he conveyed by enchantment the ſtupendous ſtones on Saliſbury plain from Ireland. There are likewiſe certain extravagant predictions that paſs under his name, printed at Paris in 1530. Near Caermarthen is a mount called Merlin's Hill, beneath which it is ſaid the prophet was buried.

Merlin, in *Ornithology*, the name of the yellow-legged falcon. See Falco *Æſalon*.

MERLINGEN, in *Geography*, a town of Switzerland, in the canton of Bern; 7 miles S.E. of Thun.

MERLOM, a town of Hindooſtan, in Dowlatabad; 12 miles S.E. of Bader.

MERLON, in *Fortification*, that part of the parapet, from fifteen to eighteen feet in length, which lies betwixt two embraſures.

The word comes from *merula*, or *merla*, which, in the corrupt Latin, was uſed for a battlement.

To ſtake out the merlons, meaſure from each end of the wall, twelve feet, there ſtick a ſtake, and plant other ſtakes at every intermediate eighteen feet: when this is done on the inſide of the wall, let other ſtakes be planted on the outſide, either directly oppoſite to the former, or in the line towards the place where the gun is more particularly intended to deliver its ſhot. Plant other ſtakes on the inſide, one a foot diſtant on each ſide of the former, and this will leave ſpaces of two feet each for the inner opening of embraſures: then, on the outſide, plant other ſtakes at five or ſix feet diſtance from the former ones, one on each ſide, and the ſpaces of ten or twelve feet will be marked out for the outſide openings of the embraſures. In the direction of the pickets, which limit the inner and outer openings of the embraſures, let ſingle rows of faſcines be ſtaked down acroſs the wall, and theſe will be the ſides of the embraſures: fill the intermediate ſpaces, or merlons, with rows or faſcines laid lengthwiſe to the wall, and this will be the firſt floor of the merlon, which is to be picketted down, and the hollows filled with earth. Let other floors be raiſed in like manner, until the merlons are carried up to about five or ſix feet, or more if neceſſary; and on the top of each let a bed or floor of earth be laid of about eight or twelve inches thick.

Merlon, or *Mellon*, in *Geography*, a town of France, in the department of the Oiſe; ſeven miles S. of Clermont.

MERLUCIUS, *Gadus merluccius* of Linnæus, in *Ichthyology*, the name of a fiſh commonly called the *hake*, and by ſome authors the *aſellus alter*.

It is a moderately large fiſh, growing to two feet or more in length, and reſembling the common pike in figure, from whence it has its name, *merlucius*, *quaſi maris lucius*, *the ſea-pike*. See Gadus *Merluccius*.

MERMAID, or Merman, a ſea-creature, frequently talked of, and ſuppoſed half human and half a fiſh.

However naturaliſts may doubt of the reality of *mermen*, or mermaids, if we might believe particular writers, there ſeems teſtimony enough to eſtabliſh it. In the year 1187, as Larrey informs us, ſuch a monſter was fiſhed up in the county of Suffolk, and kept by the governor for ſix months. It bore ſo near a conformity with man, that nothing ſeemed wanting to it beſides ſpeech. One day it took the opportunity of making its eſcape, and plunging into the ſea, and was never more heard of. Hiſt. d'Angleterre, p. i. p. 403.

In the year 1430, we are told, that, after an huge tempeſt, which broke down the dykes in Holland, and made way for the ſea into the meadows, &c. ſome girls, of the town of Edam, in Weſt-Frieſland, going in a boat to milk their cows, perceived a mermaid embarraſſed in the mud with a very little water. They took it into their boat, and brought it with them to Edam, dreſſed it in women's apparel, and taught it to ſpin. It fed like one of them, but could never be brought to offer at ſpeech. Some time after it was brought to Haerlem, where it lived for ſome years, though ſtill ſhewing an inclination to the water. Parival relates that they had given it ſome notions of a deity, and that it made its reverences very devoutly whenever it paſſed by a crucifix. (Delices d'Hollande.) In the year 1560, near the iſland of Manar, on the weſtern coaſt of the iſland of Ceylon, ſome fiſhermen are ſaid to have brought up, at one draught of a net, ſeven mermen and maids; of which ſeveral Jeſuits, and among the reſt F. Hen. Henriques, and Dimas Boſquez, phyſician to the viceroy of Goa, are ſaid to have been witneſſes. And it is added, that the phyſician, who examined them with a great deal of care, and made diſſections thereof, aſſerted that all the parts, both internal and external, were found perfectly conformable to thoſe of men. See the Hiſt. de la Compagne de Jeſus, p. ii. tom. iv. N° 276, where the relation is given at length.

We have another account, as well atteſted, of a merman, near the great rock called Diamond, on the coaſt of Martinico. The perſons who ſaw it gave in a preciſe deſcription of it before a notary: they affirmed, that they ſaw it wipe its hands over its face, and even heard it blow its noſe.

Another creature, of the ſame ſpecies, was caught in the Baltic, in the year 1531, and ſent as a preſent to Sigiſmund king of Poland, with whom it lived three days, and was ſeen by all the court. And another very young one was taken near Rocca de Sintra, as related by Damian Goes.

The king of Portugal, and the grand-maſter of the order of St. James, are ſaid to have had a ſuit at law, to determine which party theſe monſters belonged to. See Sea-cow, and Siren. See Pontoppidan's Nat. Hiſt. of Norway, vol. ii. p. 186, &c.

MERMEREDGIK, in *Geography*, a town of Aſiatic Turkey, in Natolia; 44 miles E. of Smyrna.

MERO, a diſtrict of Teneſſee, in America, on the banks of Cumberland river, comprehending ſeven counties and 32,178 inhabitants, of whom 8074 are ſlaves.

Mero *Point*, a point on the coaſt of Peru, in the South Pacific ocean, between cape Blanco to the S.W., and Tumber river to the N.E., on the S.E. ſide of Guayaquil bay. S. lat. 3° 40'.

Mero *Motu*. See Ex *Mero*.

MEROCELE, from μερος, *the thigh*, and κελη, *a tumour*, in *Surgery*, the crural or femoral rupture. See Hernia.

MEROLA, in *Geography*, a river of Naples, which runs into the Adriatic, N. lat. 42° 6'. E. long. 14° 55'.

MEROPE, a town of Peru, in the dioceſe of Truxillo; 12 miles N.W. of Lambayeque.

MEROPS, the Bee-eater, in *Natural Hiſtory*, a genus of birds of the order Picæ: bill curved, quadrangular, compreſſed, carinate, pointed; noſtrils ſmall, at the baſe of the bill; tongue ſlender, the tip, generally, jagged; feet greſſorial. There are twenty-ſix ſpecies. The birds of this genus, with a few exceptions, inhabit the old continent. Their general food is inſects, and they are particularly fond of bees and waſps. They have no note beyond a whiſtle, and that far from an agreeable one. Like the king-fiſher, they breed in holes in the banks of rivers.

Species.

* Apiaster. Back ferruginous; belly and tail blueiſh-green; two of the tail-feathers longer; chin pale yellow. A variety occurs with the bill convex and uncarinated, and the toes unconnected at the laſt joint. Bill black; irids red; front blue-green; crown, hind-head, and neck bay; a black ſtreak from the bill to the hind-head; tail wedged, the feathers edged within with cinereous; legs cheſnut; claws reddiſh-black. This is one of the moſt elegant of the European birds, and, next to the roller and king-fiſher, may be regarded as the moſt brilliant in point of colour. This bird is a native of the warmer parts of Europe, and of many parts both of Aſia and Africa. It is rarely ſeen in the northern regions of Europe. In Greece, and among the iſlands of the Archipelago, it ſeems to be extremely common, and we are told by Belon, that in the iſland of Crete the inhabitants practiſe a curious mode of catching it by means of a cicada, faſtened on a bent pin, or a fiſh hook, and tied to a long line; the inſect is then thrown into the air, and flies with great rapidity, and the bee-eater, ever on the watch for inſects, ſeeing the cicada, ſprings at it, and ſwallowing the bait, is thus taken by the Cretan boys. It has been ſeen in Sweden; and in the third volume of the Tranſactions of the Linnæan ſociety, it is aſſerted that a flight of theſe birds, not leſs than twenty in number, was ſeen near Mattiſhall in Norfolk, in the month of June 1793, and again in the following October. They feed, on the wing, upon bees, gnats, flies, and other inſects. Their neſt is compoſed of moſs, and the eggs, from five to ſeven, are perfectly white, and about the ſize of thoſe of a ſtare. When the ſun ſhines upon them, in their flight, they are a pleaſing object, as they appear gilded. It is recorded by Kolben, the hiſtorian of the Cape of Good Hope, that bee-eaters guide the Hottentots to the honey, which the bees lay up in clefts of the rocks.

Viridis, Indian Bee-eater. Green; band on the breaſt black; chin and tail blue; two of the tail-feathers longer. It inhabits Bengal, and is eight or nine inches in length. Bill and band acroſs the eyes are black; legs are brown. There are four other varieties of this ſpecies: in the *ſecond*, the body is longer, front blue: in the *third*, the chin is yellow; line on the ſides of the head black; quill-feathers tipt with brown. It is found in Egypt. The bill is black, ſtraight; tongue not jagged; legs fleſh-colour; tail even; in the *fourth* variety, the chin and ſtripe beneath the eyes are blue; tail even; it is found in the Philippine iſlands; two middle tail-feathers are black; in the *fifth* and laſt variety, the front is of a pale yellow colour; chin blue, it inhabits India.

Congener, Yellow-headed Bee-eater. Yellowiſh; rump greeniſh; quill-feathers tipt with red; tail-feathers yellow at the baſe. Found in the ſouthern parts of Europe. The band acroſs the eyes is black; back and ſhoulders bay; leſſer wing-coverts blueiſh, the greater are yellow; quill-feathers black; legs yellow. According to Geſner it is often ſeen in the neighbourhood of Straſburg.

Superciliosus, Supercilious Bee-eater. Green, frontal line above and beneath the eyes white; chin yellowiſh; two of the tail-feathers longer. There is a variety of this ſpecies deſcribed as having a ſlenderer bill; an even tail, with a rump and tail of blue-green. It inhabits Madagaſcar, and is nearly a foot long. Bill and area of the eyes black; crown greeniſh-bay; the legs are brown, and claws black.

Philippensis, Philippine Bee-eater. Green, beneath yellowiſh; rump blue; tail even. This, as its name imports, inhabits the Philippine iſlands, and is about eight or nine inches long. The bill and line through the eyes are black; legs and claws brown.

Cinereus, Cinereous Bee-eater. Variegated red and yellow, beneath reddiſh-yellow; the two longeſt tail-feathers are red. Inhabits New Spain, and is between nine and

and ten inches long. The bill is green ; head, quill and lateral tail-feathers cinereous.

Flavicans, Yellow Bee-eater. Whitiſh ; head varied with white and tawny ; breaſt reddiſh ; back yellow ; rump, wings, and tail rufous ; two middle tail-feathers very long. In Willughby's Ornithology this ſpecies is deſcribed as the ſecond bird of Paradiſe of Aldrovandus. This naturaliſt ſays he obſerved it, in the year 1577, in the poſſeſſion of a Roman knight of the name of Cavallieri. The head was nearly white, ſprinkled with yellow, and gold-coloured ſpots ; the eyes were luteous, with red eye-laſhes ; the bill between green and yellow, two fingers breadth long, and rather curved ; the tongue red, longiſh, and ſharp, not unlike that of a wood-pecker, and calculated for piercing ; the breaſt reddiſh ; the back, wings, and belly whitiſh, but the upper parts of the tips of the wings ferruginous ; the upper part of the back yellowiſh, but becoming reddiſh or ferruginous at the rump ; the tail-feathers were white at the baſe, but ferruginous for the remainder of their length, and the two middle feathers exceeded the others two palms in length. The wings in the figure of Aldrovandus appear very long in proportion to the bird, and the author ſays they meaſured five palms in length ; the tail likewiſe, excluſively of the two middle feathers, appears of conſiderable length.

Coromandus, Coromandel Bee-eater. Yellowiſh ; ſides of the neck, wings, and tail yellow ; wing-coverts, back, and rump waved blueiſh, ocular ſtripes black. Inhabits different parts of India and Coromandel, whence it derives its name. Bill and legs black ; irids pale rufous ; chin greeniſh.

Brasiliensis, Braſilian Bee-eater. Varied brown and black ; head, chin, leſſer wing-coverts, and body beneath red ; wings and tail blue. It is found, as its name imports, in Braſil ; is about nine inches long ; the bill, wings beneath, legs and claws yellow.

Superbus, Superb Bee-eater. Front and rump blue ; two middle tail-feathers longer. Bill blackiſh ; quill-feathers edged with brown ; lower half of the middle tail-feathers dark brown. The ſize of this ſplendid bird is nearly that of the common or European bee-eater.

Badius, Cheſnut Bee-eater. Blue-green ; head, neck, and ſhoulders cheſnut coloured ; tail-feathers above blue, beneath grey-brown ; two middle tail-feathers longer pointed. There is a variety that has the wings and tail cheſnut. It inhabits the iſle of France. Bill black, band beneath the eyes brown ; upper wing-coverts green, beneath tawny ; quill-feathers beneath grey, four inner ones totally green ; 13 middle ones tipt with black ; tail-feathers grey at the inner edge ; legs reddiſh ; claws blackiſh.

Chrysocephalus, Yellow-throated Bee-eater. Green-gold, beneath blue-green ; head and neck tawny ; chin yellow ; two middle tail-feathers longer. It is found in different parts of Aſia, and is about ten inches long. The front and eye-brows blue-green ; upper tail-coverts green.

Angolensis, Angola Bee-eater. Gloſſy green-gold ; band through the eyes cinereous, ſpotted with black ; wings and wedged tail beneath cinereous ; chin yellow ; throat cheſnut. It inhabits, as its name expreſſes, Angola, and is about five inches long. The bill and claws are black ; legs cinereous ; body beneath blueiſh.

Erythrocephalus, Red-headed Bee-eater. Green, beneath yellowiſh ; head and neck red ; chin yellow ; wings and even tail beneath cinereous. It is found in India, and is about ſix inches long. According to Briſſon, the crown of the head and upper part of the neck are of a bright red ; there is acroſs the eyes a black ſtreak ; all the upper parts of the bird are of a fine green ; the throat and under parts yellow, but ſlightly daſhed, from the throat downwards, with red ; tail even at the end, and rather ſhort ; irides red ; bill black ; legs brown.

Nubicus, Blue-headed Bee-eater. Blue-green, beneath red ; back, wings, and forked tail dirty red. It inhabits Nubia, and is ten inches long. The bill is black ; great quill-feathers tipt with blueiſh-aſh, the ſecondary are blackiſh ; legs pale-aſh.

Erythropterus, Red-winged Bee-eater. Olive, beneath whitiſh, chin yellow ; wings and tail red, tipt with black. It was deſcribed by Buffon, from a ſpecimen brought from Senegal by Adanſon. Its total length was about ſix inches.

Cayanensis, Cayenne Bee-eater. Green ; wings and tail rufous, the latter tipt with black. It is a native of Cayenne, from whence it derives its name. The bill is black ; quill-feathers white at the baſe ; the tail-feathers edged with black ; legs yellowiſh.

Surinamensis, Surinam Bee-eater. Variegated ; hind-head reddiſh ; ſcrag greeniſh-yellow ; quill-feathers greeniſh, varied with black and blue. An inhabitant of Surinam. The irids are cheſnut and claws black.

Novæ Seelandiæ, New Zealand Bee-eater. Gloſſy greeniſh-black ; greater wing-coverts and tuft of curled feathers on each ſide the neck white ; tail even, coverts blue. Is found in New Zealand ; is about 11 inches long ; ſings well ; is held ſacred by the inhabitants ; and the fleſh is good. Legs and claws black ; inſide the mouth and tongue yellow, the latter tipt with black and beſet with briſtles ; feathers of the neck lax, long, a little curled, with a longitudinal white ſtreak through the ſhaft.

Phrygius, Embroidered Bee-eater. Black variegated with yellow. This beautiful ſpecies is the ſize of a thruſh, and its black moſt elegantly variegated with bright and pale yellow ; the ſides of the head, round the eyes, are covered by a naked, yellow, granulated ſkin ; the back and breaſt undulated by numerous pale or whitiſh-yellow creſcents, the tips of the black feathers being of that colour ; the ſmaller wing-coverts are marked in a ſimilar manner ; the larger tipt with bright yellow, and the quill-feathers edged with the ſame colour, as are alſo the exterior tail-feathers ; the bill is black, of a moderate length, and ſharp-pointed ; the legs are brown. It is a native of New Holland.

Niger, Yellow-tufted Bee-eater. Black ; a large tuft of feathers behind the wings and vent yellow ; tail wedged, edged and tipt with white. Native of the Sandwich iſlands, where it is much eſteemed on account of the tufts of yellow feathers beneath the wings, which are uſed in various ornamental articles of dreſs among the natives, and on that account Dr. Shaw ſays it might juſtify us in placing this ſpecies among a particular diviſion of the genus Certhia. There are two other varieties, of which the *ſecond* is known by having two middle tail-feathers uniform ; and the *third* by its rufous flanks, and by its having all the tail-feathers uniform.

Carunculatus, New Holland Bee-eater. Brown, belly yellow ; wattles carunculate ; tail wedged, tipt with white. It inhabits New Holland, and is deſcribed and figured in White's Voyage to New South Wales. It is ſomewhat of the ſize of a Miſſel thruſh, but much longer in proportion, meaſuring about fourteen inches. The feathers on the upper part of the head are longer than the reſt, giving the appearance of a ſlight creſt ; the plumage of the bird is brown, the feathers long and pointed, and each feather has a white longitudinal ſtreak ; beneath the eye, on each ſide the head, beyond the baſe of the lower mandible, is a lengthened pendent wattle of an orange colour ; the middle of the belly is yellow, the tail wedge-ſhaped, like that of the magpie, and the feathers are tipt with white. The bill and legs are brown. In ſome individuals of this ſpecies a ſilvery ſtreak appears beyond each ſide of the bill, and in the young birds the white ſtreaks on the plumage terminate in a kind of dilated ſpot at the tip of each feather.

Corniculatus, Horned Bee-eater. Brown, head nakediſh; body beneath and tips of the tail-feathers whitiſh; horn on the front obtuſe. This is alſo an inhabitant of New Holland, and is deſcribed and figured by Mr. White. It is rather larger than a black-bird, the plumage above is brown, and beneath it is white; the head and upper part of the neck is ſparingly covered with narrow white feathers, almoſt like hairs; but the fore-part of the neck and breaſt are furniſhed with long ones of a white colour with a dark middle ſtreak, and pointed at the ends; its moſt remarkable feature is, that on the forehead, juſt at the baſe of the bill, there is a ſhort blunt knob, about a quarter of an inch in height, and of a browniſh colour; the tongue is nearly the length of the bill, and briſtly at the end; the legs are dark brown.

Gularis, Red-throated Bee-eater, and ſometimes, from its colour, called the Black Bee-eater. Black; forehead and rump blue; belly ſpotted with blue; throat red. It inhabits Sierra Leona. In ſize it is rather ſmaller than the common bee-eater, and its prevailing colour is the fineſt velvet black; the forehead is of the richeſt blue, ſo alſo is the rump, ſurpaſſing that of the king-fiſher; the throat is of a bright blood-red, the larger wing-coverts and middle quill-feathers bordered with bright ferruginous; the tail is even at the end; the bill and legs black.

Rufus, Rufous Bee-eater. Quill-feathers brown, the outer edge rufous. Body beneath inclining to yellow; toes ſeparated to the baſe; hind-claw longer. It is obſerved by Buffon, that as the toes in this ſpecies are not united, as in the reſt of the genus, it ſeems to form as it were a connecting link, or ſhade, between the bee-eaters and the hoopoes.

Moluccensis, Molucca Bee-eater. Grey; orbits naked; cheeks black; tail ſubequal. It is a native of the Molucca iſlands, and is about 14 inches long. The bill is blackiſh, pervious, half covered with a membrane; tongue as long as the bill, fringed at the tip; ſome of the feathers of the cheeks are tipt with a ſilvery colour; legs duſky; outer toe connected with the middle one; hind-claw longer.

Monachus, Brown or Cowled Bee-eater. Deſcribed by Latham, white beneath, with black and ſomewhat downy head with raiſed crown. It is a large ſpecies, and a native of New Holland.

Malimbicus, Malimba Bee-eater. Sanguine roſe coloured beneath, with black eye-ſtripe, white throat, and two lengthened tail-feathers. This is a native of Malimba, in Congo, Africa, where it continues only three months in the year; migrating in troops, flying with the ſwiftneſs of a ſwallow, feeding on inſects, rarely perching on trees; nor on the ground any length of time.

MEROS, in *Ichthyology*, the name of a very large American fiſh, growing to five or ſix feet long, and called by the Braſilians *cugupu-guacu*. Its head is very large, and its mouth wide and toothleſs; its eyes have a black pupil and a yellow iris; it hath five fins, one running the whole length of the back and reaching nearly to the tail; the anterior part of this is narrow, and armed with ſmall but ſharp ſpines; the other part is broader, and ſuſtained by ſofter rays; behind the anus is one like the hinder part of that on the back, and two others behind the gills, which are large and broad; the tail fin is very large and broad, and much more ſo at its extremity than at its origin; the ſcales are ſmall; the head, back, and ſides are of a browniſh-grey; and its belly white. It is accounted a well taſted fiſh. Ray. See Perca *Guttata*.

MEROSAGLIA, in *Geography*, a town of the iſland of Corſica; 14 miles N.E. of Corte.

MEROVEUS, in *Biography*, king of France, or of the Franks, whoſe monarchy, at that time, was confined to both banks of the Lower Rhine, began his reign about the year 448. Little is known of his origin and deſcent, but the moſt probable opinion ſeems to be, that he was the younger of the two ſons of Clodion, his predeceſſor, and that he obtained the crown of the Franks through the protection of Valentinian III., and his miniſter Aëtius. Attila ſupported the cauſe of his elder brother, and Meroveus was preſent as an ally of the Romans in the famous battle of Chalons, fought againſt that conqueror in 451. He afterwards probably extended his dominion in the provinces of Mentz and Rheims, to the banks of the Seine, and it has been ſaid, that in conſequence of his celebrity and renown, all the French kings of the firſt race bore the name of *Merovingian*, though others maintain that the appellation is older than this ſovereign. He died about the year 456. Gibbon. Univer. Hiſt.

MEROVINGIAN Character, derives its name from Meroüée, the firſt king of France of that race, which reigned 333 years, from Pharamond to Charles Martel. This race is ſaid by ſome to have terminated in Childeric III. A.D. 751. There are many MSS. in the French libraries ſtill extant in this character. See Spect. de la Nat. vol. vii. p. 190.

MERRET, Christopher, in *Biography*, a phyſician and naturaliſt, was born at Winchcombe, in Glouceſterſhire, in February 1614. He was educated at Oxford, being firſt entered at Glouceſter hall, and ſubſequently removing to Oriel, and took the degree of M.D. in 1642, when he ſettled in London. He appears to have enjoyed a conſiderable ſhare of practice in his profeſſion, was a fellow of the College of Phyſicians, and one of the original members of the Philoſophical Society, which after the reſtoration became the Royal Society. He died in 1695. Merret was a ſtrenuous ſupporter of the excluſive rights of the college, and his firſt publication was "A Collection of Acts of Parliament, Charters, Trials at Law, and Judges' Opinions, concerning thoſe Grants to the College of Phyſicians," 4to. 1660. This book became the baſis of Dr. Goodall's Hiſtory of the College, and it was followed, in 1669, by "A ſhort View of the Frauds and Abuſes committed by Apothecaries, in relation to Patients and Phyſicians." This publication involved him in an angry controverſy with Henry Stubbe. He was known to the public, however, more reputably as a naturaliſt, by the publication of his work, entitled "Pinax Rerum Naturalium Britannicarum, continens Vegetabilia, Animalia, et Foſſilia in hac Inſula reperta," Lond. 1667, 8vo. This, though a dry and incomplete catalogue, and abounding with errors, has the merit of being the firſt of the kind relating to this country, and was without doubt inſtrumental in promoting the ſtudy of natural hiſtory here. The botanical part is the fulleſt, conſiſting chiefly, however, of an alphabetical liſt, according to the Latin names. A great portion of his knowledge of plants was obtained through the medium of Thomas Williſel, a noted herbaliſt, whom he employed to travel through the kingdom for him during five ſummers. The zoological and mineral parts of his pinax are very meagre. Merret communicated ſeveral papers to the Royal Society, which are printed in the earlier volumes of the Philoſophical Tranſactions; particularly an account of ſome experiments on vegetation; of the tin mines in Cornwall; of the art of refining; and ſome curious obſervations relative to the fens of Lincolnſhire. In 1662, he tranſlated into Engliſh, Neri's work "De Arte Vitraria." In 1686, an edition of the ſame work was publiſhed in Latin, with Merret's obſervations and notes; and ſubſequently a work was printed in German and French, comprehending all that had been written by Neri, Merret, and Kunckel, upon this art. Eloy Dict. Hiſt. Gen. Biog.

MERRIMACK, in *Geography*, a river of America, which is formed by the confluence of Pemigewaſſet and Winnipiſcogee rivers in about N. lat. 43° 26′, and which purſues a ſoutherly courſe through the ſtate of New Hampſhire, till it enters Maſſachuſetts, and then turning eaſterly, paſſes into the ocean at Newbury-Port. It is navigable for veſſels of burden about 20 miles from its mouth.

Merrimack, a townſhip in Hillſborough county, New Hampſhire, on the W. bank of Merrimack river; eight or ten miles S. of Amherſt; containing 926 inhabitants.

MERRIMICHI, a river of America, which falls into the head of a bay of that name on the N.E. coaſt of the province of New Brunſwick. From this river there is a communication with St. John's, partly by land, but principally by water carriage in canoes. The ſalmon fiſhery is carried on with ſucceſs, and the cod-fiſhery is improving near the entrance of the bay.

MERRITCH, or Merrick, a town of Hindooſtan, in the country of Viſiapour, ſituated on the N. ſide of the Kiſtnah; 50 miles S.W. of Viſiapour. N. lat. 16° 58′. E. long. 74° 47′.

MERRY, Robert, in *Biography*, was born in London, April 1755, and was deſcended in a right line from ſir Henry Merry, who was knighted by James I. at Whitehall. Mr. Merry's father was governor of the Hudſon's Bay Company. His grandfather was a captain in the royal navy, and one of the elder brethren of the Trinity Houſe; he eſtabliſhed the commerce of the Hudſon's Bay Company upon the plan which it now purſues. He made a voyage himſelf to Hudſon's Bay, and diſcovered the iſland in the North ſeas, which ſtill bears the name of Merry's iſland. He alſo made a voyage to the Eaſt Indies, and was, perhaps, the firſt Engliſhman who returned home over land; in which expedition he encountered inconceivable hardſhips. Mr. Merry's mother was the eldeſt daughter of the late lord chief juſtice Willes, who preſided for many years with great ability in the court of Common Pleas, and was for ſome time firſt lord commiſſioner of the great ſeal. Mr. Merry was educated at Harrow, under Dr. Sumner. The celebrated Dr. Parr was his private tutor. From Harrow he went to Cambridge, and was entered of Chriſt's college. He left Cambridge without taking any degree, and was afterwards entered of Lincoln's Inn, but was never called to the bar. Upon the death of his father he bought a commiſſion in the horſe-guards, and was for ſeveral years adjutant and lieutenant to the firſt troop, commanded by lord Lothian. Mr. Merry quitted the ſervice and went abroad, where he remained nearly eight years; during which time he viſited moſt of the principal towns of France, Switzerland, Italy, Germany, and Holland. At Florence he ſtayed a conſiderable time, enamoured (as it is ſaid) of a lady of diſtinguiſhed rank and beauty. Here he ſtudied the Italian language, encouraged his favourite purſuit, poetry, and was elected a member of the academy Della Cruſca; the name of which academy he afterwards uſed as a ſignature to many poems which were favourably received by the public, and which excited a great number of imitators. When Mr. Merry obſerved this, he dropped his fictitious character, and ever afterwards publiſhed in his own name.

Upon his marriage with Miſs Brunton, who performed in his tragedy of Lorenzo, a proſpect opened to him of living at his eaſe, by the joint production of that lady's talents, and his own pen; but unfortunately the pride of thoſe relations upon whom he had moſt dependence was wounded by the alliance; and he was conſtrained, much againſt Mrs. Merry's inclination, to take her from the ſtage. This he did as ſoon as her engagement at the theatre expired, which was in the ſpring of 1792. They then viſited the continent, and returned in the ſummer of 1793. They retired to America in 1796, and our author died ſuddenly at Baltimore, in Maryland, Dec. 24, 1798, of an apoplectic diſorder, which proceeded, as is ſuppoſed, from a plethora, and the want of proper exerciſe. He was author of the following dramatic pieces, *viz.* "Ambitious Vengeance;" "Lorenzo;" "The Magician no Conjurer;" and "Fenelon," a ſerious drama. Monthly Magazine, Jan. 1799.

Merry's *Iſland*, in *Geography*, an iſland in Hudſon's Bay. N. lat. 61° 52′. W. long. 93° 5′.

MERRY-MEETING Bay, a bay of America, in Strafford county, New Hampſhire, being the ſouthernmoſt arm of lake Winnipiſcogee. On its W. ſide ſtands mount Major.—Alſo, a bay in Maine, formed by the junction of Androſcoggin and Kennebeck rivers, oppoſite to the town of Woolwich, 20 miles from the ſea.

MERS Agoleta, a town of Algiers, near the ſea-coaſt; ſix miles S.W. of Tneiſs.

Mers *il Keeber*. See Mazalquivir.

MERSA, El, a town of Africa; 12 miles N.E. of Tunis.

MERSBURG, or Morspurg, a town of the duchy of Baden, ſeated on the lake of Conſtance, containing a ſeminary for ſecular clergy, and a nunnery of the Dominicans; ſix miles N.E. of Conſtance. N. lat. 47° 41°. E. long. 9° 14′.

MERSCH, a town of France, in the department of the Foreſts, and chief place of a canton, in the diſtrict of Luxembourg. The place contains 1446, and the canton 8185 inhabitants, on a territory of 217½ kiliometres, in 15 communes.

MERSCHOWITZ, a town of Bohemia, in the circle of Leitmeritz; 14 miles W.S.W. of Leitmeritz.

MERSEA, a townſhip of Upper Canada, in the county of Eſſex, ſeated on lake Erie, W. of Romney.

MERSEBURG, a principality of Saxony, encompaſſed by the circles of Leipſic and Thuringia, the principality of Querfurt, and duchy of Magdeburg. The ſoil is fertile, and well cultivated, producing wheat, millet, and flax, but wanting wood.—Alſo, the capital of the above-named principality, ſeated on the Saale. It contains within the liberties of the Chapter, the epiſcopal palace and cathedral; a gymnaſium or foundation ſchool, the chancery-houſe, the chapter-houſe, the curiæ or reſidences of the canons, and other buildings. It has alſo a pariſh church; and derives its chief ſubſiſtence from the ſtrong beer that is brewed here and exported to different places; 16 miles W. of Leipſic. N. lat. 51° 22′. E. long. 14° 6′.

MERSENETI, a town of Aſiatic Turkey, in Natolia; 10 miles S.E. of Milets.

MERSENNE, Marin, in *Biography*, a learned French mathematician and philoſopher, was born at Oyſe, in the province of Maine, in the year 1588. He purſued his college ſtudies at La Fleche, where he had as a fellow ſtudent the celebrated Des Cartes, with whom he contracted an intimacy and friendſhip that laſted during their lives. Here Merſenne rendered himſelf conſpicuous for the diligence and rapid progreſs which he made in his various ſtudies. From La Fleche he went to the univerſity of Paris, where he paid the utmoſt attention to the mathematical ſciences; after which, he went through a theological courſe at the Sorbonne. When he had completed his ſtudies, he entered himſelf at the convent of Minims near Paris, and took the vows in 1612, when he was only 24 years of age. In the following year he was ordained prieſt, and began to ſtudy the Hebrew language, of which he made himſelf a complete maſter. In 1615 he was ſent to the convent of his order near Nevers, to fill the philoſophical chair in that houſe; and he continued there, teaching philoſophy, and afterwards theology, till the year 1619, when he was choſen ſuperior of the convent. Upon the expiration of the term of his office, which was annual, he withdrew to Paris, where he ſpent the remainder of his life in ſtudy and literary converſe, excepting ſuch time as he devoted to ſhort excurſions into Italy, Germany, and the Netherlands. While at this great city, he was the chief friend and literary agent of Des Cartes, giving him advice and aſſiſtance upon all occaſions, and informing him of every thing of a literary and philoſophical kind that was going on in that city, and elſewhere. So highly did Des Cartes eſtimate the opinion of our philoſopher, that he ſcarcely did any thing, without firſt conſulting his friend. It has been reported, that when Des Cartes was about to found his ſyſtem of philoſophy upon the principle of a vacuum, he was informed by Merſenne, who had founded the Pariſian philoſophers upon it, that it would not be admitted, and immediately changed his ſyſtem, and adopted the oppoſite doctrine of a plenum. Merſenne was much celebrated for poſſeſſing the peculiar talent of forming curious queſtions and problems; ſome of which, it afterwards appeared, he was unable to ſolve. To him has been aſcribed the invention of the curve, well known by the name of the "cycloid," which inſtantly engaged the attention of mathematicians. Schooten, indeed, aſcribes the invention to Des Cartes; but Torricelli, in the appendix, "De Dimenſione Cycloidis," ſays, the curve was diſcovered and named by Galileo and others, about the year 1599, before Merſenne and Des Cartes could have made much progreſs in mathematical learning. Dr. Wallis, in the firſt volume of the London "Philoſophical Tranſactions abridged," attempts to ſhew that it is a much older invention, and was known to Bovilli in the year 1500, and by cardinal Cuſa a full half century before this. Merſenne died in the year 1648. The loſs of him was deeply regretted by perſons of all ranks who were acquainted with him, by whom he was as much beloved for the cheerful qualities of his heart, and his mild and amiable temper, as he was reſpected for his profound ſcientific knowledge. He was, while a reſident at Paris, the very centre of communication between literary men of all countries; being there, what Mr. Collins was in England. He omitted no opportunity of engaging them to publiſh their works; and to Merſenne the world is indebted for ſeveral important diſcoveries, which would probably have been loſt, but for his encouragement and patronage. His own works were numerous, and many of them highly important. The firſt which he publiſhed, of any magnitude, was entitled "Queſtiones celeberrimæ in Geneſim, &c. cum accurata Textus Explicatione. In hoc Volumine Athei et Deiſtæ impugnantur et expugnantur." The other works of this philoſopher are enumerated in the General Biography, to which our readers are referred.

In the muſical writings of this diligent and ingenious eccleſiaſtic may be found the moſt minute and ſatisfactory account of the ſtate of muſic in France, during the reign of Louis XIII., particularly in his "Harmonie Univerſelle," publiſhed at Paris in 1636, in folio; a work in which, through all the partiality to his country, want of taſte, and method, there are ſo many curious reſearches and ingenious and philoſophical experiments, which have been of the greateſt uſe to ſubſequent writers, particularly Kircher, as render the book extremely valuable. This work, corrected and enlarged, was tranſlated into Latin, and publiſhed by the author in 1648, the year of his death, under the following title, "De Sonorum Natura, Cauſis et Effectibus." In his twenty-third propoſition, liv. i., this author explains and deſcribes twelve different kinds of muſic and movement, uſed in France during his time: theſe were motets, ſongs or airs, paſſacailles, pavans, allemandes, gaillards, voltes, courantes, ſarabandes, canaries, branles, and balets; of all which he gives examples in notes. But though moſt of theſe movements were the ſpecific names of the dances then in vogue, the minuet, which, during the preſent century, has been in ſuch general favour all over Europe, is never mentioned.

In the "Pref. generale," Merſenne ſpeaks of Galileo's diſcoveries in harmonics; and in his liv. ii. "Des Conſonances," of ſympathic vibrations. In other parts of his work he explains clearly the twelve keys major of practical muſic; and ſhews, for the firſt time perhaps, that there may be ſeventy-two keys, or ſix for each note, flat, natural, and ſharp, major and minor. There is nothing in this good father's book which reflects more honour on his taſte and penetration than his partiality for the violin, to which, in liv. iv, "Des Inſtrumens," prop. i. he gives the preference over all other inſtruments then in uſe, at a time when it was thought unworthy of being admitted into the concerts of other countries.

It is amuſing, however, to ſee how contented mankind have ever been, in the moſt rude and uncultivated ages of the world, with their own talents and accompliſhments. A ſingular inſtance of this mental comfort appears in Merſenne, chap. "De l'Embelliſſemens des Chants," which he addreſſes "to poſterity, that they may form ſome idea," ſays he, "of our manner of gracing and embelliſhing airs; as ſuch advances have at no time been made in poliſhing and refining melody, as at preſent." In his treatiſe "De la Voix," where he explains the manner of running diviſions and making ſhakes, he ſays, that "of all nations who ſtudy ſinging, and who run diviſions in the throat, the French execute paſſages in the neateſt manner: this even the Italians confeſs, who make a particular profeſſion of ſinging. It is impoſſible," adds he, "to deſcribe the beauty and ſweetneſs of our vocal embelliſhments to ſuch as have not heard them; for the purling of a ſtream, the meandering of a brook, or the warbling of a nightingale, is not half ſo mellifluous. And I find nothing in nature," continues this pious father, "that can give the leaſt idea of theſe paſſages, which are far more raviſhing than ſhakes or trills, for they are the very quinteſſence of muſic." (Liv. i. De la Voix, p. 40.) He afterwards obſerves, that no traces are to be found in the writers of muſic among the ancient Greeks, that this ingenious and voluptuous people ever had "des fredons & des paſſages comme nous autres:" trills and diviſions in their muſic, like us.

One propoſition in this book (xxxiv.) is to inquire whether the French method of ſinging is the beſt of all poſſible methods? and determines in the affirmative, not only with reſpect to this propoſition, but affirms that of all thoſe he had heard ſing in neighbouring countries, as in Spain, Germany, Flanders, and Italy, he had met with none who ſung ſo agreeably as the French. "There may," ſays he, "be now and then a miraculous performer in other countries, but I ſpeak here in general."

He mentions recitative as a thing little practiſed in France, for want of courage. The Italians, he obſerves, had ſucceeded in this ſpecies of ſinging, which Giacomo Peri had invented at Florence the beginning of the century. Here he ſpeaks of ſeveral muſical dramas in Italy, but does not call them operas. (Liv. vi. L'Art de bien Chanter.) A book with the ſame title was publiſhed at Paris, by Bacilly, 1668.

The *ſi*, to expreſs the ſeventh of the key, does not ſeem to have been in uſe at this time in France; as Merſennus in his ſolmiſation has never introduced it, repeating the *mi*, in the key of C, for E and B.

MERSEY, in *Geography*, a navigable river of England, flows from the eaſt to the weſt, and forms, in the greater part of its courſe, a natural boundary between the counties of Lancaſter and Cheſter. Its whole extent is about fifty miles; thirty-five of which are navigable, from Liverpool to the mouth of the river Irwell, for veſſels of conſiderable burthen. The Merſey derives its origin from the junction of the rivers Etherow and Goyt, where it aſſumes the preſent name, and in its courſe receives the ſtreams of the Tame, the Bollen, the Irwell, and the Weever. Oppoſite Warrington in Lancaſhire, where it meets the tide-water, the Merſey is only forty yards wide; but at Runcorn-gap, where it communicates with the Grand-trunk, and duke of Bridgewater's canals, its width is three hundred yards: below the gap, it extends itſelf into a grand eſtuary of three miles in width, and receives the navigable river Weever from Northwich and Frodſham. In its courſe northward from Runcorn, it gradually diminiſhes for ſix miles, and oppoſite Liverpool is only three-quarters of a mile wide; but it forms a fine channel, at leaſt ten fathoms deep at low water, and is very commodious for ſhipping. About five miles farther, meaſuring by the Cheſhire coaſt, it falls into the Iriſh ſea, by two or three different channels, which are much incommoded by ſands; but the paſſage is rendered ſecure by means of various land-marks, buoys, and light-houſes, and the excellent ſyſtem of pilotage eſtabliſhed by the Liverpool merchants. Lyſons's Magna Britannia, vol. ii.

MERSIG, a town of France, in the department of the Sarre, and chief place of a canton, in the diſtrict of Sarrebruck. The place contains 1832, and the canton 6421 inhabitants, in 20 communes.

MERTAQUE, a town of New Spain, in the province of Honduras, which produces cochineal.

MERTENSIA, in *Botany*, a genus of the Submerſed *Algæ*, commonly termed Sea-weeds, named by the celebrated Thunberg, in honour of Profeſſor F. C. Mertens, of Bremen, a man of the moſt amiable character, highly diſtinguiſhed by his knowledge of this tribe of vegetables in particular. A treatiſe illuſtrating this genus was publiſhed by Dr. Roth, in Schrader's New Journal for 1807. A *Merenſia* had indeed previouſly appeared, from the pen of Profeſſor Willdenow, in the Stockholm Tranſactions for 1804, belonging to the order of Ferns; but that being reduced to another genus, (ſee Gleichenia,) the preſent is eſtabliſhed; and as far as any opinion can be formed of ſo unſettled a tribe, it ſeems to be tolerably diſtinct from all that have already been adopted. Roth. in Schrad. New Journ. v. 2. aſc. 1. 11. t. 1. f. B.—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Algæ*, Linn. Juſſ.

Eſſ. Ch. Frond internally jointed. Seeds diſperſed in he coats of cluſtered inflated veſicles.

1. M. *lumbricalis*. Roth as above. (Ulva lumbricalis; Linn. Mant. 311. Syſt. Veg. ed. 14. 972. Thunb. Prod. 80.) – Gathered by Koenig, as well as by Thunberg, upon ubmarine rocks at the Cape of Good Hope. The *root* conſiſts of many ſlender entangled fibres, attaching themſelves to ſhells and ſtones. *Fronds* ſeveral, three or four inches high, cylindrical, bluntiſh, tapering at the baſe, determinately branched, the thickneſs of a crow's quill, or more, greeniſh-yellow, or purpliſh, compoſed of a thickiſh coriaceous coat; internally ſpongy, and interrupted by very frequent tranſverſe reticulated partitions, which are ſcarcely diſcoverable at the outſide. *Fructification* generally axillary, rarely lateral, conſiſting of numerous crowded, obovate, or oblong, veſicles, proceeding from a ſlightly elevated fleſhy baſe, or *receptacle*. Each of theſe is jointed internally like the frond, but their coat is rather thinner and more pellucid, lodging very numerous, ſcattered, roundiſh-oval, cryſtalline *ſeeds*. The ſpecimens in the herbarium of Linnæus juſtify his deſcription of the fructification being terminal, but Roth aſſerts that it becomes ſo only by accidental injuries to the frond. The internal partitions are conſidered by this great cryptogamiſt of a ſpurious nature, as originating from cellular ſubſtance only, which dilates into a tranſverſe web or net. The *ſeeds* are diſperſed under the external cuticle, exactly as in real *Ulvæ*, though confined to the above-mentioned veſicular excreſcences, which however ſeem materially different from branches, nor do they appear ever to be extended into ſuch.

MERTHYR Tydvil, or *Tudfyl*, in *Geography*, a large and populous market-town, ſituated in the cwmwd of Senghenydd, cantref of Brenhinol, now the hundred of Caerphilly, and county of Glamorgan, South Wales. It is a place of great antiquity, and is ſaid to derive its name from Tydvil, the daughter of Brechan, prince of Brecknockſhire, who was murdered here, along with her father and brother, Rhun Dremrudd, by a party of Saxon marauders, about the cloſe of the fifth century. Tydvil was the wife of Cyngin, ſon of Cadell, prince of the vale royal and part of Powys, and is reckoned among the number of the ancient Britiſh ſaints. After her death, the Saxons having been expelled by the prowеſs of her nephew, Nevydd, a church was erected and dedicated to her at this place, and called the church of Merthyr Tydvil, which in Welſh ſignifies "the Martyr Tydvil."

From this period, nothing occurs deſerving of notice relative to Merthyr Tydvil, till about the year 1620, when it was diſtinguiſhed for its zeal in the cauſe of non-conformity. Though then trivial in extent and political importance, it was neverthеleſs a ſort of hot-bed, which contributed in no ſmall degree to engender and keep alive, for more than a century, thoſe religious diſſentions, the effects of which ſtill continue viſible in the ſeparation of the greater proportion of the inhabitants of Wales from the eſtabliſhed church. In 1755 a new era commenced in the hiſtory of this place. The extenſive and valuable mines in its immediate vicinity had hitherto attracted but little notice. At this time, however, Mr. Bacon particularly directed his attention towards them; and having obtained a leaſe of a diſtrict, extending about eight miles in length, and four in breadth, at the moderate rent of 200*l*. *per annum*, immediately began operations, and erected extenſive works for the ſmelting and forging of iron. This gentleman continued increaſing his eſtabliſhment till the year 1783, when he deemed it proper to let out the greater part of his property to Mr. Crawſhay, and the remainder to Mr. Hill: at the ſame time, he reſerved to himſelf a certain tonnage on all the iron manufactured above a ſpecified quantity. The new proprietors ſoon augmented the works; and the part belonging to Mr. Crawſhay, at Cyfartha, are now by far the largeſt in this kingdom, and probably in Europe. He employs no fewer than 1500 men, at an average of 30 ſhillings a week *per* man. The weekly wages paid for labour amount to 1500 pounds.

The average of iron produced from theſe works is from 180 to 200 tons a week. Six furnaces and two rolling-mills are employed. For procuring blaſt for the furnaces and working the mills, there are four ſteam-engines; one of fifty, one of forty, one of twelve, and one of ſeven horſe power. The firſt engine is connected with the four upper blaſt-furnaces, to which is a water-engine annexed of nearly the ſame power. The machinery of this eſtabliſhment is truly gigantic; and that part of it worked by water is curious, and certainly highly powerful. The great water-wheel is a moſt extraordinary piece of mechaniſm: it was conſtructed under the ſuperintendance of Watkin George, and meaſures 50 feet in diameter. W. George was then a carpenter employed about the works: he was afterwards taken into partnerſhip, and received 20,000*l.* to give up his ſhare. Beſides theſe works, and thoſe of Mr. Hill, there are two others at Pendarren and Dowlais; the former producing about 140 tons of iron weekly, and the latter about three fourth-parts of that quantity. The total number of ſmelting-furnaces near this town is ſeventeen, *viz.* Dowlais four, Pendarren three, Plymouth (Mr. Hill) four, and Cyfartha ſix.

No fact can better illuſtrate the magic influence of trade on the condition of a country, than the rapid change which has been effected at Merthyr Tydvil and its neighbourhood. Forty years ago, this town was an inconſiderable village, and contained only a few hundred inhabitants; whereas, by the ſole operation of its iron-works, it has riſen to be by far the largeſt and moſt populous town in Wales. The inhabitants of this pariſh were eſtimated at 7705, in 1801; but the population is conjectured to amount to 10,000 perſons. In 1803 the money raiſed for the poor rates, at 6*s.* 6*d.* in the pound, was 1453*l.* 17*s.* 10½*d.* The ſtreets in general are cloſe and confined, and have no proper outlets behind the houſes. Conſiderable improvements, however, have already been made within theſe laſt five or ſix years. Such ſtreets as have been built ſince that period are much better arranged, and wider than thoſe which were erected earlier. At Pendarren is a large and elegant houſe, ſurrounded by beautiful gardens and pleaſure-grounds, belonging to Mr. Homfray. The pariſh church, rebuilt in 1806, is a large and handſome building; and beſides it, there is a ſpacious chapel built by Mr. Crawſhay. The meeting-houſes for diſſenters of different ſects are about eleven in number: three Baptiſts, two Preſbyterian, two Independents, two in the Weſley connection, and two in that of Whitfield. A theatre has been lately erected here. There is likewiſe a philoſophical ſociety here, as well as a printing-houſe, and a book-ſeller. The inhabitants of this town are chiefly Welſh, and the language ſpoken in it almoſt entirely ſo. Leſs immorality prevails than might be expected in a place where the population conſiſts chiefly of the lower orders. This is partly owing to the circumſtance of the iron-maſters and clergymen being uſually magiſtrates for the county, and partly to the effect of religious inſtruction. Theſe magiſtrates have the power of nominating the requiſite number of conſtables, and muſt ſubmit all their proceedings to the quarter and great ſeſſions. A court of conſcience, for the recovery of ſmall debts, has been inſtituted here by act of parliament, within theſe three years. This town has three market-places, which are well ſupplied twice every week, on Wedneſdays and Saturdays. It has likewiſe ſeveral fairs during the year.

The weighty and valuable productions of Merthyr Tydvil find an eaſy conveyance to the ſea, by means of a canal which extends hence to Penarth harbour, in the Briſtol channel, being navigable as far as Cardiff for veſſels of 300 tons, and above that town for barges of 100 tons. This canal, begun about 22 years ago, was completed in 1798. At the Cyfartha works, where it terminates, it is 568 feet above the level of the ſea; which elevation is effected by means of about 40 locks. A new tram road runs nearly by its ſide, through its whole courſe, extending altogether 26 miles in length.

Beſides its iron ores, the neighbourhood of this town is abundantly productive of other minerals uſeful in the arts, and conſequently ſubſervient to the convenience and happineſs of man. Coal, ſo indiſpenſibly neceſſary in the manufacture of the iron, is ſupplied in immenſe quantities, and of excellent quality. Good mill-ſtones and ſtones for paving are likewiſe abundant; and in the lime-ſtone rocks are found beds of black and variegated marble, not inferior to any in the kingdom.

About two miles from the town, on the ſummit of a lofty mountain, is ſituated a very ancient market-place, where weekly markets have now been held for upwards of 800 years, during the ſummer ſeaſon, from the 14th of May till the 14th October. This ſingular market is ſtill much frequented. Several fairs are likewiſe held here for cattle, though the houſes in the place do not exceed ſix in number.

Morlais caſtle ſtands about three miles to the north-weſt. It is ſituated on the ſummit of a hill, about half a mile from the ancient road over the mountains from Cardiff to Brecknock, overlooking a ravine of great depth, in the bottom of which runs a branch of Taff Vechan river. The area of this caſtle forms an irregular pentagon, defended on the ſouth and eaſt ſides by a very large and deep trench cut in the ſolid rock. On the north and weſt ſides it is rendered ſufficiently ſtrong, by the bold and rugged precipices which overhang the dingle. The whole of this caſtle is now in ruins. It was built by Ivor Petit, or Ivor Bach, the ſon of Cedevor, who was no leſs diſtinguiſhed for his valour than for the uncommon ſmallneſs of his ſtature. Malkin's Scenery, Antiquities, and Biography of South Wales, 2 vols. 8vo. 1807. Carliſle's Topographical Dictionary of Wales, 1 vol. 4to. 1811.

MERTOLA, a town of Portugal, in Alentejo, ſeated on the Guadiana, containing about 2400 inhabitants; 24 miles S.S.E of Beja. N. lat. 37° 36′. W. long. 7° 37′.

MERTON, a village in the weſt half-hundred of Brixton, in the county of Surrey, England, is ſituated on the Epſom road, nine miles diſtant from London. It contained in the year 1801, according to the return then made to parliament, 151 houſes, occupied by 813 perſons. The manor, which before the Conqueſt was the property of earl Harold, and was afterwards held by the crown, was granted by Henry I. to Gilbert Norman, ſheriff of Surrey, who, in the year 1115, built a convent for canons regular of the order of St. Auſtin. The eſtabliſhment was patroniſed by the king and his queen Matilda. In 1130, Merton abbey, as it was then called, was built with ſtone; and in 1136 the canons entered on the poſſeſſion of it. The benefactions to it were numerous and ample. In the year 1236 a parliament was held at the abbey, wherein were enacted the ſtatutes which take their name from that place. In this houſe alſo was concluded the peace between Henry III. and the dauphin of France. The abbey was ſurrendered in 1538; and the ſcite was afterwards granted to the newly-eſtabliſhed monaſtery at Shene. After the diſſolution, it was leaſed out to private perſons; and during the civil war of Charles I. it appears to have been uſed as a garriſon. At preſent there is no other veſtige of the abbey than the eaſt window of a chapel of crumbling ſtone, which ſeems, from its ſtyle, to have been built in the fifteenth century. The walls which ſurround the premiſes, including a ſpace of about 60 acres, are

are nearly entire. The ſcite has long been occupied by two extenſive manufactories for printing calicoes; and a copper mill is alſo eſtabliſhed here.

The pariſh church of Merton was built, early in the twelfth century, by Gilbert Norman, the founder of the abbey. It is conſtructed of flints, and conſiſts of a nave and chancel; and at the weſt end is a low ſpire. From the ſtyle of architecture, it is preſumed to be the original ſtructure, which has undergone but little alteration. In the chancel window are ſome remains of painted glaſs; and againſt the north wall of the church is a large picture of Chriſt bearing the croſs.

Merton-Place, the ſeat of the late admiral Nelſon, is in this pariſh: as is Cannon-hill, the villa of William Molleſon, eſq. Sir Richard Hotham had a ſeat here, which was purchaſed by —— Graves, eſq. Lyſons's Environs of London, vol. i.

MERTVOI Kultuck, a bay at the north extremity of the Caſpian ſea. N. lat. 46°.

MERTZA, a ſmall iſland in the north part of the gulf of Bothnia. N. lat. 65° 27'. E. long. 22 9'.

MERTZBACH, a town of the duchy of Wurzburg; 6 miles N.N.E. of Ebern.

MERU, a town of France, in the department of the Oiſe, and chief place of a canton, in the diſtrict of Beauvais; 12 miles S.S.E. of Beauvais. The place contains 1800, and the canton 7131 inhabitants, on a territory of 165 kiliometres, in 20 communes.

Meru, a very celebrated mountain, in the mythological fables of the Hindoos. The word in Sanſcrit ſignifies an *axis*, or *centre;* and hence, perhaps, it has been applied to the north pole, which, being deemed the moſt elevated region, led the poets to deſcribe Meru as the higheſt mountain in the world. It is alſo, by way of pre-eminence, called Sū-merū, denoting its fairneſs or beauty. In the 15th chapter of the firſt book of the Mahabarat, it is thus deſcribed: “There is a fair and ſtately mountain, and its name is Mēroo; a moſt exalted maſs of glory, reflecting the ſunny rays from the ſplendid ſurface of its gilded horns. It is clothed in gold, and is the reſpected haunt of dews and gandharvas (deities and celeſtial choriſters). It is inconceivable, and not to be encompaſſed by ſinful man; and it is guarded by dreadful ſerpents. Many celeſtial medicinal plants adorn its ſides; and it ſtands, piercing the heavens with its aſpiring ſummit, a mighty hill, inacceſſible even by the human mind. It is adorned with trees and pleaſant ſtreams, and reſoundeth with the delightful ſongs of various birds.” (Gita, p. 146.) The above is the introduction to the ſtory of the Kurmavatara, given by the learned tranſlator in a note on the Gita. (See Kurmavatara and Brachmans.) This may be deemed ſufficiently extravagant; but it is tame, compared with ſome of the ravings of Hindoo myſtics, who find, in the contemplation of this myſterious mountain, types and ſymbols of every thing in and out of nature. Here follows a ſpecimen of the Brahmanda Purana, taken from Mr. Wilford's diſſertation on the Sacred Iſles in the Weſt, in vol. viii. of the Aſiatic Reſearches. “Meru is the ſacred and primeval Linga, and the earth beneath is the myſterious Yoni, open like the Padma or Lotos. The convexity in the centre is the Os tincæ, or navel of Viſhnu: and the Hindoos often repreſent the phyſiological myſteries of their religion by the emblem of the Lotos, where the whole flower ſignifies both the earth and the two principles of fecundation; the germ is both Meru and the Linga; the petal and filaments are the mountains which encircle Meru, and are alſo the type of the Yoni; the four leaves of the calyx are the four vaſt regions towards the cardinal points; and the leaves of the plant are the different iſlands in the ocean round Jambu.” At the end of this ingenious eſſay are curious plates, repreſenting Meru under the fanciful ſemblance of a lotos, and other geographical extravaganzas of the Hindoo Puranicas, or poetical fabuliſts. “Brahma, Indra, and all the gods, declare that this largeſt of mountains is a form conſiſting of jewels of numberleſs colours; the abode of various tribes; like gold; like the dawning morn, reſplendent, with a thouſand petals; like a thouſand water-pots, with a thouſand leaves. Within it is adorned with the ſelf-moving cars of the gods, all beautiful; in its petals are the abodes of the gods, like heaven; in its thouſand petals they dwell with their conſorts. There reſides above Brahma, god of gods, with four faces. There in the eaſt is Indra, for ever to be praiſed; the lord of wealth, with a thouſand eyes, the deſtroyer of towns.” (See Indra.) On this Olympia of the Hindoos are all the gods aſſembled in their magnificent palaces, under different deſignations. Kailaſa is the paradiſe of Siva. (See Kailasa.) Meru is the grand-father of the river Ganges, as noticed under Mera, the name of his daughter. Under the articles Linga, Lotos, and Yoni, ſome mention is made of this wonderful mountain; and the reader, deſirous of farther accounts of it, and of myſticiſms connected with it, is referred to vol. viii. of the Aſiatic Reſearches, and to Moor's Hindoo Pantheon.

MERVILLE, Michael Guyot de, in *Biography*, a French writer, was born at Verſailles in 1696. After travelling through various countries, he ſettled as a bookſeller at the Hague, where he publiſhed a literary journal. His affairs becoming embarraſſed, he went to Switzerland, and drowned himſelf in the lake of Geneva in 1765. He wrote, 1. Voyage Hiſtorique, 2 vols. 12mo. 2. Several Comedies, &c. publiſhed at Paris, in 3 vols. 12mo.

Merville, in *Geography*, a town of France, in the department of the North, and chief place of a canton, in the diſtrict of Hazebrouch; 15 miles W. of Lille. The place contains 5302, and the canton 16,608 inhabitants, on a territory of 60 kiliometres, in 5 communes.

MERUIT Quantum, in *Law*. See Quantum.

MERULA, George, in *Biography*, a critic and hiſtorian, one of the revivers of ancient literature, was a native of Aleſſandria in Italy. He acquired the rudiments of Latin and Greek under able preceptors, was ſoon diſtinguiſhed for his claſſical attainments, and paſſed the greateſt part of his life in teaching the languages and rhetoric at Venice, Milan, and Pavia. He died at Milan, at an advanced age, in 1494. He was celebrated as an original writer, and as an editor and commentator. Under the patronage of Lewis Sforza he wrote “Antiquitates Vicecomitum, ſive de Geſtis ducum Mediolanenſium,” of which the firſt decade was publiſhed in his life time, and four books of the ſecond decade were given in the 25th vol. of the “Scriptores Rerum Ital.” He alſo compoſed a deſcription of Montferrat, and of the eruption of mount Veſuvius, and a ſmall hiſtorical tract entitled “Bellum Scodrenſe,” deſcriptive of the ſiege of Scutari by the Turks in 1474. He was the firſt who gave an edition of the four Latin writers on agriculture, *viz.* Cato, Varro, Columella, and Palladius, with notes, 1472. In the ſame year he gave the firſt edition of the “Comedies of Plautus.” He likewiſe either firſt publiſhed or illuſtrated “Juvenal;” “Martial;” “Auſonius,” and the “Declamations” of Quintilian. He tranſlated from the Greek, the lives of Trajan, Nerva, and Adrian. To him the world is indebted for the diſcovery of many ancient MSS. in the monaſtery of Bobbio in 1494. Gen. Biog.

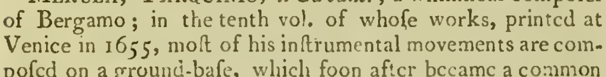
Merula, Paul, was born at Dordrecht, in Holland, in the year 1558. He acquired in his own country a profound knowledge of law, hiſtory, and polite literature, and then travelled for improvement into France, Italy, Germany, and England. On his return he was appointed to ſucceed the famous Lipſius as profeſſor of hiſtory at Leyden, an office which he held for fifteen years. He died in 1607; leaving behind him ſeveral learned works, as "The Fragments of Ennius, with a Commentary:" "Eutropius:" "The Lives of Eraſmus and Junius:" "Coſmographia," a work on ancient geography: "A Treatiſe on Law:" "A Treatiſe on Hunting, with the Laws reſpecting it:" the two laſt are in the Dutch language. After his death his works were collected and publiſhed under the title of "P. Merulæ Opera varia poſthuma," 1684.

MERULA, CLAUDIO, DA CORREGGIO, (a ſmall town in the ſtate of Modena,) organiſt of the church of St. Marc at Venice in the time of Zarlino, and one of the interlocutors in the "Raggionamento primo" of his "Dimoſt. Harm." where he is called "il gentiliſſimo M. Claudio Merula, ſuaviſſimo organiſta del ſuo tempo"—the ſweeteſt organiſt of his time. He had been maeſtro di cappella to the duke of Parma, and publiſhed "Toccate," or preludes for the organ, engraved on copper plates. The firſt book of his "Cantionum ſacrarum" appeared at Venice in 1578, in 4to.; after this he publiſhed maſſes, pſalms, motets, magnificats, madrigals in three, four, and five parts.

Claudio Merula was one of the firſt who attempted dramatic muſic. In 1574, he compoſed a theatrical piece at Venice, which was performed in the grand council chamber, for the entertainment of Henry III. of France, when he returned from Poland on the death of his brother, Charles IX. This piece was called a tragedy, and was probably declaimed, with madrigals and choruſſes intermixed.

MERULA, TARQUINIO, *il Cavalier*, a whimſical compoſer of Bergamo; in the tenth vol. of whoſe works, printed at Venice in 1655, moſt of his inſtrumental movements are compoſed on a ground-baſe, which ſoon after became a common practice with Stradella, Purcell, and others. This maſter was a church compoſer, and a madrigaliſt; but his favourite ſtyle ſeems to have been the burleſque: in his cantata of Curtius for a baſe voice, publiſhed in 1638, the poet, after adviſing Curtius againſt ſo raſh a ſtep, tells him, that though he may eaſily find his way to the bottom of the gulph into which he was about to plunge, yet, he adds, *quanto al ritornare, ſarà un difficile* PASSO; to which laſt word a diviſion of ſix bars, of ſixteen ſemiqnavers in each, is given, in the courſe of which, the finger is carried from D on the ſixth ſpace in the baſe, down to the abyſs of double C. There is another diviſion of ſeven bars at the laſt cloſe, in which the paſſages are echoed, piano, and the trill of the times in iterations of the ſame note, in ſemiquavers, is written twice at full length.

The cavalier Merula's compoſitions are almoſt all ſo tinctured with caprice and buffoonery, as to render them more ſingular and new at leaſt than thoſe of his contemporaries. In his "Libro ſecondo della Muſiche concertate," publiſhed in 1635, he has publiſhed a three-part ſong, with ritornels for two violins and a baſe, ſopra la ciacona, with his cantata of "Curzio precipitato." Among other capricious things in this publication, there is a Canzonetta ſpirituale ſopra la Nanna, or Lullaby, conſiſting of only theſe two notes in the baſe:



He has compoſed a learned fugue in four parts, on the declenſion of *Hic, hæc, hoc;* and another upon *Quis vel qui: nominativo qui, quæ, quod, &c.* This laſt conſiſts of ſeveral movements which are ſupported with vivacity, and imitations of the cant and ſtammering of ſchool-boys in repeating their grammatical leſſon. The ſingle vocal airs of this period by Merula and others, which we have examined, in order to trace the progreſs of Italian melody, *ab ovo*, are dull, monotonous, and inelegant. Imagination, as yet, was too much fettered by canto fermo, canon, fugue, and eccleſiaſtical modes, to attempt the uſe of her wings.

MERULA, in *Ichthyology*, a ſpecies of *Labrus;* which ſee.

MERULA *Fluviatilis*, a name given by Schoneveldt, and ſome other writers, to the common tench. See CYPRINUS *Tinca*.

MERULA, in *Ornithology*, the *Black-bird*, a ſpecies of *Turdus*, of which there are ſeveral varieties. See TURDUS *Merula*, &c. For other ſpecies of *Merula*, ſee ALAUDA, CORVUS, GRACULA, LANIUS, MUSCICAPA, ORIOLUS, PARADISEA, STURNUS, and TANAGRA.

MERULA *Aquatica*, the name of a bird called the *water-ouzel* in Engliſh. Sea STURNUS *Cinclus*.

MERULA *Saxatilis*. See TURDUS *Saxatilis*, LANIUS *Infauſtus*, and CORVUS *Caryocatactes*.

MERULIUS, in *Botany*, a name of far-fetched etymology and meaning; adopted by Haller, for the genus which now retains it, from John Bauhin, who in his *Hiſtoria* v. 3. 807, mentions ſome fungi as called by the name of *Merulius* or *Metulius*, from *Meta*, a pillar or boundary-poſt with a round top, which their ſhape reſembles. Such fungi, no doubt, are numerous, belonging to various genera; but the idea is leſs ſuitable to our preſent *Merulii*, than to moſt others.—Hall. Hiſt. v 3. 150. Perſ. Syn. 488. (Cantherellus; Juſſ. 4. Lamarck Illuſtr. t. 883.)—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Cap fleſhy or membranous. Receptacle veiny, with ſuperficial ſwelling plaits.

Perſoon defines 25 ſpecies of this very well-marked genus, whoſe fructifying membrane reſembles the gills of an *Agaricus* in appearance only, being totally diſtinct in nature. Its ſurface is perfectly continuous, but pinched up, as it were, into ſimple or branched tumid plaits.—The genus is divided into three ſections; 1ſt, the true *Cantherelli*, which have an entire, rather cup-ſhaped cap, with or without ſtalk, and conſiſt of 20 ſpecies; 2d, *Serpulæ*, four ſpecies, which ſpread indeterminately, fructifying on the upper ſide, and have no ſtalk; 3d, *Gomphus*, one ſpecies, of a club-like but truncated ſhape, which we think might be referred to the firſt ſection.

Examples of the firſt ſection are,

M. *Cantharellus.* Common Chanterelle. Perſ. n. 1. (M. n. 2326; Hall. Hiſt. v. 3. 150. Agaricus Cantharellus; Linn. Sp. Pl. 1639. Hudſ. 609. Fl. Dan. t. 264. Bull. t. 505. f. 1. Sowerb. t. 46. Bolt. t. 62. A. n. 73; Schæff. t. 82, and n. 95. t. 206. Fungus anguloſus, et velut in lacinias diſſectus; Vaill. Paris. 60. t. 11. f. 14, 15.)—Cluſtered, deep yellow all over. Cap fleſhy, ſmooth, depreſſed.—Very frequent in fir woods. It varies in the breadth of its top, from one to near three inches, and is entirely of the colour of yolk of egg, with an agreeable ſcent like a plum or apricot, eſpecially when drying. This fungus is eaten in many countries, and ſeems to be no otherwiſe unwholeſome, than as its toughneſs renders it indigeſtible. Haller reports the flavour to be excellent, though ſomewhat acrid, and ſays he had often eaten this *Merulius* dreſſed in meat broth, without any bad effects.

M. *nigripes.* Black-ſtalked Chanterelle. Perſ. n. 3. (Agaricus cantharelloides; Bull. t. 505. f. 2.)—Cap funnel-ſhaped, yellowiſh. Stalk elongated, black, and ſooty.

—Native of France. Perſoon ſeems to have adopted it from Bulliard. The taller, more ſlender, black *ſtalk*, and more excavated top of the *cap*, ſeem the principal marks of diſtinction between this and the firſt ſpecies, of which Mr. Sowerby eſteems it a variety only.

M. *luteſcens*. Yellowiſh-ſtalked Chanterelle. Perſ. n. 4. (Agaricus cantharelloides; Sowerb. t. 47. Helvella cantharelloides; Bull. t. 473. f. 3.)—Cap umbilicated, ſmooth; yellowiſh-brown above; reddiſh aſh-coloured beneath. Stalk yellow, hollow.—Not uncommon in woods in autumn, according to Perſoon, but it ſeems to have been firſt obſerved in England by Mr. Sowerby, Nov. 1794, in Peckham wood. This is clearly diſtinguiſhed by its hollow pale-yellow *ſtalk*, and the reddiſh buff of its fructifying membrane, contraſted with the light brown of the upper ſurface.

M. *cornucopioides*. Cornucopiæ Chanterelle. Perſ. n. 8. (Peziza cornucopioides; Linn. Sp. Pl. 1650. Sowerb. t. 74. Bull. t. 150. Bolt. t. 103. Elvela, n. 17. Schæff. t. 165, and n. 18. t. 166.)—Cluſtered, blackiſh, trumpet-ſhaped, with a wavy reflexed margin; the upper ſurface ſcaly; fructifying membrane blueiſh, with obſolete plaits.—Common in woods in autumn. Diſtinguiſhed by its invertedly conical trumpet-like ſhape, with ſcarcely any *ſtalk*, the central hollow of the *cap* running down the middle, almoſt to the root, ſo as to form a funnel, the outſide of which is really the under ſide of the *cap*, and bears a blueiſh powder, preſumed to be the ſeed. The plaits of this part are in general ſufficiently obvious to mark the genus, though often evaneſcent. An eſſential difference exiſts between this fungus and *Peziza*, the latter producing its ſeeds from the ſtrongly-coloured upper ſide of the cap, or cup.

M. *retirugus*. Reticulated Seſſile Chanterelle. Perſ. n. 16. (Helvella retiruga; Bull. t. 498. f. 1.)—Seſſile, vertical, roundiſh, thin and membranous; ſmooth and pale grey above; aſh-coloured, with radiating reticulated plaits beneath.—This pretty ſpecies was found in France by Richard, growing paraſitically upon moſſes and other plants, affixed by its ſmooth upper ſide. The margin is entire when young, but ſubſequently torn or lobed. The *ſtalk* is wanting in this, and two or three others of the firſt ſection, and Perſoon ſeems doubtful whether they ought not to range in the next. Their membranous nature, and determinate form, with the preſence of a proper upper ſurface, ſurely juſtify their remaining where he has placed them.

The ſecond ſection (which is Perſoon's third, as he divides the former into two, becauſe ſome have a central ſtalk, and others a lateral one, or none at all) compriſes four ſpecies, whoſe ſhape is quite indeterminate, the whole fungus being reverſed, or laid on its back, without any ſtalk, and almoſt without any upper ſurface. The fructification is rare, or tardily produced. The moſt remarkable is

M. *deſtruens*. Dry-rot Merulius. Perſ. n. 21. (Boletus lachrymans; Wulf. in Jacq. Miſc. Auſtr. v. 2. 111. t. 8. f. 2. Dickſ. Crypt. faſc. 1. 18. Sowerb. t. 113.)—Widely ſpreading, indeterminate, yellowiſh-red, with a white downy edge. Plaits widely reticulated. The nature of this formidable fungus has not been known till within a few years, though its effects have been but too notorious in countries where much fir wood is uſed for building. The plant inſinuates itſelf in the form of a fine web, like a ſort of mouldineſs, amongſt the timbers or wooden walls of a houſe, which it ſpeedily and effectually deſtroys, ſo that in Sweden, where houſes of fir are common, their unexpected downfall is by no means unfrequent. Mr. Sowerby informs us of this peſt having lately attacked ſome ſhips in the Britiſh navy, concerning which he has been conſulted by the navy commiſſioners. The cure for this evil is the admiſſion of air into all ſuch ſtructures, which is fatal to the growth of the plant. Where this vegetable thrives, but meets with a check to its increaſe by walls or otherwiſe, it thickens greatly, and produces a ſort of orange-coloured honey-comb ſtructure, containing the *ſeeds*, and diſcharging large drops of fluid here and there, as expreſſed in Mr. Sowerby's plate, juſtly commended by Perſoon.

M. *vaſtator*, Perſ. n. 22, ſeems very nearly akin to the laſt.

The third ſection conſiſts of only one ſpecies,

M. *clavatus*. Club-ſhaped Chanterelle. Perſ. n. 25. (Clavaria truncata; Schmid. Ic. t. 60.)—Club-ſhaped, abrupt, ſolid, with lateral plaits.—Found in graſſy places in Germany, generally growing in tufts. The colour is violet, dull purple, or browniſh. The ſhape is that of a *Clavaria*, either ſimple or branched; the top abrupt and flat, evidently, though narrow, analogous to the uſual upper ſurface of the cap of a *Merulius*; the ſides of the club-ſhaped body below being plaited or veiny, like the fructifying part of the other ſpecies.

MERY, John, in *Biography*, a diſtinguiſhed anatomiſt and ſurgeon, was born at Vatau, in Berry, where his father practiſed ſurgery, in January 1645. From his earlieſt years he diſplayed an excluſive attachment to the profeſſion of his father, and at the age of eighteen went to the great hoſpital at Paris, the Hôtel Dieu, where he purſued the ſtudy with extraordinary ardour. So earneſt, indeed, was he in this purſuit, that whenever he could procure a body, he conveyed it to his bed-room, and paſſed the night in diſſection. In 1681 he was promoted to the office of queen's ſurgeon; and in 1683 he was appointed ſurgeon-major to the invalids, at the inſtance of M. de Louvois, who juſtly eſtimated his zeal and talents. In the following year, when the king of Portugal applied to Louis XIV. to ſend a ſurgeon to Liſbon to attend upon the queen, he was ſent poſt to that capital; but the queen died before his arrival. Both the courts of Spain and Portugal attempted, by very advantageous offers, to induce him to remain in the peninſula, but he declined them, and returned to Paris. He was now, 1684, received into the Academy of Sciences; and he was ſoon afterwards ſent on a journey to England, by order of the court; but the object of this miſſion was never made public. He was alſo choſen by the monarch to attend upon the duke of Burgundy, then a child. Attendance on a court, however, as Fontenelle remarks, was not leſs irkſome to him at home, than in Spain or Portugal, and he returned as ſoon as it was in his power to the hoſpital of invalids, and to the diſſecting room.

He lived in retirement from all ſociety, as far as it was poſſible, ſhutting himſelf in his cloſet as ſoon as he had performed the ordinary duties of his office, which he tranſacted very methodically: he was not ſeen even by his family, except at his hours of repaſt; and declined all ſolicitations to engage in private practice, except for the ſervice of a few friends. In 1700 he was appointed firſt ſurgeon to the Hôtel Dieu, which gratified his utmoſt ambition, and afforded him abundant opportunities of gratifying his zeal in the purſuit of knowledge, for which he voluntarily ſacrificed all conſiderations of rank and emolument. His high reputation for anatomical knowledge brought many requeſts from foreigners to give lectures upon that ſubject; which, however, he declined. But he procured for the ſtudents of the Hotel Dieu the erection of a theatre, in which they might obtain a regular courſe of anatomy, inſtead of the caſual inſtructions which they had hitherto received; and he expected no additional

tional recompence for his increaſed trouble. It was a great part of the labour of his life to form an anatomical muſeum, which at length he rendered extremely curious and complete. For this purpoſe, he ſecluded himſelf in the moſt minute and patient diſſections; and no man ſurpaſſed him in the accuracy with which he inveſtigated facts relative to the conſtruction of the human body. Neverthelefs, he juſtly entertained a very humble opinion of the extent of information, which the knife of the anatomiſt can bring before the mind, in regard to the minute operations of the animal economy; and was accuſtomed to ſay ingenuouſly, "we anatomiſts are like the porters of Paris, who are well acquainted with all its ſtreets, as well as its lanes and alleys, but know nothing of what paſſes within the houſes." From the ſteady occupation of the inveſtigation of facts, he was not in the habit of inventing theories, and did not readily admit the reaſonings of others; at the ſame time, he did not eaſily renounce his own, when he thought them well founded on obſervation. Being little uſed, likewiſe, to the forms of polite converſation, he ſtated his views with great plainneſs, and uſed no ceremony in contradicting opinions and aſſertions, which he thought abſurd or unfounded in fact; whence he ſometimes gave offence at the meetings of the Academy without intending it. In his moral habits he was extremely regular, and always had a high ſenſe of religion. He was married, and had ſeveral children. About the age of ſeventy-five, he ſuddenly loſt the uſe of his legs, without any other indiſpoſition; but from that time his health and ſtrength began to be impaired, and he died in 1722, in his ſeventy-ſeventh year.

In addition to a great number of valuable communications, which were printed in the Memoirs of the Academy of Sciences, Mery publiſhed the following works ſeparately. 1. "Deſcription de l'Oreille de l'Homme," Paris, 1681, which was annexed to Laney's work "De l'Ame ſenſitive," by which he anticipated Duverney, who was known to have been long employed on the ſame ſubject. 2. "Obſervations ſur la Manière de Tailler dans les deux Sexes, pour l'Extraction de la Pierre, pratiqueé par Frère Jacques," ibid. 1700, 12mo. This is a very ſcientific and candid diſcuſſion of that celebrated empiric's method of cutting for the ſtone, the general principle of which he approves, while he points out many miſchiefs in his operations, occaſioned by his ignorance of anatomy, and the rudeneſs of his inſtruments. 3. "Nouveau Syſteme de la Circulation du Sang, par le trou ovale, dans le Fœtus humain, avec les Reponſes aux Objections de M. M. Duverney, Tauvry, Verheyen, Sylveſtre, et Buiſſiere," ibid. 1700, 12mo. The controverſy upon this queſtion was carried on with ardour. Mery controverted the received opinion, that part of the blood paſſes from the right to the left ventricle, through the foramen ovale, and maintained that its paſſage was in the oppoſite direction; and, therefore, that the greater part of the blood in the fœtus circulated through the lungs, and the ſmaller portion through the reſt of the body. It is ſingular, as Senac remarks, in his treatiſe on the heart, that Mery, who was in error, had the greater number of partizans; but Duverney and the reſt defended the queſtion ill. 4. His laſt work, "Problèmes de Phyſique," ibid. 1711, 4to., relates to the connection of the fœtus with the mother, and its nutrition, which he maintains, in oppoſition to Falconet, to be effected by means of the maternal blood alone, and not by any lacteous fluid, produced in the uterus for that purpoſe. Eloy Dict. Hiſt. de la Med. Fontenelle, Eloges des Acad. Gen. Biog.

Mery-*ſur-Seine*, in *Geography*, a town of France, in the department of the Aube, and chief place of a canton, in the diſtrict of Arcis-ſur-Aube; 15 miles N.W. of Troyes. The place contains 1164, and the canton 9849 inhabitants, on a territory of 330 kiliometres, in 26 communes. N. lat. 48° 30′. E. long. 3 58′.

MERYTA, in *Botany*, from μηρυω, *to collect in cluſters*, alluding to the ſituation of the flowers. Forſt. Gen. t. 60. Juſſ. 442. Lamarck Illuſtr t. 803. Claſs and order, *Dioecia Triandria*. Nat. Ord. uncertain.

Gen. Ch. Male *flowers* aggregate in cloſe heads. *Cal.* Perianth in three deep, ovate, acute ſegments. *Cor.* none. *Stam.* Filaments three, capillary, the length of the calyx; anthers oblong, with four furrows.

Female *flowers* not diſcovered.

1. M. *lanceolata*. Forſt. Prod. 92.—Native of the Society iſles.—The male flowers are repreſented in an hemiſpherical, lateral, ſeſſile head. This is all the information extant reſpecting the genus in queſtion; except that we find, by a note of the younger Linnæus, that ſir J. Banks and Dr. Solander had likewiſe deſcribed it as new, by the name of *Neaſa*.

MERZAPOUR, in *Geography*, a town of Bengal; 15 miles N.N.W. of Moorſhedabad.—Alſo, a town of Hindooſtan, in the country of Benares, ſeated on the Ganges; 24 miles W.S.W. of Benares. N. lat. 25° 10′. E. long. 82° 50′.

MERZBERG, a town of Sileſia, in the county of Glatz, which has a ſilver mine; 10 miles S. of Glatz.

MERZIFOUR, a town of Aſiatic Turkey, in Natolia; 30 miles S. of Samſun.

MES, a river of Perſia, which runs into the Tab, near Ragian.

MESA, Christoval de, in *Biography*, a Spaniſh poet, who lived five years in habits of intimacy with Taſſo. He is the author of three heroic poems. 1. "Las Navas de Toloſa," 1598, upon the great victory won at Madrid by Alonzo VIII. over the Moors. 2. "La Reſtauracion de Eſpana," 1607, of which Pelayo is the hero. 3. "El Patron de Eſpana," 1612, in honour of Santiago. Beſides theſe works he publiſhed ſome ſmaller pieces, as a tragedy upon Pompey, and a tranſlation of the whole of Virgil; and he left in MS. a verſion of the Iliad. Gen. Biog.

Mesa, in *Geography*, a river of Ruſſia, which diſcharges itſelf in the Tazovſkaia gulf, N. lat. 68° 12′. E. long. 79° 14′.

Mesa, *La*, the ſouthernmoſt of four iſles in the Pacific ocean, near each other, and E. of the Sandwich iſles. N. lat. 19°. W. long. 137° 10′.

MES-AIR, or Mezair, in the *Manege*, is a manege half *terra a terra*, and half *corvet*: ſo that the mezair is higher than the action of the former, and lower than that of the latter. In this action uſe the ſame aids as in working upon curvets. Give the aids of the leg with delicacy, and no ſtronger than is juſt neceſſary to carry your horſe forward. Remember when you cloſe your legs to make him go forward, to puſh with the outward in ſuch a degree as to keep your horſe confined, and to aſſiſt the other in driving him forward; as it is not neceſſary to lay ſo much ſtreſs on the inner leg, becauſe that ſerves only to guide the horſe, and make him cover and embrace the ground that lies before him. Berenger's Horſemanſhip, vol. ii. p. 116.

MESANA, in *Geography*, a town of Hindooſtan, in Guzerat; 35 miles N. of Amedabad.

MESANGE of Buffon, in *Ornithology*. See Motacilla and Parus.

MESANGIA, the name of a bird common in France and Italy; it is of the ſize and ſhape of the ficedula, and differs from it very little, except the having a black ſpot upon the head. This ſeems to be the melancoryphos of the ancients, who ſuppoſed, as many do at this time, that the ficedula changed into this bird. The ficedula, or fig-eater, comes into the gardens in France only at the time when the figs, which are its proper food, are ripe: theſe it devours in an inſatiable manner, and, as ſoon as it has done with them, goes away again. Soon after this the meſangia or black-cap appears, and is ſuppoſed to be the ſame bird, with the addition of this beautiful ornament. The ancients were very fond of this imaginary change of one bird into another; and Ariſtotle tells us, that the upupa is the ſame bird with the cuckoo, only changed in the colour and diſpoſition of its feathers. Æſchylus tells us in the ſame manner, according to the opinion of his times, that the cuckoo ſings all the ſummer, and after that diſappears; and that ſoon afterwards it comes again in a new form, with a plume upon its head, and is called the *upupa*.

MESARAIC, in *Anatomy*, a term applied to the blood-veſſels, glands, &c. of the meſentery.

MESAYEH, in *Geography*, a town of the Arabian Irak, on the Euphrates; 50 miles S.S.W. of Bagdad.

MESAZONTES, μεσαζοντες, officers under the emperors of Conſtantinople. See MEDIATOR.

MESCHEDIZAR, in *Geography*. See MEDSHETISAR.

MESCHETWIND, a town of Bavaria, in the principality of Bamberg; ſeven miles S.W. of Forcheim.

MESCHID, a town of the Arabian Irak, near a large lake called "Rahemat," which communicates by a canal with the Euphrates. This is the place in which Ali, Mahomet's couſin and friend, and one of his ſucceſſors, is ſaid to have been interred; and his tomb is annually viſited by a multitude of Perſian pilgrims, who deem it a part of devotion equal to the pilgrimage to Mecca; 90 miles S. of Bagdad. N. lat. 32° 5′. E. long. 43° 34′.

MESCHID-*Huſſain*, a town of the Arabian Irak, ſituated on a canal which paſſes from the Euphrates to the lake Rahemat; 53 miles S.S.W. of Bagdad. N. lat. 32° 36′. E. long. 43 29′.

MESCHID, or *Maſchid*, a city of Perſia, in the province of Khoraſan. Abas I. raiſed this place, which was ſmall and called "Tus," to eminence, by erecting a magnificent moſque in honour of an Imam who was buried there, and which drew together a great number of pilgrims. This town has a manufacture of beautiful pottery, and alſo a manufacture of ſkins. In time of peace caravans paſs continually through this town from Bucharia, Balk, Candahar, Hindooſtan, and all parts of Perſia. N. lat. 37° 35′. E. long. 57′.

MESCHIDABAD, a town of Aſiatic Turkey, in Natolia; 25 miles S.S.W. of Amaſreh.

MESCHIQUIEJOS, a town of South America, in the province of Carthagena; ten miles S. of Mompox.

MESCINZUNGH, a town of Thibet; 30 miles W. of Tankia.

MESCOLANZA, Ital. mixture: as meſcolanza dell' antica e moderna, a mixture of ancient and modern muſic.

MESE, in *Geography*, a ſmall iſland in the Eaſt Indian ſea. N. lat. 6° 55′. E. long. 131° 50′.

MESÉ, in the *Ancient Greek Muſic*, the name of the moſt acute ſound of the ſecond tetrachord. It implies *mean*: as it was in the middle of the great ſyſtem, and an octave above the proſlambanomenos.

Euclid calls meſe the ſound by which all other ſounds are regulated. And Ariſtotle, in his 36th problem, ſect. 19, ſays, that all the tones of a ſcale are accommodated or tuned to the meſé. See MUSIC *of the Ancients*.

MESEMBRIA, or MESSOURI, in *Geography*, a town of European Turkey, in Romania, at the mouth of a river which runs into the Black ſea; formerly a biſhop's ſee; 16 miles E.N.E. of Burgas. N. lat. 42° 38′. E. long. 27° 47′.

MESEMBRYANTHEMUM, in *Botany*, a vaſt genus of ſucculent plants, formerly known by the name of *Ficoides*, from its affinity to the Indian Fig, or *Cactus*. Breynius firſt named it *Meſembrianthemum*, meaning to expreſs its flowers expanding at mid-day, which is true of many of the ſpecies, but not of all. Dillenius therefore, by altering one letter in the orthography, had recourſe to another etymology, from μεσος, *the middle*, εμβρυον, *an embryo*, and ανθος, *a flower*; becauſe the embryo (meaning the germen) is in the middle of the flower; which indeed, as that author moſt truly remarks, is the caſe with innumerable plants beſides, but not exactly as in the preſent genus. He obſerves that the flower does not altogether ſtand on the top of the fruit, but is perforated, as it were, by the latter, whilſt it ſo cloſely adheres to the middle, as not to be ſeparable from it without laceration. We confeſs our predilection for the original idea of Breynius, which if not ſtrictly applicable to all the ſpecies, one or more of which are night-ſcented flowers, is ſtrikingly appoſite to the generality, whoſe refulgent and radiating petals ſeem to welcome, as well as to emulate, the noon-tide ſun, folding themſelves up as it withdraws. Fig-Marigold.—Dill. Elth. 225. Linn. Gen. 252. Schreb. 340. Willd. Sp. Pl. v. 2. 1025. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 212. Juſſ. 317. Lamarck Dict. v. 2. 474. Illuſtr. t. 438. Gærtn. t. 126. —Claſs and order, *Icoſandria Pentagynia*. Nat. Ord. *Succulentæ*, Linn. *Ficoideæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, in five acute, ſpreading, permanent ſegments. *Cor.* Petals numerous, linear-lanceolate, in many rows, rather longer than the calyx, ſlightly united into a tube by their claws. *Stam.* Filaments numerous, capillary, the length of the calyx, inſerted into its fleſhy part within the petals; anthers incumbent. *Piſt.* Germen inferior, with five obtuſe angles; ſtyles generally five, ſometimes four or ten, awl-ſhaped, ſpreading; ſtigmas ſimple. *Peric.* Capſule fleſhy, roundiſh, marked with rays at the ſummit, the cells and valves each anſwering to the ſtyles in number. *Seeds* numerous, roundiſh, affixed to the central column.

Eſſ. Ch. Calyx five-cleft. Petals numerous, linear, cohering at the baſe. Capſule fleſhy, inferior, with many ſeeds.

Fifty ſpecies of *Meſembryanthemum* are defined in the 14th ed. of *Syſt. Veg.* diſpoſed in three ſections, diſtinguiſhed by the flowers being white, red, or yellow. Thunberg in his Prodromus has but 72; Willdenow mentions 86; but the new edition of the *Hortus Kewenſis* enumerates 175. The labours of Mr. Haworth, who has publiſhed, in an octavo volume, an ample Monograph of the preſent genus, and who has, for many years, inveſtigated and cultivated all the ſpecies he could procure, has thrown great light upon the ſubject, though we are not able to follow him in all that he deſcribes, for want of having ſeen them ſo completely. They are almoſt excluſively the productions of the arid ſands of the Cape of Good Hope; a very few only being found in New Holland, and New Zealand, or in the ſouth of Europe. We ſhall therefore mention the native countries of ſuch only of thoſe we are about to particularize, as are found in other places, though even theſe are often likewiſe natives of the Cape; as the *cryſtallinum* and *nodiflorum*. There they are all at home. Their peculiarly ſucculent nature, like that of Aloes, is calculated to reſiſt the burning ſun and long-continued drought of that climate, their cuticle allowing of very ſlow perſpiration, though of ready abſorption ; ſo that however exhauſted they may be, they revive from the ſlighteſt ſhower. This wonderful proviſion of nature exiſts only in the living plant. When killed by momentary immerſion in hot water, theſe ſucculent plants dry nearly as quick as any others. The horticulturiſts of Europe are beſt acquainted with the numerous perennial ſpecies of the genus before us. There have indeed been ſome annual ones raiſed here, but we have reaſon to think there are many almoſt entirely unknown. Some of theſe bear very curiouſly-conſtructed capſules, which expand by moiſture, contrary to the nature of capſules in general, that their ſeeds may be diſperſed in the wet ſeaſon, when alone they would, in ſuch a country, have any chance of germinating. (See Sm. Introd. to Botany, 277. f. 178.) —We ſhall mention a few ſpecies of each of the 13 ſections into which this genus is diſtributed in *Hort. Kew.*

1. *Stemleſs ; inverſely conical, or obcordate, or more rarely ſpherical, the leaves being extremely abrupt, and united even to their ſummits, the flowers ſolitary.* Seven ſpecies in Hort. Kew.

M. *minutum.* Tiny Fig-Marigold. Ait. n. 1. Sims in Curt. Mag. t. 1376.—Smooth, glaucous, ſpotleſs, nearly globoſe, umbilicated. Baſes of the petals forming a tube nearly as long as the borders.—This ſingular plant appears a congeries of glaucous balls, each about the ſize of a ſmall gooſeberry, hollowed out at the top, from whence ſprings a roſe-coloured, ſeſſile, ſolitary *flower*, larger than a daiſy, with yellow *ſtigmas*, and a pale tubular baſe, compoſed of the united claws of the *petals*, by which it is elevated much above the *calyx*. This ſpecies bloſſoms from the middle of November to near Chriſtmas, after which it muſt be kept without water through the winter, being preſerved from froſt.—Six more of this curious ſection are deſcribed by Mr. Haworth, and in *Hort. Kew.*, all ſent from the Cape at different times by the late Mr. Francis Maſſon. See Masson.

2. *Nearly ſtemleſs, with a perennial root.* Thirty-eight ſpecies.

M. *calamiforme.* Quill-leaved Fig-Marigold. Linn. Sp. Pl. 690. Willd. n. 20. Ait. n. 16. Dill. Elth. 239. t. 186. f. 228. (Ficoides capenſis humilis, cepæ folio, flore ſtramineo ; Bradley Succ. Pl. t. 19.)—Leaves nearly cylindrical, acute, glaucous, finely dotted ; flattened juſt above their baſe. Styles eight.—The numerous upright or aſcending *leaves*, about a finger's length, compoſe denſe glaucous tufts. *Flowers* large, of a brilliant white with pale lemon-coloured ſtamens, each on a very ſhort, ſolitary, ſlightly leafy, ſtalk, not ſo tall as the leaves. This is one of the oldeſt inhabitants of our gardens. Bradley publiſhed it in 1717.

M. *felinum.* Cat-chap Fig-Marigold. Haworth n. 35. Willd. n. 11. Ait. n. 29. (M. ringens β ; Linn. Sp. Pl. 698. M. rictum felinum repræſentans ; Dill. Elth. 240. t. 187. f. 230. Ficoides afra, folio triangulari enſiformi craſſo brevi, &c. ; Mart. Dec. t. 30.)—Stem none. Leaves glaucous, fringed with vertical taper-pointed teeth ; cartilaginous at the extremity.—This has been long known in England, and thrives well in the dry ſtove, flowering for ſome time during autumn. It is diſtinguiſhed by the idea which its oppoſite *leaves*, fringed with long vertical hooked teeth, convey of the widely-gaping mouth of a cat. The *flowers* are ſeſſile, large, lemon-coloured, opening in the afternoon, and cloſing at night.

M. *tigrinum*, and *caninum* are nearly akin to this ; and the latter was confounded with it by Linnæus.

M. *præpingue.* Soft Tongue Fig-Marigold. Ait. n. 38. (M. heterophyllum ; Andr. Repoſ. t. 540.)—Leaves tongue-ſhaped, very tender ; the younger ones finely fringed, incurved at the point.—This flowered at Mr. Lambert's, at Boyton. The herbage is peculiarly ſucculent and tender, of a graſs green, and ſhining. *Flowers* large, yellow, on ſhortiſh ſtalks. *Capſule* cloſed when dry, expanding with moiſture, as in ſome annual ſpecies abovementioned, and, as it appears by the account in Andrews, (which, if we miſtake not, came from the pen of the late excellent Mr. George Jackſon, ſee Jacksonia), in many perennial ones ; perhaps in all the genus.

M. *dolabriforme.* Hatchet-leaved Fig-Marigold. Linn. Sp. Pl. 699. Ait. n. 45. Curt. Mag. t. 32. (M. folio dolabriformi ; Dill. Elth. 248. t. 191. t. 237. Ficoides capenſis humilis, foliis cornua cervina referentibus, petalis luteis, noctiflora ; Bradl. Succ. Pl. t. 10.)—Stem ſhort. Leaves compreſſed, with a very prominent dilated keel, and a cylindrical baſe.—Although the growth of this ſpecies be very ſlow, it has always more or leſs of a decided thick woody much-branched *ſtem*, ſo that few ſtudents would ſeek it in this ſection. The *leaves* are very peculiarly formed, as above deſcribed, and are the only inſtance of the hatchet ſhape ; ſee Sm. Intr. to Bot. 171. f. 98. The *flowers* are plentifully produced, yellow, on longiſh, ſolitary, terminal *ſtalks*, and expand in the evening and night only.

3. *Stems proſtrate. Leaves cluſtered, elongated. Petals yellow, either on both ſides, or on the upper one only.* Five ſpecies.

M. *loreum.* Leathery-ſtalked Fig-Marigold. Linn. Sp. Pl. 694. Willd. n. 48. Ait. n. 46. Dill. Elth. 264. t. 200. f. 255.—Leaves ſemicylindrical, ſomewhat triangular, elongated, recurved, rather glaucous, in round tufts. Stems lax, roundiſh, ſlender, whitiſh. Flowers axillary.—Though this has been generally cultivated in England for above 80 years, nothing is recorded of its blooming. Willdenow however deſcribes the *flowers* as very rarely produced in the collection of Engelbert Gother, each on a ſhort axillary ſtalk, from the lower *leaves* of the branch, with a purple *corolla*, and whitiſh *ſtamens*. The plant is known by its long trailing twine-like *ſhoots*, bearing ſeveral little tufts or knots of *leaves*, and generally dependent over the edges of the garden-pot.

4. *Leaves very long, alternate, cloſely crowded into tufts. Stem decumbent when old. Petals very narrow, fringed from the baſe to the middle.* Three ſpecies.

M. *capitatum.* Short Dagger-leaved Fig-Marigold. Haworth. Ait. n. 52. (M. pugioniforme ; Linn. Sp. Pl. 699. Willd. n. 80. M. pugioniforme, flore amplo ſtramineo ; Dill. Elth. 280. t. 210. f. 269. Ficoides capenſis, caryophylli folio, flore aureo ſpecioſo ; Bradl. Succ. Pl. t. 14.)—"Leaves awl-ſhaped, triangular with equal ſides, glaucous. Membranes of the calyx pale. Petals yellow, as long as the calyx ; the outer ones purpliſh. Styles briſtle-ſhaped, ſtraight."—A fine large branching ſpecies, diſtinguiſhed by the great ſize of its *flowers*, which are nearly as broad as the palm of the hand, of a brilliant ſtraw-colour, purpliſh underneath, opening in ſun-ſhine only. The *leaves* are numerous, curved, three or four inches long. This is the original *M. pugioniforme*, and we do not well underſtand why that name ſhould be transferred to another ſpecies, which it ſeems is ſo called in a French work on Succulent Plants, t. 72, and which has more compreſſed *leaves*, the membranes of the *calyx* brown, *petals* entirely ſtraw-coloured, ſhorter than the *calyx*, and linear-lanceolate expanded *ſtyles*.

5. *Leaves flat, often ſomewhat keeled beneath. Stems often decumbent or proſtrate, widely ſpreading.* Seventeen ſpecies.

M. *cryſtallinum.* Ice-plant. Linn. Sp. Pl. 688. Willd. n. 25. Ait. n. 54. (M. cryſtallinum, plantaginis folio undulato; Dill. Elth. 231. t. 180. f. 221. Ficoides africana, folio plantaginis undulato, micis argenteis aſperſo; Bradl. Succ. Pl. t. 48.)—Leaves alternate, ovate, waved, papillary. Flowers ſeſſile. Segments of the calyx ovate, broad.—Linnæus, not without reaſon, doubted whether this ſpecies came from Africa. Thunberg, however, found it at the Cape of Good Hope. The late Dr. J. Sibthorp gathered it about Athens. In gardens the plant has long been known, as a tender annual, much admired for appearing as if froſted over; or encruſted with ſugar. This appearance is cauſed by innumerable little bladders in the cuticle, filled with limpid juice. To the touch the whole herb is cold, and remarkably flaccid. Its *ſtem* ſpreads widely on the ground, in a rank mode of growth, bearing numerous broad undulated *leaves*, and copious, nearly ſeſſile, *flowers*, of a pale roſe or fleſh-colour. The *fruit* is dark purple.

M. *pinnatifidum.* Jagged-leaved Fig-Marigold. Linn. Suppl. 260. Willd. n. 23. Ait. n. 55. Curt. Mag. t. 67.—Leaves oblong, pinnatifid, papillary. Flowers axillary, on longiſh ſtalks.—This alſo is an annual, whoſe ſeeds, ſent by Thunberg from the Cape, vegetated in the Upſal garden. The pinnatifid *leaves*, and ſmall yellow long-ſtalked *flowers*, are its characteriſtics.

M. *cordifolium.* Heart-leaved Fig-Marigold. Linn. Suppl. 260. Willd. n. 24. Ait. n. 65. Sm. Spicil. t. 6. Jacq. Ic. Rar. t. 487.—Leaves ſtalked, papillary, heart-ſhaped or ovate. Stem round. Calyx often four-cleft.—Soon after the firſt introduction of this ſpecies, it was common in every green-houſe, but is now rather neglected. The *ſtems* are ſhrubby, though long and trailing. *Leaves* darkiſh green. *Flowers* ſmall, deep crimſon. It is readily propagated by cuttings.

6. *Leaves linear; the younger ones channelled above, convex beneath. Branches often ſomewhat ſhrubby. Root moſtly perennial; rarely annual.* Seventeen ſpecies.

M. *nodiflorum.* Neapolitan Fig-Marigold. Linn. Sp. Pl. 687. Willd. n. 56. Ait. n. 71. (Kali floridum repens Neapolitanum; Column. Ecphr. t. 73.)—Leaves alternate, nearly cylindrical, obtuſe; fringed at the baſe.—Native of the ſea-coaſts of the ſouth of Europe, and north of Africa. *Root* annual. *Stem* branched from the bottom, ſpreading, covered, like the *leaves*, with pellucid watery veſicles, as in *M. cryſtallinum*, but rather leſs glaucous. *Flowers* lateral or axillary, ſeſſile, ſolitary, ſmall and unornamental, with narrow white *petals* and yellow *ſtamens*. The ſegments of the *calyx* are oblong, obtuſe, leafy, very unequal in ſize.

M. *viridiflorum.* Green-flowered Fig-Marigold. Willd. n. 51. Ait. n. 74. Curt. Mag. t. 326.—Leaves ſemicylindrical, hairy, ſomewhat papillary. Calyx hairy. Petals capillary. Stem tumid. Branches diffuſe.—A ſhrubby ſpecies, ſingular in having green *petals*, which are very copious, and as narrow as a fine thread. The *herbage* is downy all over, ſlightly glaucous and papillary. It blooms from July to September, and is readily increaſed by cuttings. Mr. Maſſon ſent this from the Cape in 1774.

7. *Evening-flowering; with ſlender, ſhrubby, hard, greatly defoliated ſtems; nearly cylindrical undotted leaves; a four-cleft calyx; fragrant flowers, white on their upper ſide; roots much ſwelled with age, having very few fibres.* Two ſpecies.

M. *noctiflorum.* Night-flowering Fig-Marigold. Linn. Sp. Pl. 689. Willd. n. 41. Ait. n. 88. M. noctiflorum. flore intùs candido, extùs phœniceo, odoratiſſimo; Dill. Elth. 273. t. 206. f. 262.)—Leaves remote, obſcurely ſemicylindrical, diſtinct, glaucous. Bark white.—Highly deſirable for the ſake of its *flowers*, whoſe ſcent in an evening is like the Scarlet *Craſſula*, or the fineſt Bergamot Pear. The *ſtem* is ſhrubby, pale, upright, round, croſs-branched at the top. *Flowers* on longiſh ſtalks, from the ends or forks of the branches, with a thick pear-ſhaped *germen*, and ſhort four-cleft *calyx*, much exceeded by the numerous pale *petals*, whoſe under ſide is either red or yellow.

M. *ſtramineum.* Straw-coloured Sweet Fig-Marigold. Haworth. Ait. n. 89. (M. noctiflorum β; Linn. Sp. Pl. 689. Willd. n. 41. M. noctiflorum, flore intùs candido, extùs ſtramineo, odoratiſſimo; Dill. Elth. 274. t. 206. f. 263.)—Leaves remote, nearly cylindrical, diſtinct, rather glaucous. Bark grey.—Mr. Haworth agrees with Dillenius, who ſtrenuouſly inſiſted on this being ſpecifically diſtinct from the laſt, of which moſt writers make it a variety. The *flowers* are larger, very white above, pale yellow beneath. They expand only in an evening, like the laſt, and ſmell like the Dame's Violet, or Rocket (*Heſperis*).

8. *Flowers generally reddiſh. Branches ſhrubby, ſmooth. Leaves triangular and compreſſed* (except *M. læve*, Ait. n. 90), *naked, with ſtraight points.* Thirty-nine ſpecies.

M. *ſpectabile.* Showy Fig-Marigold. Haworth Meſembr. 385. Willd. n. 73. Ait. n. 98. Curt. Mag. t. 396.—Leaves crowded, triangular, elongated, glaucous, ſomewhat curved. Stem woody, aſcending.—Introduced by Mr. Maſſon in 1787. Its fine large crimſon *flowers*, produced all ſummer long, render this one of the moſt deſirable, nor is it difficult of culture. Mr. Curtis obſerves that the *leaves*, which are very glaucous, and often tinged with red, ſometimes acquire a prominent tooth or appendage on their upper ſide near the point.

M. *acinaciforme.* Scimitar-leaved Fig-Marigold. Linn. Sp. Pl. 695. Willd. n. 83. Ait. n. 116. Andr. Repoſ. t. 580, not 508. (M. acinaciforme, flore ampliſſimo purpureo; Dill. Elth. 282. t. 211. f. 270, and t. 212. f. 271.)—Leaves ſcimitar-ſhaped, dotleſs, combined at their baſe; their margins minutely undulated and rough. Petals lanceolate.—One of the firſt ſpecies brought to Europe, and one of the largeſt and moſt ornamental when it flowers, which unfortunately is but of rare occurrence. Andrews ſays this was accompliſhed by Mr. Trimmer of Brentford, by training the branches up againſt the glaſs, and watering the plant very ſparingly. The *leaves* are numerous, three inches long, very glaucous. *Flowers* terminal, ſolitary, as broad as the hand, formed of innumerable recurved bluntiſh *petals*, of a fine crimſon, with white *filaments* and yellow *anthers*.

M. *edule.* Eatable Fig-Marigold. Hottentot's Fig. Linn. Sp. Pl. 695. Willd. n. 85. Ait. n. 119. (M. falcatum majus, flore amplo luteo; Dill. Elth. 283. t. 212. f. 272.)—Leaves with three equal ſides, dotleſs, ſomewhat channelled; tapering at each end; keel finely ſerrated. Angles of the branches ſmooth and entire.—This is ſaid to have been one of the Cape plants, brought from Holland by the firſt Earl of Portland. It rarely flowers here, and not till the plant is old and woody. It nearly vies with the laſt in ſize, but the *flowers* are yellow. The *fruit* is reported to be eaten at the Cape, both by the Hottentots and the Dutch ſettlers.—The colour of this *flower* is an exception to the character of the ſection, but its cloſe affinity to ſome of the other ſpecies has ſuperſeded that one particular mark.

9. *Flowers yellow, orange, or ſcarlet. Stems rather ſhrubby, often erect. Leaves triangular, for the moſt part very ſhort.* Twelve ſpecies.

M. *aureum.* Golden-flowered Fig-Marigold. Linn. Syſt. Nat. ed. 10. v. 2. 1060. Willd. n. 75. Ait. n. 136. Curt. Mag. t. 262.—Leaves triangular, ſomewhat cylindrical, dotted, diſtinct. Petals orange. Styles deep purple.—A buſhy ſpecies, long cultivated here, and eaſily increaſed, known by its rather large orange-coloured *corolla*, pale yellow *ſtamens*, and five purple *ſtyles*, ſpreading like a ſtar. The *leaves* are glaucous, tumid between their angles, about one inch and a half long. So great a ſimilarity between the ſpecies of this ſection exiſts in the form of their *leaves*, that botaniſts are obliged to recur to the colours of the parts of fructification, which experience proves, in this caſe, to be conſtant. The *aureum* bloſſoms from February to May, being one of the earlieſt of its genus.

M. *tenuifolium.* Slender-leaved Fig-Marigold. Linn. Sp. Pl. 693. Willd. n. 45. Ait. n. 140. (M. tenuifolium procumbens, flore coccineo; Dill. Elth. 264. t. 201. f. 256.)—Leaves ſemicylindrical, awl-ſhaped, ſlightly compreſſed, green, ſmooth, longer than the joints of the branches. Petals ſcarlet. Stems decumbent.—Cultivated at Chelſea in 1700. Its procumbent habit, and ſlender ſcarcely glaucous *foliage*, mark this ſpecies. The *flowers* are plentiful about Midſummer, rather large, of a light brilliant ſcarlet, each laſting ſeveral days.

10. *Leaves more or leſs hooked at their points, diſtinct (without thickened ſheaths) at the baſe. Petals reddiſh. Stems ſomewhat ſhrubby, very rarely creeping.* Ten ſpecies.

M. *tuberoſum.* Tuberous-rooted Fig-Marigold. Linn. Sp. Pl. 693. Willd. n. 44. Ait. n. 146. (M. fruticeſcens, radice ingenti tuberoſâ; Dill. Elth. 275. t. 207. f. 264.)—Leaves bluntly triangular, compreſſed, minutely papillary; recurved at the ends. Root tuberous, very large.—Brought from the Cape at the beginning of the laſt century. The *root* conſiſts of ſeveral large ovate knobs, almoſt like thoſe of a *Dahlia*. *Stems* woody, variouſly branched and curved. *Leaves* about an inch long, convex above. *Flowers* ſmall, dull red, in terminal dichotomous panicles, whoſe permanent ſtalks often become ſpinous.

The *flowers* in this ſection are among the leaſt beautiful of the genus.

11. *Leaves triangular, ſtrongly united, ſo as to be perfoliate; their ſheaths fleſhy; their tips hooked. Stems hard, woody. Flowers moſtly white, rarely reddiſh.* Twelve ſpecies.

M. *perfoliatum.* Great Perfoliate Fig-Marigold. Ait. n. 152. (M. uncinatum β; Linn. Sp. Pl. 692. Willd. n. 79. M. perfoliatum, foliis majoribus triacanthis; Dill. Elth. 251. t. 193. f. 240.)—Leaves ſtrongly united at the baſe, pointed, dotted; their keel three-toothed at the ſummit. A buſhy plant, of rather ſlow growth, remarkable for two ſharp teeth, beſides the terminal one, at the back of its ſtrongly perfoliate *leaves*. The *flowers* are purple, not frequent, produced after Midſummer.

M. *uncinatum* α of Linnæus and Willdenow, Dill. f. 239, differs in its ſmaller ſize, and having but one tooth below the point of the *leaves*.

M. *umbellatum.* Umbel-flowered Fig-Marigold. Linn. Sp. Pl. 689. Willd. n. 42. Ait. n. 162. (M. fruticeſcens, floribus albis umbellatis; Dill. Elth. 276. t. 208. f. 266. Ficoides africana erecta teretifolia, floribus albis umbellatis; Herm. Parad. 166 t. 166. Bradl. Succ. Pl. dec. 4. 12. t. 44, not 34.)—Leaves rather glaucous, rough with minute dots, remote, elongated, ſlender; their points recurved; their ſheaths greatly thickened upwards.—This, according to Hermann, was early plentiful in the gardens of Holland. The *ſtem* is often two feet high. *Leaves* two inches long, ſpreading, channelled above, bearing axillary tufts of ſmaller ones. *Flowers* white, about as big as a daiſy, many together in a forked umbel-like *panicle*, not a real *umbel*.

12 *Stems ſhrubby, their branches more or leſs rough.* Five ſpecies.

M. *micans.* Glittering Fig-Marigold. Linn. Sp. Pl. 696. Willd. n. 54. Ait. n. 163. Curt. Mag. t. 448. (M. micans, flore phœniceo, filamentis atris; Dill. Elth. 292. t. 215. f. 282.)—Leaves ſemicylindrical, bluntiſh, papillary, ſlightly recurved. Segments of the calyx rather pointed. Petals acute.—An old inhabitant of our greenhouſes, diſtinguiſhed by its glittering, glaucous, often purpliſh, *leaves* and *branches*, and the very rich orange ſcarlet of its *flowers*, which however are not ſo laſting as beautiful. The dark purple *ſtamens* form a ſtriking contraſt with the *corolla*.

Mr. Haworth's *M. ſpecioſum*, Ait. n. 164, ſeems to us but a variety of this, with blunter *petals* whoſe claws are green.

13. *Branches, or leaves, or the tips of the leaves, more or leſs hiſpid.* Eight ſpecies.

M. *hiſpidum.* Purple Briſtly Fig-Marigold. Linn. Sp. Pl. 691. Willd. n. 61. Ait. n. 168. Mill. Ic. t. 176. f. 3. (M. piloſum micans, flore ſaturantèr purpureo; Dill. Elth. 289. t. 214. f. 277, 278.)—Leaves cylindrical, blunt, papillary, without hairs, as well as the calyx. Stamens longer than the piſtils. Branches very hairy.—Common in greenhouſes, flowering moſt part of the year. The very briſtly *ſtem* and *branches*; thick, deflexed, blunt *leaves*, and large *flowers*, of a ſhining violet purple, diſtinguiſh the preſent from all we have hitherto noticed.

Linnæus made ſeveral varieties of this, which are the *floribundum*, *ſtriatum*, and perhaps *hirtellum*, Ait. n. 169, 171, and 170, all nearly akin, but we mean not to ſay they are one ſpecies. The citation of Willdenow under the *floribundum* in *Hort. Kew.* ſhould be *M. hiſpidum β*.

M. *barbatum.* Trailing Bearded Fig-Marigold. Linn. Sp. Pl. 691. Willd. n. 63. Ait. n. 173. Curt. Mag. t. 70. (M. radiatum, ramulis prolixis recumbentibus; Dill. Elth. 245. t. 190. f. 234.)—Leaves remote, ſomewhat ovate, tumid, papillary; flattiſh above; tipped with five radiating briſtles. Branches ſlender, ſmooth, ſtraggling. Calyx five-cleft.—Very common in greenhouſes, and even in the garret windows of many a humble collector. The radiating briſtles at the end of the tumid *leaves* are remarkable, and are but about five in this ſpecies. The *flowers* appear in July, and are of a rich violet purple. Linnæus by miſtake quotes Miller's t. 176. f. 3, for the preſent plant, inſtead of the *M. hiſpidum*. Willdenow has it under both.

M. *denſum.* Dwarf Bearded Fig-Marigold. Haworth. Ait. n. 175. Curt. Mag. t. 1220. (M. barbatum γ; Linn. Sp. Pl. 691. Willd. n. 63. M. radiatum humile, foliis majoribus; Dill. Elth. 248. t. 190. f. 236.)—Stem very ſhort. Leaves denſely crowded, ſemicylindrical, papillary, tipped with many radiating briſtles; their baſe ſomewhat fringed. Calyx ſix-cleft, very hairy, as well as the flower-ſtalks.—Dillenius ſays this was plentiful with him, but he never remembered its blooming. Mr. Haworth kept it 21 years without ſeeing a flower. We perfectly agree with Dr. Sims that this gentleman has ſhewn his judgment in ſeparating this, as well as his *hirſutum*, Dill. f. 235, from the *barbatum*, under which Linnæus had confounded them all. The *flower* of the *denſum* is twice as large as that of either of the others, with conſpicuous yellow *anthers*; and the white membranous ſtarry briſtles, at the end of each leaf, are very ſtriking.

MESEMBRYANTHEMUM, in *Gardening*, comprehends plants of the ſucculent flowery exotic kinds, of which the ſpecies cultivated are, the diamond fig marigold, or ice plant (M.

cryſtallinum) ; the pinnated fig marigold (M. pinnatifidum) ; the plane-leaved fig marigold (M. tripolium) ; the ſmall-flowered fig marigold (M. caducum) ; the angular-ſtalked fig marigold (M. papuloſum) ; the jointed fig marigold (M. geniculiflorum) ; the night-flowering fig marigold (M. noctiflorum) ; the ſhining fig marigold (M. ſplendens) ; the umbelled fig marigold (M. umbellatum) ; the houſeleek-leaved fig marigold (M. expanſum) ; the quill-leaved fig marigold (M. calamiforme) ; the daiſy-flowered fig marigold (M. bellidiflorum) ; the delta-leaved fig marigold (M. deltoides) ; the bearded fig marigold (M. barbatum) ; the briſtly fig marigold (M. hiſpidum) ; the hairy-ſtalked fig marigold (M. villoſum) ; the rugged fig marigold (M. ſcabrum) ; the creeping fig marigold (M. reptans) ; the hook-leaved fig marigold (M. uncinatum) ; the thorny fig marigold (M. ſpinoſum) ; the tuberous-rooted fig marigold (M. tuberoſum) ; the ſlender-leaved fig marigold (M. tenuifolium) ; the upright-ſhrubby fig marigold (M. ſtipulaceum) ; the thick-leaved fig marigold (M. craſſifolium) ; the ſickle-leaved fig marigold (M. falcatum) ; the cluſtered fig marigold (M. glomeratum) ; the two-coloured fig marigold (M. bicolorum) ; the ſerrate-leaved fig marigold (M. ſerratum) ; the glittering fig marigold (M. micans) ; the ſpit-leaved fig marigold (M. veruculatum) ; the glaucous-leaved fig marigold (M. glaucum) ; the horned fig marigold (M. corniculatum) ; the ringent fig marigold (M. ringens) ; the hatchet-leaved fig marigold (M. dolabriforme) ; the various-leaved fig marigold (M. difforme) ; the white fig marigold (M. albidum) ; the tongue-leaved fig marigold (M. linguiforme) ; the dagger-leaved fig marigold (M. pugioniforme) ; the twiſted-leaved fig marigold (M. tortuoſum) ; the notch-flowered fig marigold (M. emarginatum) ; and the bracteated fig marigold (M. bracteatum).

In the ſeventh ſpecies there is a variety in which the flowers are ſomewhat larger, and of a very pale yellow on the outſide.

The thirteenth ſort has different varieties ; as the great delta-leaved, and the ſmall delta-leaved marigold.

The fourteenth ſpecies has alſo ſeveral varieties ; as the ſhrubby, bearded, the ſmall dwarf-bearded, and the great dwarf-bearded.

And in the fifteenth kind there are different varieties ; as the purple-flowered, the pale-flowered, and the ſtripe-flowered.

The nineteenth ſpecies likewiſe affords different varieties.

It may be noticed, that the twenty-ſixth ſpecies is very variable, aſſuming different appearances, according to its treatment, and the different ſtages of its growth : its very numerous beautiful purple flowers, covering the whole plant, and produced every ſeaſon, make it a valuable ſpecies in all caſes.

The twenty-ninth ſpecies varies with paler and ſmaller flowers.

And the thirtieth varies with ſhorter and more manifeſtly three-ſided leaves and fewer flowers.

The thirty-ſecond ſpecies has a variety which throws out many procumbent branches, tough at the lower part, but not properly woody, herbaceous at the upper part, about three inches in length, round or ſlightly angular, jointed at ſhort intervals, with bluntly triangular leaves, from which other leaves ſpring in bundles, of the ſame form but ſhorter ; the root-leaves and thoſe at the baſe of the branches remarkably long : the leaves bend like the horns of kine, whence the trivial name.

In the thirty-third ſpecies there is a variety which is entirely ſeſſile, of a whitiſh glaucous colour, with the leaves pale at the baſe, with frequent round whitiſh dots, eſpecially towards the end ; they are ſhorter than thoſe of the original, more reſupine, leſs triquetrous, but with a rounder back, and more frequent, longer incurved prickles, terminated by ſlender harmleſs ſpinules, which are ſometimes white, ſometimes reddiſh : the leaves have a white line at the end, which is continued towards the back : there is firſt a flower in the middle, and afterwards ſeveral come out ſucceſſively at the ſides, all ſeſſile. This is called *Cat-chap marigold.*

Mr. Haworth has two other varieties ; the *Tiger-chap fig marigold*, which is ſtemleſs in all the ſtages of its growth ; being more ſucculent and groſs than the following : the leaves are rather ſhorter, beſet with much longer hairs on the ſides, and having numerous whitiſh ſpots : the flowers are ſeſſile, yellow, and large ; and the *Mouſe-chap fig marigold*, in which the branches in very old plants are ſome inches long, and numerous, forming a fine tufted plant ; the flowers ſmall and of a yellow colour.

The thirty-ſeventh ſpecies has ſeveral varieties.

In the firſt the leaves are wide and compreſſed about the edge ; the flowers ſomewhat large, with blunt petals, ſcattered and not numerous, with ſcarcely any peduncle ; one plant has ſeveral heads, from each of which are produced cluſters of leaves in pairs, diſpoſed like thoſe of the Tongue aloes, but with the edges not horizontal but oblique ; there are generally three or four pairs of theſe leaves ; they are broad and thick, flat above, pillowed below, bright green, ſmooth and ſhining, ſometimes blunt, ſometimes a little pointed, generally in the ſhape of a ſhoemaker's knife ; the younger leaves in this and the other *varieties*, are folded together and obliquely inſerted into each other ; the flowers come out ſucceſſively in Auguſt and September from the axils, beginning with the loweſt ; they are ſubſeſſile, large, yellow, ſomewhat paler than in the following variety, ſhining in the ſun ; petals ſomewhat blunter, entire, or ſometimes cut here and there.

The *Broad tongue-leaved* variety has thick leaves, flat above, convex beneath, with the margins thicker and leſs upright than in the preceding, ſmooth and ſhining, pale green, eſpecially towards the baſe, when held up to the light appearing to be compoſed of innumerable veſicles ; three or four pairs of theſe leaves lie in the ſame inclined plane ; theſe are ſometimes flatter and blunt at the end, ſometimes very much cut at the edge ; from the lower pair firſt, and then from the next, a ſhort peduncle ariſes, obtuſely triquetrous, bearing a large flower of a ſhining golden colour, with many ſtamens, having oblong golden anthers.

The *Narrow tongued-leaved* variety is very like the preceding, but the petals have a ſlight tinge of red on the outſide ; the older leaves are more reflex ; the younger ones, which are cloſer and more luxuriant, are ſomewhat twiſted in and excavated, and are of a fuller green colour, the fruit is ſmaller and ſofter, not elevated, but rather depreſſed, roundiſh, and commonly ſtreaked with eleven angles ; it is generally eleven-celled ; the cells being the ſame in number as there are horns of the ſtyle, which are depreſſed at the bottom of the flower under the ſtamens, and are curled and wrinkled ; the petals in two or three rows, almoſt of the ſame length, of a ſhining yellow colour.

There is another variety, which is diſtinguiſhed from the others by the leaves being longer and more erect ; the peduncles of the flowers longer ; the capſules leſs globular, commonly divided into nine cells ; the calycine ſegments four, three longer and narrower, one ſhorter and broader, with a membranaceous margin ; the flowers have a double or triple row of petals, ſhining in the ſun with the ſplendour of gold; the ſtamens numerous, with oblong ſaffron-coloured anthers.

Method of Culture.—Thoſe of the annual and biennial kinds may be increaſed by ſowing the ſeeds in the early ſpring months on a freſh hot-bed, covered with ſandy earth, or in pots of fine ſandy mould. And when the plants have attained a few inches in growth they may be planted on freſh hot-beds, or in pots plunged in them, to bring them forward; and as ſoon as they have taken root, they ſhould have very little water; when of ſufficiently large ſize, each ſhould be planted in a ſmall pot, filled with light freſh earth, but not rich, plunging them into a hot-bed of tan, ſhading them in the heat of the day until they have taken new root, when they ſhould have plenty of freſh air. About the beginning of ſummer ſome of the plants may be inured to the open air, and afterwards be turned out of the pots, and planted with balls of earth about them in a warm border, where they often thrive and ſpread, but are not very productive of flowers in this way. Some muſt alſo be continued in pots, and removed to the ſhelves of the ſtove, where they flower more plentifully.

The only culture which they afterwards require is, for thoſe in the pots to have frequent ſlight waterings in dry weather, and the others to be kept clean, and their branches permitted to ſpread upon the ſurface of the ground.

All the perennial ſorts may be readily increaſed by cuttings planted during the ſummer months. Thoſe having ſhrubby ſtalks and branches, readily take root when planted out in beds or in pots of light ſandy ſoil, covered with mats or glaſſes; in the latter caſe, being ſhaded when the ſun is warm. The cuttings of theſe ſorts need not be cut from the plant more than five or ſix days before they are planted, during which time they ſhould be laid in a dry room, not too much expoſed to the ſun, that the parts which are ſeparated from the old plants may heal over and dry, otherwiſe they are apt to rot. They may then be planted at about three inches diſtance from each other, the earth being preſſed very cloſe to them, and none of their leaves buried in the ground, as from their abounding in moiſture, when they are covered with the earth, it is apt to cauſe them to rot, which often deſtroys the cuttings. When they are taken from the old plants, they ſhould therefore be diveſted of their lower leaves, ſo as to allow a naked ſtalk of ſufficient length for being planted in the earth.

Thoſe in pots may be plunged in a hot-bed, or in a warm border, due ſhade and ſhelter being given, and ſlight waterings in dry weather. When they have ſtricken good roots, they ſhould be removed with balls of earth into other ſeparate ſmall pots of light ſandy mould, being placed in a ſhady ſituation, a very ſlight watering being given to ſettle the earth about them. After they become well rooted, they may be removed, ſo as to have more ſun; when they may be kept till autumn, being watered very ſlightly twice a week in ſummer and once afterwards, care being taken to prevent their roots ſhooting through the pots, by ſhifting them two or three times in the ſummer ſeaſon in order to pare them off.

In the autumn and winter they ſhould be protected in the greenhouſe.

The cuttings of the more ſucculent ſorts ſhould be left to heal over a much longer time, being a little freed from leaves, and covered with glaſſes to prevent the wet. They ſhould have leſs water, and be removed leſs frequently. They ſucceed well in an airy glaſs caſe during the winter, when ſcreened from froſts and ſevere weather.

And ſuch ſorts as do not afford cuttings, may be increaſed by planting and managing the bottom ſide-heads or off-ſets in the above manner. They may likewiſe be increaſed by ſeeds or cuttings readily in the ſtove department.

The only culture neceſſary afterwards is, merely to give water frequently in ſmall quantities in ſummer, and very ſparingly in winter, ſhifting the plants occaſionally into larger pots.

Theſe are moſtly plants which afford a fine variety in greenhouſe collections, and among other potted plants of ſimilar growths.

MESEMMA, or BOUSEMMO, in *Geography*, a town of Africa, in the kingdom of Fez, inhabited by Arabs.

MESENTERIC, in *Anatomy*, from meſentery, an epithet uſed in deſcribing parts connected with the meſentery. There are a ſuperior and inferior meſenteric artery, branches of the abdominal aorta (ſee ARTERY): a ſuperior and inferior meſenteric vein joining the vena portarum. (See LIVER.) The glands connected with the lacteals and with the abſorbents of the large inteſtine, are called meſenteric, and the ſame term is applied to the nerves of the inteſtines.

MESENTERICA, in *Botany*, a genus of the fungus tribe, ſo called by Tode, from its reſemblance to the human meſentery.—Perſ. Syn. 706. Tode Fung. Mecklenb. faſc. 1. 7.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Creeping, gelatinous, veiny; the ramifications of the veins joined by a thin membrane.

1. M. *lutea*. Perſ. n. 1. (M. tremelloides α, lutea; Tode faſc. 1. 7. t. 2. f. 12.)—Lemon-coloured, or of a golden yellow.—Found after rain in the ſpring, ſometimes in autumn, upon rotten wood, ſpreading to the breadth of two or three inches, like a fine veiny web, of a yellow colour, more or leſs deep; ſometimes greeniſh. The margin at length ſwells, and aſſumes a bright yellow hue; whence Tode concluded that part to be the ſeat of the fructification. The whole is ſo delicate, that if expoſed for twelve hours to a warm air, it decays entirely, leaving nothing but a few very minute ſcales.

2. M. *cærulea*. Perſ. n. 2. (M. tremelloides β, cærulea; Tode faſc. 1. 8.)—Entirely of a glaucous blue.—Found once only, in September, on a half-rotten board. *Tode*.

3. M. *argentea*. Perſ. n. 3. (Corallo-fungus argenteus, omenti formâ; Vaill. Pariſ. 41. t. 8. f. 1.)—White, very broad; the margin tumid and downy. On old boards or poſts in cellars, ſpreading from a little ſoft and tender tuft, as white as ſnow, into a membrane from four to twenty-four inches in extent, full of beautifully branching veins, and fringed at the margin. After ſome time, the whole turns reddiſh and decays.

MESENTERIUM, MESENTERY, in *Anatomy*, the proceſs of peritoneum, by which the ſmall inteſtine is retained in its poſition in the abdomen. See INTESTINE.

MESERCAN, in *Geography*, a town of Perſia, in Chuſiſtan; 36 miles S.S.E. of Sulter.

MESERJEEN, a town of Algiers; 5 miles S.W. of Oran.

MESERITSCH, or MESERZICZ, a town of Moravia, in the circle of Prerau; 30 miles E. of Olmutz. N. lat. 49° 26′. E. long. 18° 2′.

MESERITSCH, GREAT, a town of Moravia, in the circle of Iglau; 18 miles W. of Olmutz. N. lat. 49° 23′. E. long. 15° 55′.

MESERITZ, a town of the duchy of Warſaw; 40 miles W. of Poſen.

MESEWITZ, a town of Pruſſia, in the palatinate of Culm; 21 miles E.S.E. of Culm.

MESHES *of Nets*, the openings or interſtices between the threads.

MESHTA, in *Geography*, a town of Egypt, on the left bank of the Nile; 7 miles N. of Tahta.

MESIANO, the name of two towns of Naples, in Calabria Ultra; one ſix miles N.E. of Bova, and the other three miles N. of it.

MESINAN, a town of Perſia, in the province of Mazanderan; 50 miles S. of Aſtarabad.

MESIRE, a name given by Avicenna to a diſtemperature of the liver, attended with a ſenſe of heavineſs, tumour, inflammation, and pungent pain, and always with thirſt, a dry mouth, and a parched black tongue.

MESITICUM, among the Romans, a toll paid for a place to ſell goods in the forum.

MESKOUTEEN, Hammam, *i. e.* the *ſilent* or *enchanted baths*, celebrated baths of Algiers, in the province of Conſtantina, ſituated on a low ground, ſurrounded with mountains. The water furniſhed by ſeveral fountains is intenſely hot, and falls afterwards into the river Ze-nati. Other baths at a ſmall diſtance are, comparatively, intenſely cold; and ſtill farther, nearer the banks of the Ze-nati, are the ruins of a few houſes, built probably for the convenience of perſons who came thither for the benefit of the waters; 36 miles E. of Conſtantina. Shaw's Travels.

MESLAY, a town of France, in the department of Mayenne, and chief place of a canton, in the diſtrict of Laval. The place contains 1173, and the canton 10,154 inhabitants, on a territory of 245 kiliometres, in 14 communes.

MESLE-sur-Sarthe, a town of France, in the department of the Orne, and chief place of a canton, in the diſtrict of Alençon. The place contains 648, and the canton 9364 inhabitants, on a territory of 157½ kiliometres, in 20 communes.

MESLIN-Corn, in *Agriculture*, a term applied to wheat and rye produced in a ſtate of mixture.

MESMARCHURES, in the *Manege*. See Pastern.

MESMES, Claude de, *Count d'Avaux*, in *Biography*, an eminent French negociator, deſcended from an illuſtrious family, was trained from an early period of life to public buſineſs, and was appointed counſellor of ſtate in the year 1623. In 1627 he was ſent as ambaſſador to Venice, in which quality he viſited Rome, Mantua, Florence, and Turin. He next paſſed into Germany, where he held conferences with moſt of the princes of the empire. Soon after this he was diſpatched upon public buſineſs to the more northern kingdoms of Poland, Denmark, and Sweden. In every undertaking he obtained a high character for probity as well as talents, and thus acquired an almoſt unlimited confidence with the foreign miniſters, with whom he treated. This enabled him to act with conſiderable effect as plenipotentiary, from his court, at the general peace, concluded, in 1648, at Munſter and Oſnaburg. He did not confine himſelf wholly to the affairs of the ſtate, but alſo maintained a regular correſpondence with men of letters, of whom he was the friend and protector. He died at Paris in 1650. Moreri.

Mesmes, John Antony de, *Count d'Avaux*, and a nephew of the preceding, paſſed through a ſimilar courſe of public employments with his uncle. He was appointed ambaſſador extraordinary to Venice from 1671 to 1674, and in the following year was one of the plenipotentiaries at the peace of Nimeguen. Some time after this he was ambaſſador in Holland, where he effected the truce with Spain by which Luxemburgh was ceded to France. In 1689 he was the French ambaſſador to James II. while in Ireland. In 1692 he went out in the ſame quality to Sweden, and was very uſeful in ſettling the preliminaries of the peace of Ryſwick. He died in 1709, at Paris, at the age of ſixty-nine, having paſſed an active and very uſeful life in the ſervice of his country. A collection of his "Letters and Negociations" was publiſhed in 1752, in ſix volumes 12mo. Moreri.

MESN, or Mesne, a term in *Law*, ſignifying him who is lord of a manor, and ſo hath tenants holding of him; yet he himſelf holds of a ſuperior lord.

All the land in the kingdom is ſuppoſed to be holden, mediately or immediately of the king; who is ſtyled the lord "paramount," or above all. Such tenants as held under the king immediately, when they granted out portions of their lands to inferior perſons, became alſo lords with reſpect to thoſe inferior perſons, as they were ſtill tenants with reſpect to the king; and, thus partaking of a middle nature, were called *meſne*, or middle lords. So that if the king granted a manor to A, and he granted a portion of the land to B, now B was ſaid to hold of A, and A of the king; or, in other words, B held his lands immediately of A, but mediately of the king. The king was therefore ſtyled lord paramount; A was both tenant and lord, or was a meſne lord; and B was called tenant "paravail," or the loweſt tenant; being he, who was ſuppoſed to make "avail," or profit of the land. It is in this manner all the lands of the kingdom are holden, which are in the hands of ſubjects. Bl. Com. b. ii.

The word is properly derived from *maiſne, quaſi minor natu*; becauſe his tenure is derived from another, from whom he holds: or perhaps *meſn* is the ſame as *mean* or middle between two extremes, either in time or dignity.

Mesn alſo denotes a writ, which lieth where there is lord meſn and tenant; and lies, when upon a ſubinfeudation the meſn or middle lord ſuffers his under-tenant, or tenant paravail, to be diſtrained upon by the lord paramount, for the rent due to him from the meſne lord. F. N. B. 135.

This is in the nature of a writ of right; and in this caſe the tenant ſhall have judgment to be acquitted or indemnified by the meſne lord; and if he makes default therein, or does not appear originally to the tenant's writ, he ſhall be forejudged of his meſnalty, and the tenant ſhall hold immediately of the lord paramount himſelf.

Mesn, or *Meſne proceſs*. See Process.

MESNA, in *Geography*, a city of Africa, capital of Begarmee; 170 miles S. of Bornou. N. lat. 17 . E. long. 22° 12'.

MESNAGER, Nicholas, in *Biography*, an able negociator, was born at Rouen, in 1658, of a rich commercial family. He was ſent by Louis XIV. to Spain on ſome important miſſions relative to the commerce of the Indies, and afterwards to Holland; on which occaſions he gave ſo much ſatisfaction as to be created a chevalier of the order of St. Michael, with patents of nobility. In 1711 he ſigned the preliminary treaty of peace between France and England at London, and he was next employed with the abbé Polignac as plenipotentiary at Utrecht. He died at Paris in 1714. His memoirs have been printed. Moreri.

MESNARDIERE, Hippolytus Julius Pilet de la, a French poet, was born at Loudun in 1610, and died in 1663. He was a member of the French Academy, and patronized by cardinal Richelieu. His works are, 1. "A Treatiſe on Melancholy," 8vo.; 2. "Poetique," 4to.; 3. "The Tragedies of Alinde and La Pucelle de Orleans;" 4. "A Collection of Poems," &c.; 5. "Relations of War," &c. Moreri.

MESNEVY, or Masnavi, in *Oriental Literature*, is a very celebrated work in the Perſian language. The author is Jelal ud Din; Rumi is often added to his name, denoting that he was of Lower Aſia. He died in 1262, and was buried in a monaſtery founded by him in the city of Konyeh

(Iconium) for an order of Derviſhes. His work is the moſt eſteemed of that numerous claſs of writings containing the doctrines of Sufiſm, (ſee Sufi,) or emblematical theology, and for ſeveral centuries his tomb was viſited by his devout countrymen, who conſider his works as the effect of inſpiration, and inferior only to the Koran. As well as religion and morality, the Meſnevy compriſes alſo hiſtory and politics. The following character of it is taken from the laſt volume of ſir William Jones's works. "So extraordinary a book as the Meſnavi was never, perhaps, compoſed by man. It abounds with beauties and blemiſhes equally great; with groſs obſcenity and pure ethics; with exquiſite ſtrains of poetry and flat puerilities; with wit and pleaſantry mixed with dull jeſts; with ridicule on all eſtabliſhed religions, and a vein of ſublime piety. It is like a wild country in a fine climate, overſpread with rich flowers and with the odour of beaſts. I know of no writer to whom the Maulavi can juſtly be compared, except Chaucer or Shakſpeare." The term Maulavi, here uſed, is uſually applied to this great writer, denoting his literary reputation. Commentaries on his works, and abridgments, tranſlations, and imitations of them, are very numerous in the different dialects of the Eaſt. See Mystical *Poetry*.

MESNOI, in *Geography*, an iſland of Ruſſia, in the ſtraits of Vaigatſkoi, N. lat. 70° 4'. E. long. 60° 14'.

MESOCHOROS, μεσοχορος, among the ancients. The meſochori were muſicians who preſided in concerts, and by beating a deſk in a regular manner with their feet, directed the meaſure of the muſic. For this purpoſe in the theatre they wore wooden clogs on their feet, that they might be better heard, which were called by the Greeks *crupezia*.

MESOCHORUS, among the Romans, was alſo uſed for a perſon in public aſſemblies, appointed to give the ſignal for acclamation at the proper time, that all might join in it at once.

MESOCOLON, in *Anatomy*, the peritoneum connecting the colon in its ſituation. See Intestine.

MESOCUROS, μεσοκουρος, in *Antiquity*, an actreſs in tragedies, who had the middle part of her head ſhaven: but others think that meſocuros ſignifies a girl or very young woman.

MESODMES, or Mesomedes, in *Biography*, a Greek lyric poet and muſician, to whom the hymn to Nemeſis, the laſt of the three hymns publiſhed in Dr. Fell's Oxford edit. of Aratus, with the original muſic, has been aſcribed. It is not ſatisfactorily ſettled who this Meſomedes was, or at what time he lived. See Music *of the Ancient Greeks*, for conjectures on the ſubject.

MESOGASTER, Mesogastrion, in *Anatomy*, a name ſometimes given to the leſſer omentum. See Epiploon.

MESOGLOSSI, a name given by ſome writers to the muſcles of the tongue, more uſually called by anatomiſts the genioglofſi.

MESOIDE, in the *Greek Muſic*, a kind of melopœia, the notes of which were confined to the two middle ſtrings of the meſon tetrachord.

MESOIDES, mean ſounds, or ſounds taken in the middle of the ſyſtem. See Melopœia.

MESOLA, or Mezola, in *Geography*, a town of Italy, in the department of the Lower Po, near the coaſt of the Adriatic, on an iſland formed by a branch of the Po; 30 miles E.N.E. of Ferrara.

MESOLABE, Mesolabium, a mathematical inſtrument, invented by the ancients for finding two mean proportionals mechanically, which they could not come at geometrically. See Proportional.

It conſiſts of three parallelograms, moving in groove to certain interſections. Its figure is deſcribed by Eutocius, in his commentary on Archimedes.

MESO-LOGARITHM, a term uſed by Kepler to ſignify the logarithms of the co-ſines and co-tangents; the former of which lord Napier calls *antilogarithms*, and the latter *differentiales*.

Theſe are alſo called *artificial ſines* and *tangents*.

MESON, in the *Ancient Greek Muſic*, is the name given to the ſecond tetrachord from the bottom, and it was likewiſe the name by which the four ſtrings of that tetrachord were diſtinguiſhed: as the firſt ſtring was called hypatemeſon, the ſecond parhypate-meſon, the third lichanos-meſon, or meſon-diatonos, and the fourth meſe. Meſon is the genitive caſe plural of meſe, mean or middle; becauſe the meſon tetrachord is the middle between the firſt and third tetrachord, or rather becauſe the ſtring or ſound meſe gives the name to the whole tetrachord, of which it is the higheſt note. See *Plate of the Greek Diagram*.

MESONYCTICUM, Lat., μεσονυκτικον, Gr., a midnight hymn in the Greek church.

MESO-PLEURII, derived from μεσος, *middle*, and πλευρον, *rib*, in *Anatomy*, the intercoſtal muſcles.

Meso-pleurii is ſometimes alſo uſed for the intermediate ſpaces between the coſtæ, or ribs.

MESOPOTAMIA, in *Ancient Geography*, an extenſive province of Aſia, the Greek name of which denotes "between the rivers," and on this account Strabo ſays, "ὅτι κεῖσθαι Μεταξυ τȣ Ευφρατȣ και τȣ Τιγρος," that it was ſituated between the Euphrates and the Tigris. In Scripture this country is called "Aram," and "Aramæa." But as Aram alſo ſignifies Syria, it is denominated "Aram Naharaim," or the Syria of the rivers. This province, which inclines from the S.E. to the N.W., commenced at N. lat. 33° 20', and terminated near N. lat. 37° 30'. Towards the ſouth it extended as far as the bend formed by the Jordan at Cunaxa, and to the wall of Semiramis which ſeparated it from Meſſene. Towards the north, it comprehended part of Taurus and the Meſius, which lay between the Euphrates and the Tigris. The modern name, given by the Arabs to this part, is of the ſame import with the ancient appellation; they call it "iſle," or in their language, "Al-Dgézera." In this northen part is found Oſrhoéne, which ſeems to have been the ſame place with Anthemuſia. The northern part of Meſopotamia is occupied by chains of mountains paſſing from N.W. to S.E., in the ſituation of the rivers. The central parts of theſe mountains were called "Singaræ montes." The principal rivers were Chaboras (Al Kabour), which commenced at Charræ (Harran), E. of the mountains, and diſcharged itſelf into the Euphrates at Circeſium (Kirkiſieh) (ſee Chabor); the Mygdonius (Hanali), the ſource of which was near Niſibis, and its termination in the Chaboras. (See Mygdonius.) The principal towns, in the eaſtern part along the Tigris and near it, are Niſibis (Niſibin), Bezabde (Zabda), Singora (Sindja), Labbana on the Tigris (Moſul), Hatru (Harder), and Apamea-Meſenes. At ſome diſtance to the ſouth, upon the Tigris and on the borders of Meſopotamia, was the town of Antiochia, near which commenced the wall that paſſed from the Tigris to the Euphrates, under the name of "Murus Mediæ," or "Semiramidis." In the weſtern part were Edeſſa, called alſo Callin-Rhæ (Orfa), Charræ (Harran), Nicephorium (Racca), Circeſium at the mouth of the Chaboras, Anatho (Anah), Neharda (Hadith Unnour) upon the right of the Euphrates. There are ſeveral other towns of leſs importance, which our limits will not allow us to mention. According to Strabo, this country was fertile in vines, and afforded abundance of good wine. According to Ptolemy, Meſopotamia had on the north a part of Armenia, on the weſt the Euphrates, on the ſide of Syria, on the eaſt the Tigris, on the borders of Aſſyria, and on the ſouth the Euphrates which joined the Tigris. Meſopotamia was a ſatrapy under the kings of Syria. See Syria.

MESOPYCNI, μεσοπυκνοι, in the *Ancient Muſic*, was an appellation given to ſuch chords as formed the middle notes of the ſpiſſa. There were five meſopycni in the ſcale. See Pycni and Spissum.

MESORECTUM, in *Anatomy*, the proceſs of peritoneum attached to the ſigmoid flexure of the colon, and upper part of the rectum. See Intestine.

MESORO, in *Ichthyology*, a name given by Salvian to that fiſh which we call the butterfly-fiſh, the blennus or blennius of other authors.

Mesoro is alſo uſed by the Italians for the fiſh commonly called the *uranoſcope*, or *ſtar-gazer*.

MESOTHENAR, in *Anatomy*, a name given by Winſlow to a muſcle of the thumb. It includes the adductor pollicis, and a part of the flexor brevis. See Adductor and Flexor.

MESOTYPE, in *Mineralogy*. See Zeolite.

MESPILEUS Lapis, in *Natural Hiſtory*, a name given to ſome ſpecies of the echinitæ, from their reſemblance to the ripe fruit of a medlar. This was a name given them before they were much known, and they were ſome time afterwards called, from their five lines on the ſurface, *pentexoche*.

MESPILUS, in *Botany*, μεσπιλη of the Greeks, the Medlar-Tree. Linn. Gen. 251. Schreb. 339. Willd. Sp. Pl. v. 2. 1010. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 205. Sm. Fl. Brit. 529. Juſſ. 335. Lamarck Dict. v. 4. 437. Illuſtr. t. 436. Michaux Boreal-Amer. v. 1. 291. Gærtn. t. 87. (Cratægus; Linn. Gen 250. Schreb. 338. Willd. Sp. Pl. v. 2. 1000. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. ed. 2 v. 3. 200. Juſſ. 335. Lamarck Illuſtr. t. 433. Michaux Boreal-Amer. v. 1. 287. —Claſs and order, *Icoſandria Pentagynia*. Sm. Intr. 427. Nat. Ord. *Pomaceæ*, Linn. *Roſaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, concave, in five deep, ſpreading, permanent ſegments. *Cor.* Petals five, roundiſh, concave, with ſhort claws, inſerted into the calyx. *Stam.* Filaments about twenty, awl-ſhaped, inſerted into the calyx, not longer than the corolla; anthers ſimple, roundiſh. *Piſt.* Germen inferior; ſtyles from two to five, (occaſionally ſolitary,) ſimple, erect; ſtigmas capitate. *Peric.* Berry roundiſh, umbilicated, crowned with the cloſed calyx, but almoſt perforated in the centre. *Seeds* equal in number to the ſtyles, bony, gibbous at the outer ſide, each with two kernels.

Eſſ. Ch. Calyx five-cleft. Petals five. Berry inferior. Seeds two to five, with two kernels.

Botaniſts have differed concerning the limits of this genus. The *Cratægus* of Linnæus is diſtinguiſhed from his *Meſpilus* ſolely by the former having but two ſtyles, and occaſionally, on the ſame tree, ſome flowers with but one; while the latter has five. *Sorbus* is ſuppoſed to differ from both in having three ſtyles and as many ſeeds. Linnæus was well aware of the cloſe relationſhip between all the three genera, and hints that there is ſcarcely any ſufficient diſtinction between them. He adds however that "the leaves in *Sorbus* are uſually pinnate, in *Cratægus* angular, in *Meſpilus* undivided." This would indeed be a character in the habit too important to be overlooked, but unfortunately it is not founded in fact. *M tanacetifolia* has not merely angular, but pinnatifid leaves, with the fructification of a perfect *Meſpilus*, and is ſo naturally allied to the Hawthorn, *Cratægus Oxyacantha* of Linnæus, that nothing ought to disjoin them. As to *Sorbus*, the *domeſtica* is ſhewn in *Engl. Bot.* v. 5. 350, to be a complete *Pyrus*, both by number and ſtructure of all the parts; nor can the *aucuparia* or the *hybrida* (more properly *pinnatifida*) be ſeparated from it, as the number of their ſtyles and cells is variable, though the coats of the latter are rather more coriaceous than in the *domeſtica*. Other acknowledged ſpecies of *Pyrus* indeed have pinnate or pinnatifid leaves. (See Pyrus.) The writer of the preſent article therefore ſees no reaſon to abrogate what is ſettled in the *Flora Britannica*, though Willdenow, not having ſeen that work till he got as far as *Tetradynamia*, has not adopted this correction; and the authors of the new edition of the *Hortus Kewenſis* in general follow him, where they themſelves have not particularly ſtudied any ſubject. Hence five of the fourteen ſpecies of *Cratægus* in the laſt-mentioned work are defined with five ſtyles or five ſeeds, one with three and another with four; a ſufficient evidence of their being *Meſpili*, in ſpite of their more or leſs angular foliage. It is ſcarcely neceſſary to obſerve that the fruit of theſe two ſuppoſed genera is exactly of the ſame nature. We now follow Linnæus and Gærtner in calling it a *bacca*, or berry, becauſe it is found moſt convenient to reſtrict the term *drupa* to pulpy fruits with a ſolitary nut.

The number of ſtyles is ſo ill calculated for a generic diſtinction in this caſe, that we cannot take advantage of it even to divide *Meſpilus* into any tolerably natural ſections. The form of the leaves, whether undivided, lobed, or pinnatifid, might ſerve better. None of this genus is known to have really pinnated leaves.

The ſpecies of *Cratægus* are nineteen in Willdenow, of *Meſpilus* ſix; in all twenty-five. They are all either *trees* or *ſhrubs*, with very hard wood, often thorny; and they have ſtalked, alternate, almoſt always deciduous, *leaves*. Their *flowers* are corymboſe, ſometimes ſolitary; white with an occaſional tint of red. *Fruit* mealy, red or yellow, ſeldom eatable. The whole genus is very patient of cold, partly American, partly European and Alpine, well calculated and much uſed for the adorning of ſhrubberies in this climate. It is remarkable that none of them have been publiſhed in that uſeful and deſervedly popular work, the Botanical Magazine.

We ſhall indicate a few of the moſt valuable.

M. *coccinea*. Great American Hawthorn. (Meſpilus apii folio virginiana, ſpinis horrida, fructu amplo coccineo; Pluk. Phyt. t. 46. f. 4. Cratægus coccinea; Linn. Sp. Pl. 682. Willd. n. 1. Ait. n. 1.)—Thorny. Leaves ovate, with angular inciſions, ſerrated, ſmooth; heart-ſhaped at the baſe. Footſtalks and calyx glandular. Styles five.—Native of Virginia and Canada. Cultivated by biſhop Compton at Fulham in 1683. This is a ſpreading tree, with broad light green *leaves*, ſtrong thorns, large white copious *flowers*, which appear in May, and ſcarlet *fruit*, as big as a ſmall damſon. Linnæus and Willdenow cite under this, ſynonyms of Miller (*Ic. t.* 179.) and the *Hort. Angl. t.* 13, which belong to *Meſpilus cordata*, their *Cratægus*, n. 2.

M. *parvifolia*. Small-leaved Hawthorn. (M. Xanthocarpus; Linn. Suppl. 254. Cratægus parviſolia; Willd. n. 8. Ait. n. 7.)—Thorny. Leaves ſomewhat wedge-ſhaped, crenate, cut. Flowers nearly ſolitary. Segments of the calyx leafy, cut and ſerrated, as long as the fruit. Styles five.—Native of Virginia. Cultivated here in the time of biſhop Compton. We are indebted to Meſſrs. Lee and Kennedy for a knowledge of this ſpecies, for Willdenow quotes a heap of erroneous ſynonyms, amongſt others the *Cratægus tomentoſa*, Linn. Sp. Pl. 682. The preſent ſhrub is remarkable for its ſtout, rigid habit; ſtraight dark *thorns*, often two inches in length; ſmall *leaves*, about an inch long, more or leſs downy; rather large *flowers*, moſtly ſolitary, at the end of each ſhort lateral ſhoot, with a long, leafy, green *calyx*. The *fruit* is ſaid to be pale yellow, dotted with little black warts, and containing five ſeeds.

M. *Oxyacantha*. Common Hawthorn, White-thorn, or May. Gærtn. v. 2. 43. t. 87. Sm. Fl. Brit. 529. (Cratægus Oxyacantha; Linn. Sp. Pl. 683. Fl. Dan. t. 634. Bulliard. t. 333, with the flowers of *Prunus ſpinoſa!* C. monogyna; Jacq. Auſtr. t. 292. Oxyacanthus; Ger. em. 1327.)—Thorny. Leaves obtuſe, deeply three-cleft, ſerrated, ſmooth. Styles one or two.—Native of dry, open, ſtony countries in all parts of Europe, flowering in May or June. In the rich deep ſoil of Marſhland it is particularly luxuriant, and the bloſſoms, uſually white, aſſume there a pink hue. Double and roſe-coloured varieties are often cultivated, as well as one with yellow, not ſcarlet, fruit. This tree is one of the greateſt ornaments of our parks and hedges.

M. *odoratiſſima*. Downy Oriental Hawthorn. Andr. Repoſ. t. 590. (M. tanacetifolia β; Sm. Prod. Fl. Græc. Sibth. v. 1. 342.)—Thorny. Leaves deeply five-cleft, jagged; very downy on both ſides. Styles five.—Native of the Levant. In Greece, and the ſouth-weſtern part of the Crimea. Cultivated by Meſſrs. Lee and Kennedy for ſome years paſt. Rather ſtouter than the Common Hawthorn, and diſtinguiſhed by its very ſoft deep-cut *leaves*, larger highly fragrant *flowers*, and globular ſcarlet *fruit*, as big as a ſmall gooſeberry. Mr. Lambert diſcovered, by Pallas's herbarium, that this is the *Cratægus orientalis* mentioned by that intelligent traveller; ſee the Engliſh edition of his Travels, v. 2. 174. and 181.

M. *tanacetifolia*. Tanſy-leaved Hawthorn. Sm. Exot. Bot. v. 2. 51. t. 85. Ait. Hort. Kew. ed. 2. v. 3. 206. Andr. Repoſ. t. 591. (M. orientalis, tanaceti folio villoſo, magno fructu pentagono e viridi flaveſcente; Tourn. Cor. 44. Voy. v. 2. 171. t. 172.)—Thorny. Leaves obtuſe, pinnatifid, cut; downy on both ſides. Styles five. Bracteas permanent.—Native of all the high mountains of Greece. A very deſirable ſhrub for plantations, on account of its large highly-ſcented corymboſe *flowers*, and yellow *fruit*, which reſembles a ſmall apple, and has the ſcent of one. By culture and grafting, it promiſes to become an acquiſition to our tables. From the deſcription in Dioſcorides of his μεσπιλον, "a ſpinous tree with leaves like hawthorn, fruit like a little apple, ſweet, with three hard ſeeds," this ſhould ſeem, as the number of ſeeds varies, to be the very plant; while his μεσπιλον ἑτερον, from Italy, "a tree like an apple tree, but with ſmaller leaves, and a round eatable fruit, with a broad depreſſion, ſlightly aſtringent, and long in ripening," can only be our common garden *Meſpilus germanica*. Tournefort did not obſerve the thorns of the *M. tanacetifolia*, but he deſcribes the eagerneſs with which his Armenian companions collected and ate the fruit, and he mentions the trees as of the ſize of oaks. He notices alſo our preceding *M. odoratiſſima*, as diſtinguiſhed by its red fruit, varying in ſize, rather acid, and more agreeable than that of the *tanacetifolia*.

M. *Azarolus*. Neapolitan Medlar or Azarole. (M. Aronia veterum; Bauh. Hiſt. v. 1. 67. M. prima; Matth. Valgr. v. 1. 229. M. n. 13; Duham. Arb. v. 2. 16. t. 5. (Cratægus Azarolus; Linn. Sp. Pl. 683. Willd. n. 19. Ait. n. 14. Andr. Repoſ. t. 579.)—Somewhat thorny. Leaves obtuſe, nearly ſmooth, in three or five entire-edged ſegments. Styles two.—Native of Italy, the ſouth of France, and Carniola; rare in our gardens. It is akin to the two laſt, but the *leaves* are ſmoother, entire at the edges, and the *ſtyles* but two; though Scopoli ſays the fruit has five cells, which cauſed him to refer this ſpecies to *Pyrus*. We have no doubt that the number of the *ſtyles* and *cells* is the ſame, and therefore this perhaps affords another example of the variableneſs of that number. The *fruit* is ſaid to be auſtere in flavour, and hence Matthiolus found a difference between his plant and the μεσπιλον of Dioſcorides, which, as they had never ſeen the true one, he, and other botaniſts of his time, took this to be; nor were they very wide of the mark. When cultivated, the Azarole is ſpoken of as an agreeable fruit. We have never heard of its ripening in England, nor does the tree often bloſſom.—The old wooden cut of Matthiolus, uſed again by Duhamel, is by far the beſt repreſentation of this ſpecies; that in Ger em. 1454 is more like the *Oxyacantha*.

M. *germanica*. Common, or Dutch Medlar. Linn. Sp. Pl. 684. Willd. n. 1. Ait. n. 1. Engl. Bot. t. 1523. Pallas Roſſ. v. 1. p. 1. 29. t. 13. f. 1. (M. altera; Matth. Valgr. v. 1. 230. M. ſativa; Ger. em. 1453.)—Thorns none. Leaves lanceolate, ſomewhat downy. Flowers ſolitary, ſeſſile, terminal. Styles five.—Native of the warmer parts of Europe. Common in gardens, for the ſake of its fruit, which is not eatable till it becomes quite mellow, and is almoſt as variable in ſize and flavour as any other. The *leaves* are a ſpan long, moſt downy beneath, dark green above, a little ſerrated at the top. *Flowers* the largeſt of the genus, white, as broad as a crown piece. *Fruit* broad, depreſſed, brown when ripe.

M. *grandiflora*. Large-flowered Barren Medlar. Sm. Exot. Bot. v. 1. 33. t. 18. Ait. n. 5.—Thorns none. Leaves elliptic-oblong, ſlightly downy, unequally ſerrated. *Flowers* nearly ſolitary, terminal. Styles three.—Cultivated in Chelſea garden by Mr. J. Fairbairn, who is unacquainted with its native country. The *tree* much reſembles the *M. germanica*, but the *leaves* are ſtrongly ſerrated, and more elliptical. *Flowers* white, ſcentleſs, almoſt as big as thoſe of the *germanica*, and much exceeding thoſe of all the other ſpecies, *tanacetifolia* approaching them moſt nearly in this reſpect. They grow moſtly ſolitary, rarely two together, at the ends of ſmall lateral branches. *Styles* never more than three; often but two. *Fruit* ſmall, reddiſh, with little pulp, rarely perfected in England.

M. *japonica*. Japan Medlar, or Loquat. Thunb. Jap. 206. Willd. n. 2. Ait. n. 2. Banks. Ic. Kæmpf. t. 18. Vent. Malmaiſ. t. 19. (Bywa; Kæmpf. Amœn. 800.)—Leaves obovate, acute, ſerrated; downy beneath. Cluſters aggregate, terminal. Styles five.—Native of Japan; hardy with us, flowering in ſpring and autumn, and often ripening its *fruit*, which is globular, an inch in diameter, yellow, not bad eating. Thunberg ſays this is a very large tree in its native country. The *leaves* are rigid, a foot long, evergreen, ſmooth, and ſhining on the upper ſide, white or ruſty beneath. *Flowers* very numerous, white, on ruſty ſtalks.—This plant remained for ſome time in our ſtoves without flowering, and was taken for a *Volkameria*.

Mespilus, in *Gardening*, comprehends plants of the deciduous tree flowering ſhrubby and evergreen kinds, of which the ſpecies cultivated are; the Dutch or common medlar (M. germanica); the arbutus-leaved meſpilus (M. arbutifolia); the alpine meſpilus (M. amelanchier); the baſtard quince, or meſpilus (M. chamæ-meſpilus); the ſnowy meſpilus (M. canadenſis); the dwarf meſpilus (M. cotoneaſter); the quince-leaved meſpilus (M. tomentoſa); and the evergreen thorn or meſpilus (M. pyracantha).

In the firſt ſort it is obſerved, that the wild tree differs from the cultivated one in having more ſlender, ſtrigoſe, thorny branches, and much ſmaller leaves, flowers, and fruits.

And there are two varieties, the narrow-leaved and the broad-leaved; the firſt growing to a large tree, riſing with a ſtraighter ſtem, and the branches growing more upright than thoſe of the Dutch medlar: the leaves are narrower and not ſerrate, the flowers ſmaller, and the fruit ſhaped like a pear. This is a native of Sicily.

The latter never riſes with an upright trunk, but ſends out crooked deformed branches at a ſmall height from the ground, the leaves are very large, entire, and downy on their under ſide: the flowers very large, as alſo the fruit, which is rounder, and approaches nearer to the ſhape of an apple: this, bearing the largeſt fruit, is now generally cultivated; but there is one with ſmaller fruit, called the Nottingham medlar, of a much quicker and more poignant taſte. There are alſo other varieties in the fruit, which are now little attended to by the cultivators of this fruit.

The ſecond ſpecies varies with red, with black, and with white fruit.

Method of Culture.—They are all eaſily raiſed by ſeeds, layers, grafting and budding; but it is the beſt practice to raiſe the medlar kinds principally by grafting or budding, in order to continue the ſorts.

When they are raiſed in the firſt method, the ſeeds ſhould be ſown in autumn, in a bed of common earth, as they uſually lie a year, or more, before they germinate, as in the haw and holly-berries, &c.

As ſoon as the plants appear they ſhould be watered frequently in dry weather; and in the autumn or ſpring following, the largeſt be thinned out and planted in nurſery rows, two feet by one aſunder; and in another year all the reſt may be ſet out in the ſame manner; and in three or four years they will be proper for being planted out in the garden or ſhrubbery grounds.

But in the ſecond mode the young branches ſhould be laid down in the autumn in the common method; and they will be properly rooted by the autumn following, when they ſhould be planted out in nurſery-rows in the ſame way as the ſeedlings.

And the two laſt methods ſhould be performed on the ſtems or ſtalks of the larger medlar kinds, or ſometimes upon thoſe of the white thorn, raiſed from ſeed as above; but the pear-ſtock is to be preferred for the common medlars, when intended as fruit trees. The operations are performed in the uſual way, low in the ſtocks to form dwarfs; and for half or full ſtandards, training the firſt ſhoot for a ſtem, or the ſtock may be let form a ſtem, and then be wrought at from about three or four to five or ſix feet in height. See BUDDING and GRAFTING.

Thoſe plants intended for fruit-trees, whether dwarfs, half or full ſtandards, in training, ſhould, for dwarfs, have the firſt ſhoots from the graft or bud headed down ſhort in ſpring, if neceſſary, in order to force out a proper ſupply of bottom branches, which muſt be trained as other dwarf fruit-trees, either for ſtandard-dwarfs or eſpaliers. When for half or full ſtandards, and wrought low in the ſtocks, the firſt ſhoot of each ſhould be trained for a ſtem, topping it afterwards at the proper height to force out lateral ſhoots to form the head; but when wrought high in the ſtock, the firſt ſhoots may either be ſhortened or ſuffered to grow, as may ſeem moſt proper, according to the natural diſpoſition of the leading ſhoot, in reſpect to its furniſhing lateral branches. After this training for the firſt year or two, to give the trees their firſt proper formation, there ſhould not be any further general ſhortening of the branches, practiſing it only occaſionally to particular ſhoots, to procure more wood, when neceſſary, to fill vacancies, to reduce any irregular growth, or to cut off dead parts. But in other reſpects the branches ſhould be principally left at full length, and the ſtandards left to aſſume nearly their own natural way of branching. See PRUNING and TRAINING.

Theſe plants are all hardy, ſucceeding in any common ſoil and ſituation.

It may be noticed that the firſt ſort and varieties are cultivated as fruit trees, principally as ſtandards, but ſometimes as eſpaliers for variety; and are often introduced into the ſhrubbery plantations. All the other ſpecies are proper for ornament in ſhrubbery or other plantations, where they effect a fine variety by their different foliage and flowers, as well as their fruit in autumn and winter, which remains long on the branches. They ſhould be diſpoſed—the deciduous kinds principally in aſſemblage with others of that ſort, and the ever-green kind alſo chiefly with thoſe of their own kind, arranging each ſort according to its height of growth; but the laſt ſort, being agreeably ornamental, both as an evergreen and in its numerous cluſters of fine red berries in winter, ſhould have a conſpicuous ſituation. From its being of a rather ſlender growth, it is however commonly trained againſt walls or the fronts of houſes, for the ſupport of its flexible branches, as well as to exhibit its berries more ornamentally. It may however be trained as a ſtandard ſhrub, like the other ſorts, in the open ſhrubbery; in which caſe it ſhould be generally trained with ſhort ſingle ſtems, and be permitted to branch out upwards into ſpreading heads, which have a good effect.

MESS, in *Sea Language*, denotes a particular company of the officers or crew of a ſhip, who eat, drink, and aſſociate together, whence *meſs-mate*, denoting one of theſe with reſpect to another.

MESS, in *Military Language*. The principal military meſs in Great Britain is kept, and provided for in the extraordinaries of the army, at the Horſe-guards. This meſs conſiſts of the field officers in waiting, of the life and foot guards, officers in the king's life and foot guards; officer of the queen's guard and tilt picket, and adjutant of the battalion of foot guards that mounts. The colonel of the foot guards is allowed to invite three viſitors. Two breakfaſts are likewiſe provided every morning, one for the guard coming on, and one for the guard going off, together with a ſupper every night.

MESSA, in *Geography*, a town of Morocco, ſituated on the river Sus, not far from the foot of the Atlas. It is large, divided into three parts, and ſurrounded with walls. In its vicinity is a moſque, containing the bones of a whale, which the ſuperſtitious inhabitants conſider as thoſe of the whale which ſwallowed Jonah; 165 miles S.W. of Morocco. N. lat. 29 56′.

MESSA, *Meſſe*, plural. Ital.; *Meſſe*, *Meſſes*, plu. Fr., the title given in the Romiſh liturgy to the high maſs in muſic, conſiſting of the *Kyrie*, *Chriſte*, *Credo*, *Sanctus*, and *Agnus Dei*. Theſe portions of the church ſervice have been ſet in the ſtyle of our cathedral ſervices by every great compoſer in Catholic countries, ever ſince the laws of counterpoint were ſettled, that is, from the latter end of the 15th century to the preſent time. For common occaſions the maſs is ſet for the choral eſtabliſhment, accompanied only by the organ: in theſe, ſolo verſes are ſeldom introduced; but for feſtivals, in Italy, the compoſition is more elaborate and ſecular, when an additional band and ſingers of the firſt claſs are employed. Aleſſandro Scarlatti, Leo, Pergoleſi, Durante, Perez, Jomelli, Sacchini, &c. have compoſed maſſes, which will be regarded by true judges of compoſition as maſter-pieces of the art.

Messa *Baſſa*, ſilent maſs whiſpered by the prieſt during a muſical performance.

Messe *de Capella*, in the *Italian Muſic*, is uſed for maſſes ſung by their grand chorus. In theſe, various fugues, double counterpoints, and other ornaments are uſed.

Messe *Concertati*, maſſes wherein the parts reciting are intermixed with choruſſes.

MESSALA, M. Valerius Corvinus, in *Biography*, an illuſtrious Roman, of an ancient and noble family, who diſtinguiſhed himſelf in youth by his eloquence and patriotiſm, and joined the republican army under Brutus and Caſſius againſt the triumvirs. He is deſcribed in very high terms by Cicero, in a letter to Brutus, as being almoſt, or altogether unequalled for integrity, conſtancy, and the affection which he diſplayed for the commonwealth. Of his eloquence, Quintilian ſays, it is ſplendid, fair, and bearing the ſtamp of his nobility. At the battle of Philippi he had a diſtinguiſhed command, and with his legion was the firſt that turned the left wing commanded by Octavianus Cæſar. After the death of the two republican chiefs, he made his peace with the victor, and, according to one of the hiſtorians of Rome, there was no circumſtance of the victory more pleaſing to Cæſar than the preſervation of Meſſala, nor did any man ever give proof of greater attachment and gratitude than Meſſala towards Cæſar. Yet, to his honour, it is aſſerted, that he never, and on no occaſion, was backward in ſhewing his regard to the memory of his earlier friends, and his decided preference of their cauſe. When he recommended Strato to Cæſar, he ſaid, with tears flowing from his eyes, "this, ſir, is the man who performed the laſt kind office for my beloved friend Brutus;" and at another time, when Cæſar reminded him that he had been no leſs zealous for him at Actium, than *againſt* him at Philippi, he anſwered, "I always eſpouſed the moſt juſt ſide of every queſtion." In the year 31 B.C. he was the emperor's colleague in the conſulate, and was ſent as his legate into Aſia a year or two afterwards. In 37 he obtained a triumph over the Aquitanians; after this, he for a ſhort time held the office of prefect, which he reſigned, finding it ill adapted to his habits. He was addicted to literary purſuits, and was a patron of literary perſons, particularly of Tibullus, who commemorates him in his elegies, and has left an expreſs panegyric upon him. In old age he compoſed a work "De Familiis Romanis," cited by Pliny. At the age of ſeventy, about two years prior to his deceaſe, the faculties of his mind underwent a total decay, and his memory ſo completely failed him, that he forgot his own name. Plutarch.

MESSALIANS. See Euchites.

MESSALINA, Valeria, in *Biography*, a daughter of Meſſala Barbatus, married the emperor Claudius, and diſgraced herſelf by her cruelties and ſcandalous incontinence. Her huſband's palace was not the only ſeat of her laſciviouſneſs, but ſhe even proſtituted herſelf in the moſt public manner. Her extravagancies at laſt irritated Claudius ſo much, that he was obliged to ſummon her to anſwer to all the accuſations which were brought againſt her, upon which ſhe attempted to deſtroy herſelf, and when her courage failed, one of the tribunes diſpatched her with his ſword in the year 48. The ſatiriſt, in ſpeaking of her, ſays,

> "Et laſſata viris, necdum ſatiata, receſſit."

There was another perſon of this name called alſo Statilia, who was deſcended of a conſular family, and married the conſul Atticus Viſtinus, whom Nero murdered. She received with tokens of tenderneſs her huſband's murderer, and married him. She had married four huſbands before ſhe came to the imperial throne; and after the death of Nero retired to literary purſuits and peaceful occupations. Otho, after this, paid his addreſſes to her, but before the conſummation of marriage he deſtroyed himſelf. In his dying moments he wrote her a pathetic and very conſolatory letter.

MESSANA, in *Ancient Geography*. See Messina.

MESSAPIA, a country of Italy, which, though ſcantily watered, was covered with trees and paſtures. Its principal towns were Brunduſium, Rudiæ, Lupiæ, Hydruntum, Callipolis, and Tarentum. It was alſo called Iapygia.

MESSAR, in *Geography*, a ſmall iſland in the Red ſea, N. lat. 17° 26′.

MESSARA, a province of the iſland of Crete, which lies ſouth to that of Candia, and which is the moſt fertile, and the moſt agreeable of the iſland; it has, among others, a very beautiful plain, ſix leagues in extent, in which are found an abundance of wheat, barley, flax, cotton, and a variety of fruits. It is croſſed by a ſmall river called at this day "Malognithi," and formerly known by the name of "Lethe." It paſſes by the ſide of the ruins of Gortyna, and empties itſelf into the ſea facing the Paximadi iſlands. The wheat of Meſſara yields a great quantity of flour, which makes excellent bread; it is conveyed on the backs of aſſes to Candia, Retimo, and Canea; while the inhabitants themſelves live all the year on a very coarſe barley bread. Meſſara is reckoned the granary of Crete: its wheat is one of the beſt in Turkey. The Turks are here more numerous than the Greeks.

MESSASAGUES, or Missasagas, a tribe of Indians in America, on a river of this name, which diſcharges itſelf into the N.W. part of lake Huron. This tribe, a few years ago, numbered 500 warriors, but now 80.

MES-SEELAH, a town of Africa, in the kingdom of Algiers; 80 miles S.S.E. of Dellys.

MESSEGNA, a town of Naples, in Otranto; 21 miles N.W. of Lecce.

MESSENE, Maura-Mathi, a town of European Turkey, in the Morea, on a river which runs into the gulf of Coron; 30 miles N.W. of Miſitra. This was the ancient Meſſene or Mycene, the capital of Meſſenia, N. of Æchalia and S. of Ithome. It was founded by Epaminondas, and peopled about the year 369 B.C. It was a large and magnificent town, embelliſhed by the temples of Neptune, Venus, Ceres, Lucina, &c. by a variety of ſtatues, &c. Strabo repreſents it as one of the ſtrongeſt places among the ancients, and compares it with Corinth, being defended by a fortreſs built on mount Ithome, as the latter city was by a double citadel. On the path which led to this citadel was a fountain called Clepſydra, ſignifying concealed water. It was pretended, that the nymphs which reared Jupiter came to bathe ſecretly in this fountain, whence it derived its name. N. lat. 37° 15′. E. long. 21°.

Messene, a kind of iſland, formed by the Euphrates on the W. and the Tigris on the E. It had, to the north, the wall of Semiramis, and to the ſouth a canal, which ſeparated it from Babylonia, and the Seleucide territory.

MESSENGERS, in the *Engliſh Polity*, are carriers of letters and meſſages; or, more particularly, certain officers, chiefly employed under the direction of the ſecretaries of ſtate, and always in readineſs to be ſent with all manner of diſpatches, foreign and domeſtic.

They are always employed with the ſecretaries warrants to take up perſons for high treaſon, or other offences againſt the ſtate, which do not ſo properly fall under the cognizance of the common law; and, perhaps, are not properly to be divulged in the ordinary courſe of juſtice. The priſoners they apprehend are uſually kept at their own houſes, for each of whom they are allowed by the government a compenſation. Although it is the conſtant practice to make commitments to meſſengers, it is ſaid that it ſhall be intended only in order to the carrying of offenders to gaol. (1 Salk. 347. 4 Hawk. P. C. c. 16. § 9.) An offender may be committed to a meſſenger, in order to be examined before he is committed to priſon; and though ſuch commitment to a meſſenger is irregular, it is not void. (Skin. 599.) When they are diſpatched abroad, they have an allowance for their journey.

Messengers *of the Exchequer*, are officers attending the exchequer, in the nature of purſuivants; their buſineſs is to attend the chancellor and auditor, &c. and to carry their letters, precepts, &c.

Messenger *of the Preſs*, a perſon, who, by order of the court, ſearches printing-houſes, bookſellers' ſhops, &c. in order to diſcover ſeditious books, &c.

There are alſo other officers diſtinguiſhed by this appellation; as the meſſenger of the lord chancellor, of the privy council, of the great wardrobe, the two meſſengers of the yeomen of the guards, meſſenger to the gentlemen penſioners, four meſſengers to the board of commiſſioners for India, meſſenger of the board of longitude, nine meſſengers of the navy pay-office, four meſſengers of the victualling office, meſſenger of the war-office, three meſſengers of the army pay-office, meſſengers of the ordnance-office, meſſengers of the office for auditing the public accompts, meſſengers of the cuſtom-houſe, of the ſtamp-office, of the general poſt-office, ſeven meſſengers to the commiſſioners of bankruptcy, &c.

Messenger, in *Mechanics*, the endleſs rope employed in the *capſtan;* which ſee.

MESSENIA, in *Ancient Geography*, a country of Greece, which occupied the S.E. part of the Peloponneſus; it was 13 or 14 leagues in its largeſt dimenſion, and 10 from S. to N. It was bounded, on the north, by the Elide and Arcadia; on the E. by Laconia, on the S. in great meaſure by the Meſſenian gulf, and on the W. by a part of the Ionian ſea. This country was mountainous and unfertile: its principal river was the Pamiſſus, and Meſſene was its capital. It is ſaid by Pauſanias to have derived its name from a princeſs, called Meſſéne, a native of Argos, daughter of Triopas, and granddaughter of Phorbes. She married Polycaon, the youngeſt ſon of Lelex, and perſuaded her huſband to take poſſeſſion of a country ſituated to the W. of Laconia, and inhabited by a ſavage race. Having done this, he gave to the country the name of his wife, and built in it many towns. When the family of Polycaon became extinct; it paſſed under the dominion of ſeveral ſucceſſive ſovereigns; till at length, after the battle of Leuctra, Epaminondas recalled the deſcendants of the Meſſenians, and built Meſſene.

MESSERAG, in *Geography*, a town of the duchy of Courland; 38 miles E. of Goldingen.

MESSEROF, a town of Poland, in the palatinate of Braclaw; 40 miles N.W. of Braclaw.

MESSERSBURG, a poſt-town in Franklin county, Pennſylvania; 168 miles W. by S. from Philadelphia.

MESSERSCHMIDIA, in *Botany*, received its name from Linnæus, in honour of Daniel Theophilus Meſſerſchmid, a German botaniſt who was ſent out by the Ruſſian government to explore the natural hiſtory of Siberia, prior to the expedition under Pallas. He was born in the year 1685, and died about the age of 30. His reſearches were never publiſhed, and he is only known as an author, by a paper which he left, giving an account of the "*Camelus Bactrianus, binis in dorſo tuberibus.*" This was edited by John Amman, and publiſhed in the 14th vol. of the Tranſactions of the Peterſburg Academy. Linn. Mant. 5. Schreb. 103. Willd. Sp. Pl. v. 1. 789. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 303. Juſſ. Gen. 129. Lamarck Illuſtr. t. 95. Gærtn. t. 109.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Aſperifoliæ*, Linn. *Borragineæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, erect, permanent, deeply cloven into five, ſomewhat linear ſegments. *Cor.* of one petal, funnel-ſhaped, tube cylindrical, of a rude texture, longer than the calyx, globoſe at the baſe; limb five-cleft, folded, membranous at the ſides; throat naked. *Stam.* Filaments five, minute, in the lower part of the tube; anthers awl-ſhaped, erect, within the middle of the tube. *Piſt.* Germen ſuperior, nearly ovate; ſtyle cylindrical, very ſhort, permanent, ſtigma capitate, ovate. *Peric.* Berry dry, corky, of a roundiſh cylindrical form, abrupt at the ſummit, which is ſurrounded with four, obtuſe teeth; when ripe it ſeparates into two parts. *Seeds* two in each diviſion of the berry, oblong, bony, incurved, rounded on the outſide, angular within.

Eſſ. Ch. Corolla funnel-ſhaped, with a naked throat. Berry corky, diviſible into two parts, with two ſeeds in each.

1. M. *fruticoſa.* Linn. Suppl. 132. Syſt. Veg. ed. 14. 190.—Stem ſhrubby. Leaves on ſtalks. Corolla ſalver-ſhaped.—A native of the Canary iſlands, eſpecially in the northern parts of Teneriffe, where it was found by Mr. Francis Maſſon, who introduced it into Kew gardens in 1779, where it flowers from June to October.—The *ſtem* of this ſhrub is lofty, rugged, rough with hairs, branched; branches panicled at the top. *Leaves* alternate, on long ſtalks, lanceolate, entire, veined, hairy. *Spikes* of flowers compound, directed one way, forked, at the ends of the twigs on the upper part of the ſtem. Linnæus obſerves that this ſpecies has the corolla of *Tournefortia,* to which the genus is nearly allied, but its fruit is that of a *Meſſerſchmidia.* It is very ſimilar to the following ſpecies *M. Arguzia,* differing only in its ſhrubby ſtem, ſtalked leaves, ſhorter calyx, and ſmaller, ſalver-ſhaped corolla, with a flat limb.

Profeſſor Martyn has quoted a figure of this ſpecies as being in the ſecond volume of *L'Heritier's Stirpes Novæ*, on the authority of the editor of the firſt edition of *Hortus Kewenſis;* and we know that this quotation, in the latter work, aroſe from a communication of L'Heritier to Mr. Dryander. The ſecond volume however of *Stirpes Novæ* never appeared, and therefore Mr. Dryander repented of having quoted it, determining never to refer to an unpubliſhed figure again; accordingly the reference is ſuppreſſed in the ſecond edition of *Hortus Kewenſis.*

2. M. *Arguzia.* Linn. Mant. 42. Suppl. 132. (Meſſerſchmidia; Hort. Upſ. 36. Gmel. Sib. v. 4. 77. Arguzia; Amman. Ruth. 29. Tournefortia ſibirica; Linn. Sp. Pl. 202.)—Stem herbaceous. Leaves ſeſſile. Corolla funnel-ſhaped. A native of dry, gravelly, ſunny places in Siberia. *Root* creeping. *Stem* erect, three or four inches high. *Branches* alternate, ſterile. *Leaves* alternate, ſeſſile, ovate-oblong, veined, downy, whitiſh. *Corymbs* or *tufts* of flowers frequently two. *Calyx* ſhorter than the tube of the *corolla*, which is white, larger than in the preceding, with the throat naked and pervious; the limb plaited and its ſides membranous.

3. M. *cancellata.* Willd. n. 3. D'Aſſo. Synop. n. 162. t. 1. f. 2. (Cerinthe foliis lanceolatis, caulibus ramoſis, floribus vix calycem ſuperantibus, fructibus cancellatis; Quer. Hiſp. v. 4. 145. t. 25.)—Leaves ſeſſile, linear, obtuſe, hiſpid. Capſules reticulated.—A native of Spain.—We adopt

this on the authority of Willdenow, without being able to conſult his references. "*Plant* a foot high. *Root* fibrous, reddiſh. *Stems* hairy, branched. *Radical-leaves* lanceolate, rather obtuſe, hiſpid, thoſe of the ſtem ſimilar, but narrower. *Flowers* on ſtalks, in cluſters, of a blue colour."—D'Aſſo obſerves that one *ſeed* in each diviſion of the berry is abortive.

MESSI, in *Geography*, a town of Aſiatic Turkey, in Natolia, built on the ſcite of *Halicarnaſſus*, which ſee; 50 miles S.W. of Mogla. N. lat. 37° 46′. E. long. 27° 22′.

MESSIAH, a term ſignifying *anointed*, or *ſacred;* and, in that ſenſe, applied to kings and prieſts; but, particularly, by way of eminence, to Jeſus Chriſt, the ſaviour promiſed by the prophets of the old Jewiſh law.

The word comes from the Hebrew מָשׁוֹחַ, *maſcuach*, *anointed*, of the verb מָשַׁח, *maſchach*, *to anoint;* whence Jeſus Chriſt claims the title on a manifold account; 1, as having been anointed king of kings from all ages; 2, as chief of the prophets; 3, as high prieſt of the law of grace, or prieſt for ever after the order of Melchizedech.

The prophecies in the Old Teſtament, which relate to the coming of the Meſſiah, are very numerous; ſome of which may be found in Gen. iii. 15. xlix. 10. Iſaiah, vii. 14. c. xi. c. lii. liii. which the Targum of Jonathan interprets of the Meſſiah. Dan. ix. 25. Micah, iv. 1—5. c. v. 2—4. Haggai, ii. 6, 9. Zech. iii. 8—10. vi. 12, 13. ix. 9—12. Mal. iii. 1—4. iv. 2—6, &c.

It has been alſo urged, that there are ſome remarkable paſſages in Joſephus, Philo, Tacitus, Suetonius, and Celſus, which ſhew that the expectation of the Meſſiah, agreeable to the ſcripture prophecies, prevailed in ſome degree among the heathen nations; and many have ſuppoſed that there is ſome reference of this kind in the fourth eclogue of Virgil. We ſhall only add farther, that the beſt Chriſtian writers lay little ſtreſs on the prophecy of Chriſt cited by Abulpharagius, out of the books of Zerduſh or Zoroaſter, nor on the pretended prophecy of Confucius, among the Chineſe; nor on thoſe of the Sibylline oracles, among the Romans.

The Jews ſtill wait for the coming of the Meſſiah, being infatuated with the notion of a temporal Meſſiah, that is to be a mighty conqueror, and to ſubdue all the world. Moſt of the modern rabbins, according to Buxtorf, believe that the Meſſiah is already come, but that he keeps himſelf concealed, and will not manifeſt himſelf becauſe of the ſins of the Jews. Some of the Jews, however, in order to reconcile thoſe prophecies that ſeem to contradict each other, as to the character and condition of the Meſſiah, have had recourſe to the hypotheſis of two Meſſiahs, who are yet to ſucceed each other; one in a ſtate of humiliation and ſuffering; the other of glory, ſplendor, and power. The firſt, they ſay, is to proceed from the tribe of Ephraim, who is to fight againſt Gog, and to be ſlain by Annillus, Zech. xii. 10. The ſecond is to be of the tribe of Judah, and lineage of David, who is to conquer and kill Annillus, and reſtore the kingdom of Iſrael, reigning over it in the higheſt glory and felicity.

Jeſus Chriſt aſſerts himſelf to be the Meſſiah. In St. John iv. 25. the Samaritan woman ſays to Jeſus, "I know that when the Meſſiah comes, who is called the Chriſt, he will tell us all things. Jeſus anſwered her, I that ſpake to thee am he." There are ſeveral impoſtors, who have endeavoured to paſs for Meſſiahs, as Chriſt himſelf predicted. J. Lent, a Dutchman, has written a hiſtory of *falſe* Meſſiahs, "De Pſeudomeſiis." The firſt he mentions was one Barcochab, who appeared under the empire of Adrian. The laſt was rabbi Mordecai, who began to be talked of in 1682. A little before him; *viz.* in 1666, appeared Sabbethai Sebi, who was taken by the Turks, and turned Mahometan.

MESSIEURS, a French title of honour, or civility, lately introduced into our language; being the plural of *monſieur*, and equivalent to the Engliſh ſirs, or gentlemen.

The French lawyers always begin their pleadings and harangues with meſſieurs; which word is alſo frequently repeated in the courſe of their ſpeeches; on which occaſion it anſwers to our Engliſh word *gentlemen.*

The French ſay, *Meſſieurs du parlement; du conſeil; des comptes*, &c.

MESSILLONES, or Muscle-*Bay*, in *Geography*, a bay on the coaſt of Chili or Peru, in South America; 8 leagues N. by E. of Morrenas bay, and 5 S. by W. of Atacama. It forms part of Atacama bay, and at its entrance, or the anchoring place, ſhips may ride in 15 fathoms, clean ground, and ſecured from moſt winds.

MESSINA, a city and ſea-port of Sicily, in the valley of Demona, the ſee of an archbiſhop, ſituated on the E. coaſt towards the narrow ſea, called "The Straits of Meſſina," formerly called "Zancle," which name it received, according to Thucydides, from the form of its harbour, that reſembles a hook. This author ſuppoſes that the city was founded by the pirates of Cuma. Other writers trace its origin to a higher antiquity, and date it 530 years before the ſiege of Troy, and 964 years before Romulus laid the foundation of Rome. They add, that when the inhabitants were moleſted by the pirates of Cuma, they ſought the aſſiſtance of the Meſſenians, a people of Greece, who haſtening to their ſuccour, cleared their coaſts, entered into an alliance with them, and hence the city was called by the Greeks "Meſſene," and by the Latins "Meſſana." Pauſanias ſays, that Anaxilas, tyrant of Rhegium, having formed an alliance with the Meſſenians of Greece againſt the Zancleans, with their aſſiſtance took poſſeſſion of the city, which, in compliment to them, he called "Meſſene." This event is ſaid to have taken place in the year of Rome 94. This city was afterwards ſeized by the Mamertini, and being made their capital, it became one of the moſt wealthy and powerful cities of Sicily. The Mamertini transferred it to the Romans, and from them it was taken, in the firſt Punic war, by the Carthaginians. Under the Romans it enjoyed a long interval of peace, and was ſpared by the rapacious Verres. In the civil wars it took part with Sextus Pompeius. After the fall of the Roman empire it was for ſome time in the poſſeſſion of the Saracens: and, in 1060, was taken by Roger, count of Calabria, who alſo aſſumed the name of the count of Sicily. In 1139, Richard I. king of England, made himſelf maſter of it in his way to the Holy Land. It was afterwards betrayed to Louis XI., king of France, who was compelled to ſurrender it. The harbour of this city has been much admired, and the quay is decorated with a range of buildings, nearly uniform in its whole length, and interrupted only by a number of arches, which ſerve as entrances into the correſponding ſtreets that terminate upon it. At the bottom of the port is the king's palace, the reſidence of the governor of the city, before whoſe door the veſſels of the royal navy lie at anchor. Near this is a covered walk, which leads to the citadel, which is almoſt impregnable, and cannot be attacked by ſea, on account of the currents and the difficulty of anchorage, nor is it overlooked on the land ſide, whilſt it commands the city and harbour. This was built by Charles XI. after a revolt of the inhabitants. There is a communication by a covered way, and a wide ſubterranean paſſage formed under the jettee, between the citadel and two forts; one that of the Lantern, which points out the channel in the Calabrian coaſt, and that of St. Salvador, which defends the entrance of the port. It ſeems as if nature had deſigned even the whirlpools of Scylla and Charybdis to ſerve as guards to this ſuperb port; which is capable of containing all the ſhips of Europe, and where veſſels arrive at the very door of the merchant, finding any required depth of water, and needing not to move an anchor, if it were not for the violence of the Sirocco, the only wind to which it is expoſed, and by which the ſhips are in danger of being driven out to ſea. In the middle of the haven are a light-houſe and lazaretto. Within the city are handſome ſtreets, elegant marble fountains, equeſtrian and pedeſtrian ſtatues of bronze, large and handſome churches, vaſt convents, tolerably well built hotels, a magnificent general hoſpital, called "La Loggia," another large and rich hoſpital, and near it a well-regulated as well as ſpacious Lombard houſe. The population formerly correſponded with theſe appearances; but the plague of 1743 and 1744 reduced it from 100,000 to 30,000. In 1780 and 1782 it ſuffered much from an earthquake. The calamities which this city has ſuffered have not only diminiſhed its population, but occaſioned the decay of many houſes and the deſertion of their occupiers, as well as the decline of their trade, which, however, is ſtill conſiderable. In Auguſt an annual fair is held, at which great quantities of foreign goods are expoſed to ſale. The air at Meſſina is temperate, being continually freſhened by the ſea, purified by the mountains, agitated by the currents, and moderated by the ſhade and ſhelter. So that, as De Non ſays, it is rendered one of the healthieſt and moſt agreeable habitations of the whole world. Meſſina claims the prerogative of being ſtyled the capital of the kingdom, though Palermo diſputes the precedency with it; 104 miles E. of Palermo. N. lat. 38° 10′. E. long. 15° 40′.

MESSINES, a town of France, in the department of the Lys, and chief place of a canton, in the diſtrict of Ypres. The place contains 3155, and the canton 17,956 inhabitants, on a territory of 167½ kiliometres, in 8 communes.

MESSING, a town of Bavaria, in the biſhopric of Aichſtatt; 14 miles N.N.E. of Aichſtatt.

MESSIS, a town of Aſiatic Turkey, in Caramania; 15 miles E.S.E. of Adana.

MESSUAGE, Meſſuagium, in *Law*, a dwelling-houſe, with ſome land adjoining, aſſigned for its uſe.

By the name of meſſuage may a garden, ſhop, mill, cottage, chamber, cellar, or the like, paſs.

In Scotland, meſſuage denotes what we call the *manor-houſe*, *viz.* the principal dwelling-houſe within the barony.

MESSUBY, in *Geography*, a town of Sweden, in Tavaſtland; 34 miles N.W. of Tavaſthus.

MESTA, in *Geography*, a town and cape on the W. coaſt of the iſland of Scio. N. lat. 38° 25′. E. long. 30° 54′.

Meſta, a Spaniſh term, which, in its general acceptation, ſignifies a mixture of two or more ſorts of grain, and is equivalent to the Engliſh word "Meſlin," denotes, in a more reſtricted ſenſe, the union of the flocks belonging to ſeveral different proprietors into one collective body, which does not ſtrictly attach to any country, but travels backward and forward twice in the year, paſſing part of it at one place, and part in another. This collection is formed by an aſſociation of proprietors, conſiſting of the nobles, perſons in power, members of rich monaſteries and eccleſiaſtical chapters, who feed their flocks on the waſte lands, as is done on the commons in England. Theſe flocks they call *Merinos*, or *tranſhumantes*.

This cuſtom, firſt introduced by circumſtantial neceſſity, in proceſs of time was converted into a claim, which long poſſeſſion has now changed into a preſcriptive right. It reſts at preſent upon the ſupport of thoſe laws and ordinances which have favoured, protected, and perpetuated the uſurpation.

The origin of this cuſtom muſt be referred to the era in which the great plague ravaged Spain, and deſtroyed two-thirds of the population. The few perſons who ſurvived that deſtructive ſcourge took poſſeſſion of the lands which had been vacated by the death of their former occupiers. Theſe they united with their own for the purpoſe of forming large properties; but not poſſeſſing ſufficient means for the cultivation of ſuch extenſive domains, they were obliged to convert nearly the whole into paſturage, and confine their attention principally to the care and increaſe of their flocks. Hence has ariſen the vaſt quantity of paſture lands which occupy the greater part of Eſtramadura, the kingdom of Leon, and other provinces. To this cauſe, among others, may be attributed the prodigious quantity of uncultivated lands diſcoverable through the whole kingdom; and hence ſo many proprietors, who poſſeſs extenſive tracts of territory, yet have no titles to their eſtates, and are therefore denominated *Dueñoſvoceros*.

The flocks which, when united, form the Meſta, uſually conſiſt of about ten thouſand ſheep in each. Every flock is conducted by an officer, called a *mayoral*, who ſuperintends the ſhepherds, and directs the route. It is eſſential that he ſhould be an active man, well acquainted with the kinds of paſturage, the nature of ſheep, and methods of treatment. The mayoral is allowed a horſe and one hundred *doublons*, or fifteen hundred livres tournois (thirty pounds eight ſhillings ſterling) *per annum*. Placed under him are fifty ſhepherds, who are divided into four claſſes. The wages amount to one hundred and fifty reals, or thirty-ſeven livres ten ſols (one pound eleven ſhillings and three-pence) *per* month, for the firſt claſs; one hundred reals, or twenty-five livres (one pound and eleven-pence) for the ſecond; ſixty reals, or fifteen livres (twelve ſhillings and ten-pence) for the third; and forty reals, or ten livres (eight ſhillings and four-pence) for the fourth: excluſive of theſe wages, each is allowed a daily ration of bread, weighing two pounds. They receive individually twelve reals, or three livres (two ſhillings and ſixpence) for travelling expences, when they commence their journey in the month of April or May; and the like ſum on their return in October. To each ſhepherd is granted the privilege alſo of keeping a few ſheep and goats, but the wool and hair belong to the proprietor of the flock; he takes himſelf the increaſe, the fleſh, and the milk; but he cannot take any part of theſe away. The number of perſons thus employed in the care of the whole of the flocks which compoſe the Meſta, are about forty-five or fifty thouſand. The dogs are alſo numerous, fifty being the allowance to each flock.

The number of ſheep which are thus made to migrate has varied at different periods. It very much decreaſed during the ſeventeenth century. It was again increaſed in the eighteenth. In the ſixteenth the enumeration compriſed ſeven millions. At the commencement of the ſeventeenth, in the reign of Philip III., they were reduced to two millions five hundred thouſand. Uſtaria ſtates the number in his time, about the end of the ſame century, at four millions; they amount at preſent to near five.

The flocks are put in motion the latter end of April, or beginning of May, leaving the plains of Eſtramadura, Andaluſia, the kingdom of Leon, and Old and New Caſtile, where they uſually winter; they repair to the mountains of the two latter provinces, and thoſe of Biſcay, Navarre, and Aragon. The mountainous diſtricts moſt frequented by theſe flocks in New Caſtile are thoſe of Cuença; and in Old Caſtile, thoſe of Segovia, Soria, and Buytrago. The ſheep, while feeding on the mountains, have occaſionally adminiſtered to them ſmall quantities of ſalt. It is laid upon flat ſtones, to which the flocks are driven, and permitted to eat what quantity they pleaſe. During the days the ſalt is adminiſtered, the ſheep are not allowed to depaſture on a calcareous ſoil, but are moved to argillaceous lands, where they feed voraciouſly.

At the end of July the ewes are put to the rams, after ſeparation has been made of thoſe already with lamb. Six or ſeven rams are conſidered ſufficient for one hundred ewes.

In September the ſheep are ochred, their backs and loins being rubbed with red ochre, or ruddle, diſſolved in water. This practice is founded upon an ancient cuſtom, the reaſon of which is not clearly aſcertained. Some ſuppoſe, that the ochre uniting with the oleaginous matter of the fleece, forms a kind of varniſh, which defends the animal from the inclemency of the weather. Others think the ponderoſity of this earth prevents the wool growing too thick and long in the ſtaple. But the more eligible opinion is, that the earth abſorbs the ſuperabundant perſpiration, which would otherwiſe render the wool both harſh and coarſe.

Toward the end of the ſame month the flocks recommence their march. Deſcending from the mountains, they travel towards the warmer parts of the country, and again repair to the plains of Leon, Eſtramadura, and Andaluſia. The ſheep are generally conducted to the ſame paſtures they had grazed the preceding year, and where moſt of them had been yeaned: there they are kept during the winter.

Sheep-ſhearing commences the beginning of May, and it is performed while the ſheep are on their ſummer journey, in large buildings called *Eſquileos*. Theſe, which are placed upon the road, are capable of containing forty, fifty, and ſome ſixty thouſand ſheep. They are erected in various places; but the principal are in the environs of Segovia, and the moſt celebrated is that of *Iturviaca*. The ſhearing is preceded by a pompous preparation, conducted in due form, and the interval is conſidered a time of feaſting and recreation. One hundred and twenty-five men are uſually employed for ſhearing a thouſand ewes, and two hundred for a thouſand wethers. Each ſheep affords four kinds of wool, more or leſs fine according to the parts of the animal whence it is taken. The ewes produce the fineſt fleeces, and the wethers the heavieſt: three wether fleeces ordinarily weigh on the average twenty-five pounds; but it will take five ewe fleeces to amount to the ſame weight.

The journey which the flocks make in their peregrinations is regulated by particular laws, and immemorial cuſtoms. The ſheep paſs unmoleſted over the paſtures, belonging to the villages, and the commons which lie in their road, and have a right to feed on them. They are not, however, allowed to paſs over cultivated lands; but the proprietors of ſuch lands are obliged to leave for them a path ninety *varas*, or about forty toiſes (eighty-four yards) in breadth. When they traverſe the commonable paſtures, they ſeldom travel more than two leagues, or five and a half miles a day; but when they walk in cloſe order over the cultivated fields, often more than ſix, or near ſeventeen miles. The whole of their journey is uſually an extent of one hundred and twenty, thirty, or forty leagues, which they perform in thirty or thirty-five days.

The price paid for depaſturing the lands, where they winter, is equally regulated by uſage, and is very low; but it is not in the power of the landed proprietors to make the ſmalleſt advance. The Meſta has its peculiar laws, which were originally made by the parties intereſted, the proprietors of flocks, and received the ſanction of ſeveral ſovereigns of Spain, among whom was Charles I., who approved and confirmed them in the year 1544. A particular tribunal alſo exiſts, under the title of "honrado conſejo de la Meſta," or *the honourable council of the Meſta*. This court, in which one of the council at Caſtile preſides, is compoſed of four judges, denominated "Alcaldes mayores entregadores," each having a fiſcal or exchequer, and an eſcheator or *Alguaſil mayor*. The cognizance of this court ſuperintends the preſervation of the privileges belonging to the Meſta. The judges levy upon the ſhepherds and their flocks pontage, parcage, and other tolls; they ſettle the diſputes and quarrels among the ſhepherds; direct the route the flocks ought to take in their journies to and from the mountains; regulate what occurs on their paſſage; ſettle what reſpects their paſturage; in a word, they adjuſt every concern in which the Meſta can be ſuppoſed intereſted in the ſlighteſt degree. The proprietors of flocks, and even the ſhepherds, poſſeſs, to a certain extent, a power of *committimus*, or commitment, which they very frequently abuſe. They have the improper privilege of citing all kinds of perſons, of whatever age or condition, before the Meſta, under a ſuppoſition, or pretence, that their altercations, or buſineſs, have ſome connection, however diſtant, with the juriſdiction of its court.

The public opinion throughout Spain is decidedly oppoſed to the Meſta, againſt the vexatious circumſtances to which it continually gives riſe, and the conſtant obſtacles it throws in the way of agricultural improvements. In fact, the grievances ariſing from its effects are numerous and ſevere.

1. The number of perſons it employs is very great, forty or fifty thouſand; which are ſo many ſubjects loſt to the ſtate, as to the purpoſes of agriculture and population; and this takes place principally in thoſe provinces where the ſtrength requiſite for the cultivation of the ſoil is moſt deficient.

2. An immenſe extent of highly valuable land is converted into paſturage; and produces comparatively nothing. The conſequence is, that the inhabitants of ſuch places find no employ, nor means of providing for their wants: they are refuſed the neceſſary articles for the ſupport of life, becauſe the lands on which they might be grown do not produce them.

3. The cultivated lands, which lie near the route the flocks take in their journies to and from the mountains, are ſubject to continual treſpaſs, which is committed with impunity; for in vain do the owners of thoſe lands appeal againſt ſuch abuſes and ſolicit indemnity. The damages ſuſtained on theſe occaſions is ſo much greater, owing to the ſeaſons of the year in which the journeyings of the flocks are made. The firſt is when the corn is generally far advanced in its growth; and the ſecond when the vines are loaded with grapes.

4. The commonable paſtures alſo, which are in the line of the route, are equally devaſtated; ſo that the flocks belonging to places in the vicinity can ſcarcely find a bare ſubſiſtence.

5. The flocks which compoſe the Meſta are unprofitable for agricultural purpoſes; for never being folded upon the arable lands, they conſequently contribute nothing towards their fertilization.

6. The directors and ſhepherds are dreaded in every place through which they paſs; for they exerciſe a moſt inſufferable

able deſpotiſm, the conſequence of the improper privilege they poſſeſs of bringing whomſoever they may chuſe to inſult before the tribunal of the Meſta ; whoſe deciſions are almoſt invariably in favour of its ſervants.

Theſe grievances have for time immemorial excited the moſt forcible proteſtations againſt them ; the general ſtates of the realm have inceſſantly requeſted the ſuppreſſion of the Meſta, and the complaints and addreſſes of the people have been repeatedly preſented at the foot of the throne. For a long ſeries of years all appeals upon the ſubject were in vain. They at length, however, became ſo loud and preſſing, towards the middle of the eighteenth century, that the government found itſelf obliged to pay ſome attention to the ſubject. A committee was formed to make the requiſite inquiry, Whether it were more eligible for public utility to continue, or ſuppreſs the Meſta? and, provided the committee ſhould determine on the former meaſure, what modifications might be proper to adopt for its better regulation. The perſons intereſted were very powerful, and they made ſure of evading this wiſe diſpoſition for remedying the evils of the Meſta. The committee, though permanently eſtabliſhed, have done nothing theſe thirty or forty years. Affairs remain in juſt the ſame ſtate, and, as it too frequently happens, the intereſt of a few individuals ſtill obtains the advantage over the public good. Laborde's View of Spain, vol. iv.

MESTERO, in *Geography*, a cape on the N. coaſt of Egypt ; 10 miles N.E. of Roſetta. N. lat. 31° 25′. E. long. 30° 54′.

MESTI, a town of Auſtrian Poland, in Galicia ; 6 miles E.S.E. of Belcz.

MESTRA, a town in the Treviſan ; 8 miles N.W. of Venice.

MESTRE-BAY, *Little*, a bay on the N.E. part of Newfoundland iſland, S. of St. Julian, and N. by W. of the iſlands Gros and Belle.

MESTREZAT, JOHN, in *Biography*, a celebrated French Proteſtant miniſter, was born at Geneva in the year 1592. When he was yet very young he was ſent to the academy at Saumur, where he afforded ſuch evidence of his abilities and proficiency, that he was offered a profeſſorſhip of philoſophy when he was only eighteen years of age. He became an eloquent and highly diſtinguiſhed preacher, and there are ſaid to be no ſermons that contain more ſublime theology than thoſe which he preached upon the epiſtle to the Hebrews. He conducted the controverſy concerning the authority of the church with forcible reaſoning, and completely refuted all the ſubtilties of father Regourd and cardinal Perron on this ſubject. He died in 1657, leaving behind him a number of theological works that do honour to his memory: of theſe the chief are, "A Treatiſe on the Holy Scriptures, in which is ſhewn the Certainty and Fulneſs of Faith, and its Independence on the Authority of the Church;" and "An Expoſition on the Epiſtle to the Hebrews, in a Courſe of Sermons," making five volumes 8vo. Bayle.

MESTURA, in *Geography*, a town of Africa, in the kingdom of Tunis.

MESUA, in *Botany*, a Linnæan genus, in honour of *Meſue*, the father and ſon, two celebrated Arabian phyſicians and botaniſts, who reſided at Damaſcus, and who flouriſhed in the eighth and ninth centuries. The works of the younger *Meſue*, medical and botanical, were publiſhed in folio, with annotations, at Venice, in 1581.—Linn. Gen. 268. Schreb. 471. Willd. Sp. Pl. v. 3. 843. Mart. Mill. Dict. v. 3. Juſſ. Gen. 258. Lamarck Dict. v. 4. 416.—Claſs and order, *Monadelphia Polyandria*. Nat. Ord. *Guttiferæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of four, ovate, concave, obtuſe, permanent leaves, the two outward, oppoſite ones ſmaller. *Cor.* Petals four, abrupt, undulated. *Stam.* Filaments numerous, capillary, the length of the corolla, united at the baſe into a ſort of cup ; anthers ovate. *Piſt.* Germen ſuperior, roundiſh; ſtyle cylindrical; ſtigma thickiſh, concave. *Peric.* Nut roundiſh, pointed, marked with four, longitudinal, elevated ſutures. *Seed* ſolitary, roundiſh.

Eſſ. Ch. Calyx ſimple, of four leaves. Corolla of four petals. Nut ſlightly four-ſided, ſingle-ſeeded.

1. M. *ferrea.* Linn. Sp. Pl. 734. Fl. Zeylan. 91. (Naghas ; Herm. Zeylan. 7. Nagaſſarium; Rumph. Amboin. v. 7. 3. t. 2. Bellutta Tſiampakam, ſive Caſtanea roſea indica ; Rheed. Malab. v. 3. 63. t. 53.)—A native of the Eaſt Indies, and much cultivated, according to Rheede, in Malabar, for the beauty of its flowers, which expand there in July and Auguſt. It bears fruit in ſix years from the nut, and continues to bear during three centuries. The ſame author ſubjoins a long account of its medical virtues, and Rumphius ſays, it is planted in Amboyna, about houſes, for the ſhade it affords, and for the odour of its flowers, which alſo, when dry, are mixed with other aromatics, ſuch as the white ſandal-wood, and uſed for perfuming ointments.

This *tree* grows to a large ſize, having a variegated, thick, hard, ſmooth, much-branched trunk, like that of a lime-tree. *Bark* ſmooth, brown, aromatic, of a ſharp and bitter taſte. *Root* fibrous, red, covered with a ſmooth, yellow bark, bitter, but ſweet-ſmelling. *Leaves* oppoſite, on ſhort ſtalks, ſmooth, thickiſh ; of a ſhining green on the upper ſide ; glaucous-blue underneath, like the bloom of grapes. *Flowers* in ſize and ſhape like thoſe of the Sweet-briar or Eglantine, but with only four white petals. Their ſmell partakes both of the roſe and violet. *Fruit* ſmooth and greeniſh, but reddiſh and wrinkled when ripe, with a rind like that of the cheſnut, and three or four kernels within, the ſhape, ſize, ſubſtance, and taſte of cheſnuts.—The ſpecific name is taken from the cloſe texture and hardneſs of the wood.

MESUA, in *Gardening*, compriſes a plant of the exotic ſhrubby kind, for the hot-houſe of which the ſpecies cultivated is the ferreous Indian meſua (M. ferrea.)

Method of Culture.—This plant may be increaſed by ſeeds, layers, and cuttings. The ſeeds ſhould be ſown in the ſpring, in pots of light earth, plunging them in a bark hot-bed in the ſtove. When the plants have attained ſome growth, they ſhould be planted in ſeparate pots and be replunged in the bark-bed, where they muſt be kept.

The layers ſhould be made from the young branches, and ſhould be laid down in the autumn or early ſpring, being taken off when well rooted, and planted in ſeparate pots, having the ſame management as the others.

The cuttings ſhould be taken from the young branches, and be planted in the ſummer in pots of light mould, and plunged in the bark-bed. When they have ſtricken root, they ſhould be removed into ſeparate pots, and be managed as the others.

Plants of this kind afford variety among other ſtove plants.

MESUA, in *Geography*, a town of Arabia, in the province of Yemen ; 40 miles N. of Chamir.

MESUE, in *Biography*, one of the early phyſicians among the Arabians, was born at Niſabour, in the province of Khoraſan, and flouriſhed in the ninth century. He is ſaid to have died in 846, or, according to other accounts, in 865. His father was an apothecary at Niſabour. Meſue was educated in the profeſſion of phyſic by Gabriel, the ſon of George Backtiſhua, and through his favour was appointed phyſician to the hoſpital of his native city. Although a Chriſtian of the Neſtorian ſect, he was in great favour with ſeveral ſucceſſive caliphs, being reputed the ableſt ſcholar and phyſician of his age. When the caliph Haroun al Raſchid appointed his ſon, Almammon, to the viceroyalty of the province of Khoraſan, Meſue was nominated his body phyſician, and was placed by him at the head of a college of learned men, which he inſtituted there. On his acceſſion to the throne of the caliphs, in the year 813, Almammon brought Meſue to Bagdad, and made him a profeſſor of medicine there, as well as ſuperintendant of the great hoſpital, which ſituations he occupied a great number of years. He was alſo employed, under the auſpices of the ſame caliph, in transferring the ſcience of the Greeks to his own country, by tranſlating their works. Freind is of opinion that Meſue wrote in the Syriac tongue, which prevailed in his native province, long before and after his time; for not only he, but the Backtiſhuas, are reckoned Syrians by Abulpharagius and Abi Oſbaia, though born at Niſabour. He was the author of ſome works, which are cited by Rhazes and other writers, which appear to have periſhed: for the works, which are now extant in his name, do not correſpond with theſe citations, nor with the character of them given by Haly Abbas; not to mention, that in theſe works the writings of Rhazes are quoted, who lived long after his time. Abi Oſbaia enumerates thirty-ſeven books written by Meſue, among which is one upon purging, and another reſpecting decoctions. Freind's Hiſt. of Phyſic, vol. ii.

Mesue, *the Younger*. A writer of this name, or *Meſuach*, who was later than Rhazes, and a Chriſtian of the ſect of Jacobites, is mentioned by Leo Africanus. He ſtudied medicine and philoſophy at Bagdad, and practiſed at Cairo, where he died in the year 1015, at the age of 90. He wrote ſome treatiſes on potable liquors, and on the compoſition of medicines: and perhaps to him may be attributed the work entitled, "Joannis Meſue Damaſceni de Re Medica, lib. iii." edited by Jac. Sylvius, Paris, 1549, folio, and often reprinted. Eloy Dict. Hiſt. de la Med. Gen. Biog.

MESURACA, in *Geography*, a town of Naples, in Calabria Citra; 8 miles S.W. of St. Severina.

MESURADA, a ſea-port town of Africa, in the country of Tripoli, and reſidence of a governor: a conſiderable commerce is carried on at this place by means of the caravans that paſs into the interior parts of Africa. This is the chief place of a diſtrict anciently called "Cyrenaica" and "Pentapolis," from its five cities; 100 miles E.S.E. of Tripoli. N. lat. 32° 10′. E. long. 15° 10′.

MESURADO, a river of Africa, which runs from the mountains that ſeparate Negroland from Guinea, into the Atlantic, N. lat. 6° 25′. W. long. 10° 35′.

MESURE, Fr.; *Miſura*, Ital.; meaſure, in *Muſic*. In poetry meaſure is expreſſed by *metre*; in muſic, by *time*. See Measure, Metre, and Time.

MESVRES, in *Geography*, a town of France, in the department of the Saône and Loire, and chief place of a canton, in the diſtrict of Autun; 5 miles S. of Autun. The place contains 608, and the canton 6277 inhabitants, on a territory of 302½ kiliometres, in 12 communes.

MESYMNIUM, a name which the ancients gave to a part of their tragedy, or to certain verſes in their tragedies.

The meſymnium was a kind of burden, as *Io Pæan; O Dithyrambe; Hymen, O Hymenæe*; or the like; which, when placed at the end of a ſtrophe, was called *ephymnium*; and when inſerted in the middle of a ſtrophe, *meſymnium*. See Strophe, and Chorus.

MET, in *Rural Economy*, a term applied to a meaſure which contains a ſtrike, or four pecks.

META, in *Geography*, a river of South America, which, after receiving ſeveral tributary ſtreams, runs into the Oronoko; 30 leagues below the cataracts of Aturas, and 125 leagues from St. Thomas of Guiana. This river, ſays Depons, ſeems deſtined by nature to form vaſt commercial relations between the whole eaſtern part of the kingdom of Santa Fé and Spaniſh Guiana.

METAC, a town of Upper Siam; 130 miles N.W. of Porſelouc.

METACAL, an Egyptian weight, uſed in the weighing of pearls, and conſiſting either of a carat and a half, or of two carats. Sixteen of theſe carats make a drachm, each of the carats weighing four grains, and twelve drachms an ounce.

METACARPIUS, in *Anatomy*, the name given by Winſlow to the adductor oſſis metacarpi digiti minimi; which ſee.

METACARPUS, one of the diviſions of the bones of the hand, placed between the wriſt and the fingers. See Extremities.

Metacarpus, *Fracture of*, in *Surgery*. See Fracture.

METACHORESIS, a word uſed by Galen, to expreſs a receſs of a morbid humour from one part of the body to another, a thing very common in many diſtempers.

METACHRONISM, formed of μετα and χρονος, *time*, in *Chronology*, an error in computation of time, either on the ſide of defect or exceſs.

METACINEMA, from μελα, and κινεω, *to remove*, in *Surgery*, a removal of the pupil of the eye from its natural ſituation.

METACISM, Metacismus, in *Grammar*, a defect in the pronunciation of the letter M.

Iſidore repreſents the metaciſm as a final *m*, followed by a vowel, as *bonum aurum, Bethlehem erat*, &c.

METACOE, in *Botany*, a name given by the people of Guinea to a plant, of which they are very fond, becauſe of its virtues as a balſamic and vulnerary. Its leaves, being bruiſed and applied to a freſh wound, cure it. They have alſo another uſe for it, twiſting the dried leaves into a ſort of match for their muſkets. Phil. Tranſ. N° 232.

METACONDYLI is uſed by ſome authors for the outmoſt bones, or joints of the fingers, next the nails.

METADELO, plur. *Metadeli*, in *Commerce*, a corn and liquid meaſure at Florence. For corn, the moggio contains 24 ſtoja; and the ſtoja 16 metadeli; and the moggio contains about 16 Engliſh buſhels. Oil is ſold by the barile of 32 boccali or metadeli, the whole weighing 88lbs. of Florence, or about 66lbs. avoirdupois.

METAGITNION, μεταγειτνιων, in *Chronology*, the ſecond month of the Athenian year. It contained twenty-nine days, and anſwered to the latter part of our July and beginning of Auguſt. The Bœotians called it *Panemus*, and the people of Syracuſe, *Carnius*.

It is ſo called from *Metagitnia*, one of Apollo's feſtivals kept in it.

METAGONITÆ, in *Ancient Geography*, a people of Africa, who inhabited the environs of the promontory of Metagonium, on the weſt of Mauritania Tingitana.

METAKOONA, in *Geography*, a town of Hindooſtan, in the province of Cattack; 60 miles S. of Cattack.

METALS, in *Chemiſtry*, a claſs of ſimple bodies poſſeſſing peculiar properties. The ancients, who valued theſe bodies moſt for their phyſical properties, did not beſtow the excluſive name of metal on any body which was not malleable. Other bodies, which poſſeſſed ſimilar characters, without being malleable, were called ſemi-metals. The peculiar brilliancy belonging to the metals is perhaps their moſt generally diſtinguiſhing character. The luſtre exhibited by mica has ſome reſemblance to the luſtre of metals, but it is very inferior in degree, and is merely confined to the ſurface. The great ſpecific gravity of moſt metals has been thought a ſufficiently diſtinguiſhing character. This property, to a certain extent, was very ſtriking. Till the late diſcoveries of Mr. (ſir H.) Davy, the lighteſt of the known metals was of greater ſpecific gravity than the denſeſt body which was not a metal. The baſes of potaſh and ſoda, however, have all the characters of metals, with the exception of being defective in the property juſt alluded to, ſince potaſſium and ſodium are of leſs ſpecific gravity than water. From theſe facts, therefore, we are no longer allowed to ſay that all metals are of greater ſpecific gravity than other bodies.

In the preſent ſtate of our knowledge there appear to be two claſſes of elementary matter, namely, oxygen, which conſtitutes one claſs, and oxydable bodies, or ſuch bodies as combine with oxygen. Of the latter claſs, out of 45 varieties, there appear to be only five which are not metallic. The metals, therefore, compriſe by far the greateſt part of the elementary bodies.

Dr. Thomſon has divided the metals into four claſſes: 1. Malleable. 2. Brittle and eaſily fuſed. 3. Brittle, and difficultly fuſed. 4. Refractory.

I. Malleable.

1. Gold.
2. Platinum.
3. Silver.
4. Palladium
5. Rhodium.
6. Iridium.
7. Oſmium.
8. Mercury.
9. Copper.
10. Iron.
11. Lead.
12. Tin.
13. Nickel.
14. Zinc.

II. Brittle, and eaſily fuſible.

1. Biſmuth.
2. Antimony.
3. Tellurium.
4. Arſenic.

III. Brittle, and difficultly fuſible.

1. Cobalt.
2. Manganeſe.
3. Chronium.
4. Molybdenum.
5. Uranium.
6. Tungſten.

IV. Refractory.

1. Titanium.
2. Columbium.
3. Cerium.

Beſides the metals arranged in this table, there are a number of others lately diſcovered by Mr. Davy, which are the baſes of ſome of the earths, and the two fixed alkalies. If the whole of the earths, as well as the two fixed alkalies, have metallic baſes, the number of metals to be added to the above will be 13. Thoſe from potaſh, ſoda, barytes, ſtrontian, zinc, and magneſia, have already been obtained, and have been named by Mr. Davy, potaſſium, ſodium, barium, ſtrontium, calcium, and magneſium. The four firſt of theſe appear to be malleable metals; the others are not ſufficiently known.

Thoſe metals which are not liable to be oxydated by expoſure to the air, ſuch as gold, platina, ſilver, &c. have been called noble; while thoſe which become tarniſhed and corroded, were termed baſe metals. Theſe diſtinctions have now become obſolete.

The metals have always, and muſt continue to be of the utmoſt importance in chemiſtry, in the arts and manufactures, and in domeſtic economy. Their malleability and hardneſs render them highly fitted for making various veſſels and utenſils, and their luſtre and colour are agreeable to the eye. The properties of hardneſs and tenacity united, ſuch as belong to iron and ſteel, are of great utility in various kinds of edge-tools, and the elaſticity which is conſtituted by certain degrees of theſe two properties, could ſcarcely be furniſhed by any other ſubſtance than ſteel; hence its great uſefulneſs for making ſprings.

The ductility of ſome metals is ſo great, as to admit of its being drawn into wires much finer than a hair. Gold, although the moſt laminable of all the metals, or which may be made into the thinneſt leaves, does not admit of being drawn into the ſmalleſt wire, owing to its want of hardneſs. Iron, in conſequence of poſſeſſing greater hardneſs, with a conſiderable portion of that property by which the particles of bodies attract each other in all ſituations equally, is capable of being drawn into finer wire than gold. Indeed pure gold is leſs ductile than when it contains a certain portion of copper. In treating of ſome of the phyſical properties of metals, ſuch as malleability, ductility, hardneſs, and tenacity, much uncertainty has prevailed, from the want of ſome of theſe terms having definite meanings.

That property of a metallic bar or wire, by which it reſiſts the action of a weight in the direction of its length, has been called tenacity, and this is always the meaſure of its ſtrength. This power in metals, however, is evidently dependent upon two properties, one of which is its hardneſs, and the other a property for which philoſophers have no preciſe word; perhaps the word flexibility may come the neareſt. We mean, however, that property by which its particles can be changed into any ſituation, without ſeparation. In the drawing of a piece of wire, ſome of thoſe particles which conſtitute its thickneſs, before it paſſes through the hole of the wire-plate, are, by the proceſs of drawing, brought into the direction of its length. This property in the greateſt degree enables a piece of wire, or a thin ſlip of metal, to be bent backwards and forwards without breaking. A ſingle experiment will ſatisfy any one of the propriety of theſe remarks. Take a piece of copper or iron wire, previouſly well annealed, and it will be found exceedingly flexible, and may be twiſted or bent conſiderably, without breaking. If a weight be hung to it, with a view to break it, it will ſtretch conſiderably before it breaks. If a piece of the ſame wire be drawn through one or two holes, it will be found much ſtiffer and harder, and of courſe ſmaller: it will alſo be leſs capable of being bent or twiſted without breaking. If, however, a trial be made of its ſtrength, it will require a much greater weight to break it than in the annealed ſtate; although its diameter is diminiſhed. If the hardneſs be ſtill increaſed by theſe means, a maximum of ſtrength would be found under ſome joint proportion of the hardneſs, and the property of bending or twiſting, which we may for the preſent call flexibility. It is on this latter property, with a certain degree of hardneſs, that the malleability and ductility of metals depend. It requires rather leſs hardneſs to make a metal to the beſt advantage into ſheets, than to draw it into wire. This evil, however, of the wire breaking from being ſoft, may be remedied by making leſs difference in the ſize of the holes in the wire-plate. By this means the greateſt ductility and malleability may exiſt under the ſame degrees of hardneſs and flexibility.

Metals, with regard to their hardneſs and flexibility, are very different under different circumſtances. Some metals, however, are more ſuſceptible of this change than others. Steel may be ſo ſoft and flexible as to bear much twiſting, and be eaſily penetrable by the file, which happens when it is newly annealed; while, if it is heated red-hot, and cooled rapidly, it becomes extremely brittle, and is ſufficiently hard to cut glaſs. Lead, on the contrary, under all circumſtances, has the ſame degree of ſtiffneſs and hardneſs. The ſame is pretty nearly the caſe with tin.

Some hints were given under the article LIQUIDITY, which may throw ſome light on this myſterious property of metals. It is there conjectured, that the particles of bodies may be capable of aſſuming two ſtates, one in which the particles attract each other equally in all directions. Hence whatever motion may take place among them, the ſame attraction ſtill exiſts. It is in this ſtate that bodies can be changed in their figure, without deſtroying their aggregation.

On the other hand, it is ſuppoſed that the particles of bodies, under certain circumſtances, may poſſeſs polarity; and that the ſtrongeſt attraction, and, conſequently, their greateſt hardneſs, may exiſt, when the particles are ſo arranged that oppoſite poles are preſented to each other. Any thing, therefore, which facilitates this change to polarity, will increaſe the hardneſs of a body. The cryſtalline form, which is common to ſome metals, ſtrongly favours this idea; ſince metals are always harder in this ſtate, than when their *fibrous form*, as it is called, is brought about. Metals ſeem to acquire the greateſt hardneſs by cooling rapidly, through a great range of temperature. It is in this change, therefore, that the particles acquire the greateſt polarity, and by which the body becomes the moſt brittle and elaſtic. Indeed it is on the principle of polarity only, that we are enabled to explain the elaſticity of bodies. Heat appears to be the moſt efficacious in deſtroying the polar property. The body would, however, regain it by rapid cooling; but by ſlow cooling, it is rendered ſoft to the greateſt degree of which it is capable, and in the ſame proportion malleable and inelaſtic.

The hardneſs of metals, when they have been annealed, may be conſiderably increaſed by hammering, rolling, or wire-drawing. This change appears to be brought about merely by condenſation. The ſmall degree of polarity left in the particles will exhibit itſelf in the elaſticity, when the particles are brought nearer together. It will be equally evident that the particles will be attracted with more force, and that the hardneſs will be increaſed. The hammering does not appear to increaſe the hardneſs of a body which has aſſumed the cryſtalline form, under which the greateſt polar power is ſuppoſed to exiſt, but rather to diminiſh it. If a piece of ſteel plate, which has been hardened and tempered, be hammered carefully, the elaſticity and hardneſs become leſs. Upon heating it, however, till it becomes blue, the elaſticity returns. The hammering, in this inſtance, deranges the poles of the particles, which the ſlight heat reſtores to their proper poſitions.

From what has been obſerved it will be eaſy to infer, that no metal can be malleable under its cryſtalline or polar form. Several of the metals are ſcarcely ſuſceptible of this form: among theſe we may enumerate gold, ſilver, and lead, and, in all probability, mercury. Others are deprived of it, and become malleable by hammering or rolling at a certain temperature. Of theſe are copper, braſs, iron, ſteel, tin, and zinc. There are other metals, indeed the greateſt part of them, which are not capable of any other than the cryſtalline form, and hence are not malleable. Of theſe we may mention antimony, biſmuth, arſenic, cobalt, and manganeſe. What ſtrengthens the idea that the cryſtalline form is the cauſe of the want of ſoftneſs and malleability, is the circumſtance of copper and tin being ſeparately very ſoft and malleable; though an alloy of theſe two metals is as hard as ſteel, and does not poſſeſs the leaſt malleability. Caſt ſteel and bliſtered ſteel are in the cryſtalline form, till they have been hammered at a certain temperature. In the firſt ſtate they are hard and brittle; in the latter, they are flexible, and are increaſed in tenacity.

Braſs wire appears to undergo ſome change in its arrangement, by hanging up in a damp room, or in ſituations where the fumes of acids prevail. It becomes ſo brittle as not to admit of bending to a right angle. This appears to ariſe from an increaſe in its polar form, for heating it red-hot partly reſtores its malleability.

The fuſibility of metals is a very valuable property, ſince it not only admits of their being caſt into almoſt any form, but the refuſe can be made into its original form, which allows of great economy.

Some metals are better fitted for caſting than others. It is obſerved, that all thoſe metals of which we have ſpoken as being ſuſceptible of the cryſtalline form, are the beſt calculated to take fine impreſſions. At that point in which the metal paſſes from the liquid to the ſolid form, a ſudden expanſion takes place, by which the volume is increaſed, and, in conſequence, preſſes more ſtrongly againſt the ſides of the mould. This is particularly the caſe with braſs, caſt iron, and copper with tin. In forming alloys the moſt fitted for caſting, a ſimple method offers itſelf. Let the ſpecific gravity of the ſolid be as much as poſſible leſs than the liquid. In ſuch bodies it will be found that the ſolid metals will float upon the liquid.

The property which metals poſſeſs of reflecting light, is highly important in the arts, ſciences, and in common life. The ſurfaces of many of the metals, when they are ſmooth and poliſhed, reflect almoſt all the light which falls upon them. White metals reflect more light than thoſe which are coloured. The hardeſt metals are beſt fitted for reflectors, becauſe they aſſume the fineſt poliſh. It has been thought that this property depended upon the denſity of theſe ſubſtances. This idea, however, ſeems incorrect, ſince ſodium and potaſſium, which are leſs denſe than water, appear to poſſeſs the power of reflecting light equal to many other metals. It is the great quantity of light which they reflect to which they owe their luſtre. The great facility with which metallic bodies conduct heat is of incalculable utility in the arts, and in the economy of human life. The boiling of moſt fluids would be almoſt impracticable in any other veſſels than thoſe of metal.

This property has been applied to great advantage in the proceſs of drying various articles. Large tubes of metal, being filled with ſteam, are kept conſtantly at nearly 212°. The goods to be dried are wrapped round the outſide of the tube.

The metal gives its heat with ſuch facility, as to dry the ſubſtances upon it in a very little time.

Metals are the beſt conductors of electricity, and hence are highly uſeful in electrical ſcience, as well as in preſerving the leſſer conducting ſubſtances from the effects of lightning.

The greater number of the metals are acted upon by the air, eſpecially when aided by heat. Metals were thought by the ancients to be compounds of an earth combined with phlogiſton. When theſe bodies were acted upon by the air, they ſuppoſed that the phlogiſton was ſeparated, leaving behind a calx, or earth. The ancients did not weigh their products, or elſe they would have found, that although this imaginary ſubſtance phlogiſton had eſcaped, yet the reſiduum was heavier than the original metal. By the greater accu-

racy

Strahan and Preſton,
New-Street Square, London.

racy of modern experimenters, it has been found that the metal is the ſimple body, and that, by combining with the oxygen of the atmoſphere, the metal is converted into a ſubſtance of an earthy appearance, which, in modern chemiſtry, is called an oxyd of the metal.

The bodies formed by the combination of metals with oxygen, exhibit, as well as the metal, an ample field of utility to man. Theſe bodies, in various forms, are valuable auxiliaries in the healing art. Some of them conſtitute rich pigments of the utmoſt importance to the arts. Others are not leſs valuable to the dyer and the bleacher. Several metallic oxyds are uſed to great advantage for poliſhing marble, glaſs, and metals.

METALS *for Specula.* See SPECULUM.

METALS, *Colours from.* As metals have a ſtrong texture in their metalline form, ſo they preſerve their natural colours durable, unleſs corroded or diſſolved by particular menſtruums, after which their ſolutions ſtrike particular durable colours, or afford the ſtrongeſt ſtains.

Iron diſſolved in ſtale ſmall beer gives the beautiful yellow and different ſhades of buff colour, uſed in printing linens and cottons, &c. When ſublimed with ſal ammoniac it alſo affords a yellow; and the common iron-moulds made by ink are owing to the iron diſſolved in the copperas of which ink is made.

Copper melted with zinc appears of a gold colour; diſſolved in aquafortis, it affords a beautiful green; and in any alkali a beautiful blue. And theſe ſolutions may be reduced to dry colours by cryſtallization or evaporation; and the ſame metal, precipitated out of aquafortis with common ſalts, gives the turquoiſe colour to white glaſs. Tin, a white or colourleſs metal, affords a light blue colour, when fluxed with antimony and nitre. The ſame metal is neceſſary in ſtriking the ſcarlet dye with aquafortis and cochineal; and its calx, by ſtrong infuſion, turns to a glaſs of an opal colour.

Lead, corroded by the fumes of vinegar, gives the fine white ceruſs; burnt in a ſtrong naked fire, it becomes the ſtrong red-lead, or minium; and melted into a glaſs with ſand, is of the hyacinth colour. Shaw's Lectures, p. 171.

Silver being diſſolved in aquafortis, if chalk be put to the ſolution, turns of a beautiful purple or amethyſt colour; and its own ſolution, though pale as water, durably ſtains the nails, ſkin, or hair, brown or black.

Quickſilver, mixed with brimſtone, makes a black maſs, and this, by ſublimation, affords the beautiful red pigment called cinnabar, or vermilion; and the ſolution of quickſilver being precipitated with common ſalt, yields a ſnow-white powder, which alſo turns black by being mixed with ſulphur.

Gold, diſſolved in aqua regia, affords a fine yellow liquor, which ſtains animal ſubſtances beautifully purple; and if the ſolution be ſufficiently weakened with water, and mixed with a ſolution of tin, a fine red or purple powder may be procured, very uſeful for ſtaining of glaſs and paſtes to a beautiful red.

It appears, from the experiments of ſir Iſaac Newton, relating to the changes of colour that take place in pellucid colourleſs ſubſtances, that the leſs refrangible colours are exhibited by the greater thickneſs of air, water, and glaſs; and that as the thickneſs of thoſe ſubſtances is diminiſhed, they reflect the more refrangible colours. Hence he infers, that nothing more is requiſite for producing all the colours of natural bodies, than the ſeveral ſizes and denſities of their particles. Accordingly he attributes the colours of permanently coloured bodies to the ſame cauſe by which they were produced in colourleſs ſubſtances, *viz.* to the various thickneſſes of their component particles. But no experiments were made on permanently coloured bodies, in order to eſtabliſh the truth of ſir Iſaac Newton's opinion, till the ingenious Mr. Delaval directed his attention to this ſubject. From obſerving the circumſtances above recited, and more largely illuſtrated under the article COLOURS, it appeared to him, that, if permanently coloured bodies are ſubject to the ſame laws as tranſparent colourleſs ſubſtances are, all ſuch permanently coloured bodies, whenever the ſize of their particles is diminiſhed, ſhould undergo a change of colour, by aſcending from the leſs refrangible to the more refrangible colours; and that ſuch bodies, when the ſize of their particles is augmented, ſhould undergo a contrary change, their colour in this caſe deſcending from the more refrangible to the leſs refrangible colours. In order to confirm this concluſion, he made a great variety of experiments with vegetable, animal, and mineral ſubjects, whereby the ſize of their particles, upon which their colours depend, might be diminiſhed or increaſed. The methods which he uſed, in order to diminiſh the ſize of the particles of thoſe bodies which were the ſubject of inquiry, were by diſſolving, attenuating, &c. by means of chemical ſolvents, heat, putrefaction, dilution, &c. The contrary effects were brought about by ſuch means as are known to condenſe, incraſſate, or unite the particles of bodies into larger maſſes, as by coagulation, precipitation, evaporation, by diminiſhing the force of the ſolvents, &c. The metals afforded him numerous inſtances in confirmation of the doctrine above explained; for almoſt every operation, to which they are ſubject, exhibits a change of colour correſponding to this doctrine. This is particularly the caſe with regard to the imperfect metals; for every change of their texture is accompanied by a correſpondent change of colour. We can only enumerate ſome of the principal reſults which Mr. Delaval obtained from a great number of well-conducted experiments. Thus, the green vitriol of iron is changed, in proportion as it is deprived of its ſolvent part, by expoſing it to a ſtrong heat, &c. to yellow, orange, red, and purple; and by a contrary proceſs, *viz.* by a farther attenuation, by means of the phlogiſticated lixivium, in the proceſs of Pruſſian blue, &c. the colour of the iron aſcends from green to blue; ſo that all the primary colours are produced from the ſame metal, in proportion as its particles are attenuated or incraſſated. It appears, likewiſe, that when iron is divided into very ſmall parts by means of a large quantity of glaſs, and by a violent heat, its colour is blue; but in proportion as it is leſs divided, by the mixture of a ſmaller quantity of glaſs, or the application of leſs heat, its colours are green, yellow, and red. From iron diſſolved in its ſeveral menſtrua, colours are produced in proportion as the ſolvent power of thoſe menſtrua is greater or leſs. Thus, iron diſſolved in its ſtrongeſt acid ſolvent, the vitriolic acid, gives green; in its weaker acid ſolvents, the marine and nitrous acids, yellow and orange; and in its weakeſt acid ſolvents, the vegetable acids, red. The colours of the calces of iron precipitated from its ſolution in the vitriolic and nitrous acid, deſcend from green to yellow, and from yellow to red; whereas the changes of colour ariſing from the ſolution of theſe calces, proceed in a contrary order, and aſcend. Mineral ſubſtances are alſo frequently impregnated with iron, and their colours correſpond with the ſtate of the iron contained in them.

In the ſame manner the colours of the ſolution of mercury in the nitrous acid vary, in proportion as the ſolvent is extricated from it, from yellow to orange, and then to red. Thus alſo, thoſe ſubſtances which have the greateſt affinity with the acid of the corroſive ſublimate produced

Strahan and Preſton

by the ſolution of mercury in the marine acid, diſengage from its ſolution a red precipitate; and thoſe, whoſe affinity with it is leſs, produce a yellow one. But theſe colours are liable to ſome variation, according to the greater or leſs quantity of acid in the ſolution. Mercury diſſolved in the vitriolic and in the vegetable acids, exhibits, in proportion as its ſolvent is taken from it, the ſame colours which, under ſimilar circumſtances, are afforded by that metal diſſolved in the other acids. All theſe mercurial preparations become red, when they are deprived of the principal part of their menſtruum; and mercury calcined by heat, without the addition of any acid, acquires the ſame colour. Its colour, however, is ſubject to variation, from the action of its ſolvents; and thus the phoſphoric acid changes the red to yellow and white. The ſame law obtains in the changes of colour to which the mineral manganeſe is ſubject; for Mr. Delaval found, that by means of the different degrees of power in the ſeveral ſolvents, theſe colours were produced in their regular priſmatic order, *viz.* yellow, green, blue, purple, and red. The various phenomena of the ſympathetic ink of M. Hellot conform to the ſame law, and are urged by Mr. Delaval as arguments to eſtabliſh it. Heat and cold, he obſerves, are not neceſſary agents in the production or ſuppreſſion of the colour. But it appears, that the alterations are effected by the moiſture of the air, attracted by the ſaline matter when cold, and expelled from it when heated. When this ink is expoſed to a moderate heat, in a white China cup, and when the greater part of the water is evaporated, the ſaline matter becomes green. This colour ariſes from a ſuperfluous quantity of the marine acid, which ſoon flies off, and leaves the remaining part blue, ſlightly inclining to green. It alſo forms a hard dry maſs, which, in a few minutes after its removal from the fire, grows moiſt, and aſſumes a light red colour. Theſe alterations may be often renewed, by alternately heating and cooling the coloured matter; which does not again become green, after the ſuperfluous marine acid is once evaporated. But a drop of ſpirit of ſalt, added to the red or blue maſs, immediately renders it green. When preparations of cobalt are acted upon merely by heat, the order of the changes of colour effected in them, is ſuch as, in other inſtances, conſtantly ariſes from that means of attenuation. Thus, when the yellow ſolution of this mineral, in the marine acid, is heated, it aſſumes a green colour, paſſing from a leſs to a more refrangible colour. When this ſolution is cooled, the yellow is reſtored.

Mr. Delaval obſerves, that as the inflammable matter, in the entire metals, acts ſtrongly on the rays of light, it is neceſſary to calcine or to divide them into extremely minute particles, in order to examine ſeparately the action of the calx, or fixed matter, on the rays of light. In order, therefore, to examine all the metals in the like circumſtances, by reducing them into the ſmalleſt particles, and depriving them of their phlogiſton as much as poſſible, he expoſed each of them, united with a proper quantity of the pureſt glaſs, without any additional ingredient, to the greateſt degree of fire which they are capable of bearing, without having all colour whatever deſtroyed. In this ſtate it appears, from a variety of experiments and facts, that they actually do, without any exception, exhibit colour in the order of their denſities as follow: gold, red; lead, orange; ſilver, yellow; copper, green; and iron, blue. He has alſo ſhewn that the other preparations of the metals, *viz.* their ſolutions, precipitates, cryſtals, &c. do for the moſt part exhibit the ſame colour, in the order of their denſities, though not ſo invariably as their glaſſes; ſome ſmall variation of colour happening in the more imperfect metals, probably from a change of denſity in their different preparations. Thus, gold acquires a red colour, by a minute diviſion of its particles, without any addition. In the proceſs of calcining lead in the furnace, the firſt of the primary colours which it acquires is yellow; the calx paſſing from that colour through orange into red. This variety of colours proceeds from the imperfection of the metal; which, probably, during its calcination (as our author ſuppoſed), receives a ſmall portion of phlogiſton, as well as air; for the effect of ſuch an union muſt probably be a change of colour from orange to red: as ſir Iſaac Newton has ſhewn, that bodies reflect more ſtrongly in proportion as they poſſeſs more phlogiſton; and that the leſs refrangible colours require a greater power to reflect them. The preparations of ſilver are yellow; the two moſt imperfect metals, copper and iron, being very eaſily acted upon by almoſt all menſtrua, the colours of their ſolutions, &c. *viz.* green and blue, are apt to change into each other's order; the copper in ſome ſolvents becoming blue, and the iron green, and in other ſolvents *vice verſâ*; which probably depends on the increaſe or diminution of their denſities. The preparations, &c. of mercury have been already examined. The ſpecific gravity of platina being nearly equal to that of gold, it is found, agreeably to the Newtonian doctrine, confirmed by Mr. Delaval, that the precipitates and cryſtals obtained from ſolutions of this metal are red; and that a ſolution of it in aqua regia to perfect ſaturation is of a dark red, though, when diluted, yellow. Delaval's Experimental Inquiry into the Cauſe of the Changes of Colours in opaque and coloured Bodies, &c. 1777, paſſim. Phil. Tranſ. vol. lv. art. 3, p. 10, &c.

METALS, *Fluxes of.* See FLUX.

METALS, *Granulation of.* See GRANULATION.

METALS, in the *Materia Medica*, furniſh medicines of conſiderable importance and utility. Although the operation of the pure metals on the animal ſyſtem is merely mechanical, yet when they undergo oxydation, or are changed by acids into the ſtate of ſalts, they acquire a high degree of activity, and become effectual remedies in many diſorders, when they are judiciouſly adminiſtered. Mercury and tin have, indeed, been employed in their metallic ſtate. For what purpoſes and with what effect they have been ſo uſed, we ſtate under the articles MERCURY and TIN. But metals are more generally and with greater efficacy previouſly combined with oxygen, acids, ſulphur, &c. This is the caſe with reſpect to antimony, arſenic, biſmuth, copper, iron, lead, mercury, ſilver, and zinc. This combination, for medicinal purpoſes, is effected either by the action of atmoſpheric air, with an increaſed degree of temperature; or by deflagration with nitrate of potaſs; or by the action of water; or by ſolution in an acid, the acid being ſubſequently abſtracted by an alkali, or by ſome ſubſtance for which it has a greater affinity than it has for the oxyd of the metal. When oxygen is united with a metallic baſe, or the combination denominated oxydation takes place, in whatever mode it is effected, and oxyds of metals are thus obtained, they are found to loſe their luſtre, tenacity, inflammability, and other metallic properties, and they are changed into earth-like ſubſtances, the weight of which is greater than that of the portion of metal that has been employed. The activity of the oxyds of metals on the animal ſyſtem depends, with a few exceptions, on the quantity of oxygen with which they are combined. Metals, in conſequence of oxydation, become capable of uniting with acids, and forming ſoluble ſalts. The "metallic ſalts," therefore, are oxyds combined with acids, whether the oxyd, previouſly prepared, be diſſolved in an acid, or the ſalt be the product of the direct ſolution of a metal in an acid. In the latter caſe, the metal firſt gains oxygen, either from a part of the acid itſelf, or from the water, or the air, which it decompoſes; and the oxyd, thus formed, is then diſſolved by the remainder of the acid. "The properties of the metallic ſalts are much varied by the previous degree of oxydizement of the metals; and this is a point, the fixing of which in pharmaceutical operations is of the firſt practical importance; for if in all the indefinite degrees of oxydizement the metallic oxyds combine with acids; the reſulting ſalts muſt vary in as many ſhades as exiſt between the maximum and minimum of oxydizement. In the preparation of the metallic ſalts, therefore, the ſame ſtrict attention is requiſite in following one eſtabliſhed and approved proceſs."—"Many of the metallic ſalts are altered by expoſure to the atmoſphere; ſome effloreſce and attract oxygen; ſome are altered in their properties by moiſture; and others are reduced by the action of light; hence, all of them ought to be kept in well-ſtopped glaſs bottles; and perhaps theſe always ſhould be either made of green glaſs, or otherwiſe rendered opaque. In compoſitions which require theſe ſalts to be diſſolved in water, *diſtilled* or *filtered rain-water* ſhould always be employed; and much attention is requiſite to avoid combining them with incompatible ſubſtances, which may either chemically decompoſe them, or alter their medicinal properties." (Todd's London Diſpenſatory, 8vo. 1811.) For the principal metallic preparations uſed in medicine, ſee the ſeveral metals, *viz.* ANTIMONY, ARSENIC, &c. and alſo the names of theſe preparations as they occur in the order of the alphabet. But for a fuller account of them, with the inſtructions for combining them given in the London, Edinburgh, and Dublin diſpenſatories, we refer to the comprehenſive and uſeful publication already cited. Part iii.

METAL, *Prince's.* See COPPER, GOLD-*coloured Metal*, and TOMBAC.

This metal derives its name from prince Rupert, whom ſome ſuppoſed to have been the inventor of it, in 1680. But the greateſt perfection this metal was ever brought to, was by two Frenchmen, M. La Croix, and M. Le Blanc. Their methods of making the compoſition, though both beautiful, were very different. M. Le Blanc's was the brighteſt, and of the moſt elegant and lively colour; but M. La Croix's was greatly ſuperior to that in ductility and ſoftneſs, ſo that it was very eaſily malleable.

M. La Croix invented a ſort of varniſh or lacquer for his metal, which added a ſomewhat deeper tinge to it, as it was naturally rather too pale; and had this farther advantage, that while it remained on the metal, it preſerved it from ruſt or decay. This is a very material point in regard to a metal of which copper is the baſis, ſince that is, of all metals, moſt ſubject to be injured by the air, or by the contact of liquids of almoſt any kind. M. Le Blanc's metal is of a deeper, yet equally lively colour, and remarkably bright; and is of ſuch a temper as to be admirably fitted for working. The whole hiſtory of theſe metals is, certainly, that they are compoſed of zinc and copper in different proportions the one to the other; but it is not eaſy, without the help of numerous experiments, to determine what is to be the true proportion for either.

The microſcope, however, ſhews a manifeſt difference, which may lead ſomewhat towards it; for the metal of La Croix is ſeen to be compoſed merely of a number of irregular ſtriæ, while the other is diſcovered to conſiſt of always two regular beds of them, which meet in the centre of the piece; hence it is that this is always brittle, and will not well poliſh. The fabric of theſe metals was long kept a ſecret; but it was always to be diſcovered by melting it in a crucible in a ſtrong fire, when it always ſent up plain flowers of zinc, and the remaining metal appeared no other than copper altered by calamine; that is, common braſs. Mem. Acad. Par. 1732.

METAL, *Bell*, is a compoſition of copper and tin melted together. See COPPER.

METALS, *Blueing of.* See BLUEING *of Iron.*

METALS, *Painting on.* See PAINTING.

METALS, *Ruſt of.* See RUST.

METALS, *Line of.* On Gunter's ſector are ſometimes two lines thus called, and noted with the characters of the ſeven metals, ☉, ☽, ☿, ♄, ♀, ♂, and ♃; their uſe is, to give the proportions between the ſeveral metals as to their magnitudes and weights. See SECTOR.

METALS, *Tincture of.* See TINCTURE.

METAL, *Over*, in *Gunnery.* When the mouth of a piece of ordnance, in diſparting it, lies higher than the breech, it is then ſaid to be "laid over metal."

METAL, *Under*, is when the mouth of a piece of ordnance lies lower than the breech.

METAL, *Right with.* When a piece of ordnance lies truly level, point-blank, or right with the breech, it is ſaid to lie "right with its metal."

METALS, *Superficies of*, denotes the ſurface or outſide of a gun.

METAL, in *Heraldry.* There are two metals uſed in heraldry, by way of colours, *viz.* gold and ſilver; in blazon called *or* and *argent.* See COLOUR.

In the common painting of arms, theſe metals are repreſented by white and yellow, which are the natural colours of thoſe metals.

In engraving, gold is expreſſed by dotting the coat, &c. all over; and ſilver by leaving it quite blank.

It is a general rule in heraldry, never to place metal upon metal, nor colour on colour; ſo that if the field be of one of the metals, the bearing muſt be of ſome colour, and *vice verſâ;* otherwiſe the arms are falſe: though this rule admits of ſome exceptions.

METALEPSIS, in *Rhetoric*, is a figure in which two or more tropes, and thoſe of a different kind, are contained under one word; ſo that ſeveral gradations, or intervening ſenſes, come between the word that is expreſſed, and the thing deſigned by it. Thus, when Sylla ſays of Julius Cæſar, *In one Cæſar there are many Mariuſes.* Suet. in Vit. c. 1. This is a metalepſis. So when Virgil deſcribing that part of the African coaſt, where Æneas arrived with his ſhips, ſays, *A dark wood hung over it*, Æn. lib. i. ver. 665; and in the words of Dido, Æn. lib. iv. ver. 664, the ſame figure is uſed. Thus, the Roman phraſe of "Fuit," or "Vixit," expreſſes that a perſon was dead. "Fuit Ilium et ingens gloria Dardanidum" ſignifies, by metalepſis, that the glory of Troy is now no more.

METALLIC, or METALLINE, an adjective applied to any thing that bears a relation to metals.

METALLIC *Germination*, *Mines*, *Vegetation*, and *Vitriols.* See the reſpective ſubſtantives.

METALLIC *Solutions*, in *Agriculture*, ſuch fluids as contain ſome ſort of metal ſuſpended in them in the ſtate of ſolution or diffuſion. Theſe ſorts of liquids were formerly ſuppoſed to have a highly noxious or poiſonous effect when applied to plants as manures and taken up as food; but ſome late experiments made by Dr. George Pearſon ſeem to lead to a different concluſion.

This is further confirmed by the remarks of profeſſor Barton of America, who, in a letter to the doctor, ſtates his having been ſeveral years engaged in an extenſive ſeries of experiments relative to the effects of various ſtimulant ſubſtances, ſuch as camphor, &c. upon vegetables, as well as on the abſorption of certain powerful mineral ſubſtances into the organical ſyſtem of vegetables. "In numerous inſtances, he has ſubjected the ſtems and leaves of plants, young and old, large and ſmall, to the influence of the ſulphats of iron and copper, and has found that both of theſe metallic ſalts are very greedily abſorbed by vegetables, inſomuch that he has detected the preſence of iron in the veſſels of a branch of a mulberry, at the height of five or ſix feet above the place of immerſion in a ſolution of the ſulphat of this metal."

He intends to communicate a full account of his experiments to the public in two memoirs. But ſuggeſts, in the mean while, that the ſulphat of iron applied to vegetables in the manner he has mentioned, "is only a poiſon like almoſt every thing elſe, from the over doſe," as mentioned by the doctor. "In ſeveral of his experiments, the branches of vegetables that were placed in veſſels containing ſolutions of the ſulphat of iron and copper, lived longer and exhibited more ſigns of vigour than ſimilar branches that were placed in equal quantities of ſimple water. It is true, that in many other experiments theſe metallic ſalts proved fatal to his plants, but this was when he employed too large a doſe. In like manner he has found ſeveral years ago that camphor, by greatly ſtimulating, often kills vegetables; and yet when properly doſed this is a very wholeſome ſtimulant to plants; he had alſo found that large doſes of nitre (which is unqueſtionably a powerful ſtimulant both with reſpect to animals and vegetables) produce an appearance like genuine gangrene in the leaves of vegetables; and yet it is certain that nitre, when it is judiciouſly doſed, may be made to greatly aſſiſt the healthy vegetation of plants.

METALLOID, in *Chemiſtry*, a name given to thoſe metals which have been obtained from the fixed alkalies, and ſome of the earths. Theſe bodies are ſo completely metallic, that they may, with the utmoſt propriety, be claſſed with the other metals, and ſuch a diſtinction will therefore be unneceſſary.

The metalloid ſaid to be obtained from ammonia appears to have been given up by chemiſts. It was ſaid to be produced by applying a globule of mercury at the negative end of a Galvanic battery, in contact with an ammoniacal ſalt. The mercury became of four or five times its original volume, and in the form of a ſoft ſolid. When this ſubſtance is expoſed to the air, or thrown into water, the mercury aſſumes its original volume, and ammonia and hydrogen are exhaled. Theſe appearances led Mr. (ſir H.) Davy to conceive that the ammonia, like the other alkalies, contained a metallic baſe; and that during the Galvanic energy, this metallic baſe had been ſeparated, and had alloyed itſelf with the mercury. From the great increaſe of volume, without a perceptible increaſe of weight, the ſpecific gravity of this ſuppoſed baſe was deemed inconceivably ſmall. Mr. Davy was more warranted in drawing this concluſion from ſome experiments, in which it appeared that ammonia contained oxygen. This fact, however, has been diſproved by the experiments of Dr. Henry, and by thoſe of Berthollet, jun. namely, that ammonia contains oxygen. The light amalgam produced in electrifying an ammoniacal ſalt with mercury, has been examined by Gay Luſſac and Thenard, in their work entitled "Recherches Phyſico-Chimiques," tom. i. p. 52. The chemiſts conſider the amalgam merely a compound of mercury, with hydrogen and ammonia. The phenomena which attend this proceſs are in favour of ſuch an opinion. Oxygen is given out in abundance at the poſitive wire, while a very little gas is obſerved at the negative wire, except when the mercury is removed. The writer of this article, ſeven years ago, diſcovered that when a wire coated with mercury is on the negative ſide in pure water, a much leſs quantity of hydrogen is evolved than what might be expected from the quantity of oxygen at the other wire; and if the battery be not of tolerable ſtrength, no hydrogen at all appears.

In the decompoſition of the amalgam, they found that the ammonia was to the hydrogen as 28 to 23.

On the ground that mercury has the property of combining with hydrogen, and from the great levity of the baſes of potaſh and ſoda, Mr. Murray is of opinion that theſe ſubſtances are compounds of hydrogen with ſome metallic baſe, with which we are not as yet acquainted. In addition to this, he obſerves, that in the decompoſition of potaſh and ſoda, no hydrogen is given out at the negative wire, although water is preſent; he therefore concludes that the hydrogen muſt combine with the metal. It muſt be remembered, however, that during the decompoſition of any metallic oxyd by Galvaniſm, no hydrogen is given out, although water is preſent.

The metalloid obtained from barytes has not been noticed under that article, becauſe theſe diſcoveries have all been made ſince that part of this work was publiſhed.

Soon after the diſcovery of potaſſium and ſodium, Mr. Davy ſubjected barytes to the ſame decompoſing power. He firſt expoſed the moiſtened earth in contact with mercury to the Galvanic battery. He found that the mercury loſt much of its fluidity by being alloyed with a metal. This amalgam, on being expoſed to the air, became covered with a cruſt of barytes. When the ſame was thrown into water, hydrogen gas was evolved, and barytes formed. This proved the preſence of a metallic ſubſtance, capable of decompoſing water, which was the baſe of barytes. Mr. Davy next mixed the moiſtened earth with one-third its weight of red oxyd of mercury, and placed them upon a plate of platina in a ſmall cavity, where was lodged a globule of mercury. Theſe materials being covered with a thin film of naphtha, the plate was connected with the poſitive ſide of the battery, the mercury with the negative, the two metals being ſeparated by the earth and the red oxyd of mercury. By the influence of a powerful battery an amalgam was ſoon formed. This amalgam was then introduced into a bent glaſs tube, and the mercury diſtilled off. Although the heat was raiſed to redneſs, it was ſtill rather uncertain whether the baſe was perfectly pure.

Mr. Davy has given the name of barium to this metallic ſubſtance. It is a white metal of the colour of ſilver, different from potaſſium. It is ſolid at the common temperature, but becomes liquid at a heat a little ſhort of redneſs. It is not volatile at a red heat. When expoſed to the air it ſoon abſorbs oxygen, becomes tarniſhed, and ultimately falls down in the ſtate of white powder, having returned to its original ſtate by the abſorption of oxygen. When this metal is thrown into water, the latter is decompoſed with great rapidity, hydrogen is evolved, and barytes formed. The ſpecific gravity of this metal is greater than that of potaſſium or ſodium, ſince it ſinks in water, and even in ſulphuric acid.

Mr. Davy thinks its ſpecific gravity four or five times that of water. Barium appears to be a malleable metal, ſince it is capable of being flattened at the common temperature.

The proportion of oxygen with which it combines has not been aſcertained. If barytes be the firſt oxyd of barium, and the weight of atom of barytes be 68, the proportion will be $\frac{68}{7} = \frac{100}{10.3}$, or 10 *per cent.* of oxygen, nearly.

For the reſt of the metalloids, ſee the reſpective earths and alkalies.

METALLORUM *Crocus*, *Mater*, and *Sulphur*. See the reſpective articles.

METALLURGY, in a general ſenſe, ſignifies the art of working metals under all circumſtances. In its more limited meaning, it is confined to the art of ſeparating metals from their ores. Since, however, theſe proceſſes are given at full length under the heads of the metals reſpectively, it will be unneceſſary to ſay more under this article. See Assaying and Smelting.

METAMORPHISTS, in *Eccleſiaſtical Hiſtory*, a ſect of heretics in the ſixteenth century, whoſe diſtinguiſhing tenet was, that the body of Jeſus Chriſt was, upon his aſcenſion into heaven, changed and metamorphoſed into God.

METAMORPHOSIS, Μεταμορφωσις, formed of μετα, *change*, or removal from one place or ſtate to another, and μορφη, *form*, or *figure*, *transformation*, the change of a perſon or thing into another form.

The ancients held two kinds of metamorphoſes; the one real, the other apparent. The metamorphoſis of Jupiter into a bull, and of Minerva into an old woman, were only apparent. That of Lycaon into a wolf, and of Arachne into a ſpider, and the like, they ſay, were of the real kind.

Moſt of the ancient metamorphoſes include ſome allegorical meaning, relating either to phyſics or morality. Ovid's Metamorphoſes is a collection of hiſtories of ſuch transformations, poetically related. Some authors are of opinion that a great part of the ancient philoſophy is couched under them; and Dr. Hooke has made an attempt to unriddle and lay open the hidden meanings of ſeveral of them.

METAPARA, in *Geography*, a town of the iſland of Borneo; 70 miles S.E. of Nagara.

METAPEDIUM, in *Natural Hiſtory*, a name given by ſome authors to a kind of ſtone, called by others *metatarſum*, and ſuppoſed to imitate a human foot. It is only a luſus naturæ in the formation of a common pebble.

METAPHOR, Metaphora, μεταφορα, *tranſlation*, or *diſplacing*, of μετα, *trans*, and φερω, *I bear*, or *carry*, in *Rhetoric*, a figure of ſpeech, or a ſpecies of trope, whereby a word is transferred from its proper ſignification to another, different from it, by reaſon of ſome ſimilitude between them; or whereby the proper denomination of one thing is applied to another; which other thing is more elegantly explained by this tralatitious or foreign name, than by that which naturally belongs to it. As, when we ſay, the light of the underſtanding; to burn with zeal; to float between hope and deſpair, &c.

The metaphor is the moſt common of all the figures of ſpeech; and is that uſually meant, when we ſay a thing is ſpoken figuratively.

The metaphor is a ſhort ſimile; or, as Cicero calls it, a ſimilitude reduced to a ſingle word; an image being thereby called from its proper ſubject to give the reſemblance of another. An allegory is no more than a continued metaphor.

Quintilian ſays, that a metaphor is a ſhort ſimilitude, and differs from it only in this, that the former is compared to the thing we deſign to expreſs, and the latter is put for it. It is a ſimilitude, when I ſay of a man, he has acted like a lion; and a metaphor, when I ſay, he is a lion. But though metaphors are uſually taken from a ſimilitude between two things; yet ſometimes they are founded in the ſimilitude which two things bear to each other, in ſome particular reſpect, by means of which what properly belongs to one of them is transferred to the other: the former of which are called *ſimple* metaphors, and the latter *analogous*. Hence the rudder of a ſhip may be called its reins; for what the reins are to a horſe, that the rudder is to a ſhip, in guiding and directing it. Again, ſome metaphors are reciprocal in which the ſimilitude holds either way. Thus to ſteer and govern are uſed reciprocally, both of a ſhip and a ſtate; the proper expreſſions being to ſteer a ſhip, and govern a ſtate, and the contrary metaphorical. From this account, therefore, of the nature of a metaphor, it may be defined, the application of a word, by way of ſimilitude, to ſome other thing than what it properly ſignifies.

Quintilian diſtinguiſhes metaphors into four kinds: the firſt, when a word is transferred from one animal to another; as when Livy ſays, that Cato uſed to *bark* at Scipio; or when our Saviour calls Herod *fox*. To this claſs belong thoſe forms of expreſſion that occur in the ſacred writings, by which the properties and affections of men are aſcribed to the deity; as when God is ſaid to hear, ſee, be angry, and repent, &c. The ſecond, when the word is transferred from one inanimate to another; as *bridle* for *laws*; *floods* of fire, and *clouds* of ſmoke, denoting large quantities. The third, when inanimates are applied to animates; as the *flower* of youth. Thus, alſo, Homer calls Ajax the *bulwark* of the Greeks, and Cicero brands ill men with the character of being the *peſt* of the ſtate. And the laſt, when animates are applied to inanimates; as the river *diſdained* its bounds. Thus Cicero ſpeaking of Clodius ſays, the very altars, when they *ſaw* that monſter fall, ſeemed to *move* themſelves, and *aſſert* their right againſt him. Virgil, ſpeaking of the impetuous force and rapidity of the river Araxes, ſays, it *diſdained* a bridge. And it is a very uſual epithet, which Homer gives to words, to call them πτεροεντα, or *winged*, to intimate the ſwiftneſs of ſpeech. And metaphors of this kind, which give life and action to inanimate things, are eſteemed the fineſt and ſtrongeſt.

As the metaphor is intended to ſet things before the eyes, it becomes ſo much the more perfect, as it ſhews them the more vividly, by repreſenting them in motion and action. Cicero, ſpeaking of a metaphor, calls it the moſt florid manner of expreſſion, and brighteſt ornament of language, that conſiſts in ſingle words. A metaphor ſhould have nothing in it either coarſe or ſhocking, or that may raiſe it above the ſimplicity of nature, ſo as to be forced and harſh; nor ſhould it appear a metaphor to any, but thoſe who view it very cloſely. A metaphor ſhould never be carried too far; for, in that caſe, it degenerates into puerility. Metaphors ſhould always be followed in the ſame kind; they become unnatural, when different images are introduced. In all metaphorical dictions, there ſhould be a kind of ſuitableneſs to each other; different ideas are always abſurd; as in this inſtance, the church was beſieged with a deluge of troubles, where the two images, *ſiege* and *deluge*, have no relation.

The beauty of a metaphor is very ſtrikingly exhibited in the following paſſages, extracted from lord Bolingbroke's Remarks on the Hiſtory of England. Speaking of the behaviour of Charles I. to his laſt parliament, he ſays, "About a month after their meeting, he diſſolved them; and as ſoon as he had diſſolved them, he repented; but he repented too late of his raſhneſs. Well might he repent; for the veſſel was now full, and this laſt drop made the waters of bitterneſs flow."—"Here," he adds, "we draw the curtain, and put an end to our remarks." Nothing, as Dr. Blair obſerves, could be more happily thrown off. The metaphor, we ſee, is continued through ſeveral expreſſions. The *veſſel* is put for the ſtate or temper of the nation, already *full*, that is, provoked to the higheſt by former oppreſſions and wrongs;

this *laſt drop* ſtands for the provocation recently received by the abrupt diſſolution of the parliament; and the *overflowing of the waters of bitterneſs*, beautifully expreſſes all the effects of reſentment let looſe by an exaſperated people.

There is nothing young writers are more faulty in, than the indiſcreet uſe of metaphors: thoſe who affect the marvellous, are eternally on the metaphorical ſtrain; nor know any bounds or reſtraint. They, who underſtand them beſt, uſe them with the greateſt reſerve. Mr. Addiſon propoſes it as a rule for writers, to imagine their metaphors actually painted before them, and to view and examine the juſtneſs of their application and aſſemblage under thoſe circumſtances; throwing every thing out of the writing, but what might be retained in the picture. Card. Perron preſcribes this general rule for metaphors, that they muſt always deſcend from the genus to the ſpecies; and never go backwards from the ſpecies to the genus: thus, we ſay figuratively, the *bonds of ſociety*, and not the *human cords*, which tie us together; *bond* being a genus, and *cord* a ſpecies.

We ſhall cloſe this article with a brief recital of the rules laid down by Dr. Blair as proper to be obſerved in the conduct of metaphors, which will alſo apply to tropes of every kind. Metaphors ſhould be ſuited to the nature of the ſubject of which we treat. They ſhould be neither too many, nor too gay, nor too elevated for it. The exceſſive or unſeaſonable employment of metaphors is mere foppery in writing; it gives a boyiſh air to compoſition, and, inſtead of raiſing a ſubject, in fact, diminiſhes its dignity, which ſhould ariſe from ſentiment and thought, not from ornament. This obſervation, as we have already ſuggeſted, demands the particular notice of young writers. A ſecond rule reſpects the choice of objects, from which metaphors, and alſo other figures, are to be drawn. Accordingly, we ſhould ſtudiouſly beware of even uſing ſuch alluſions as raiſe in the mind diſagreeable, mean, vulgar, or dirty ideas. Some approved authors have been incautiouſly betrayed into this error. Again, care ſhould be taken that the reſemblance, which is the foundation of the metaphor, be clear and perſpicuous, not far-fetched, nor difficult of diſcovery. The tranſgreſſion of this rule produces harſh or forced metaphors, which are always diſpleaſing, becauſe they puzzle the reader, and, inſtead of illuſtrating the thought, render it perplexed and intricate. Cowley is often chargeable with this fault. Farther, it muſt be carefully attended to, in the conduct of metaphors, never to jumble metaphorical and plain language together; never to conſtruct a period ſo that part of it muſt be underſtood metaphorically, part literally, which always produces a moſt diſagreeable confuſion. Moreover, two different metaphors ſhould never be made to meet on one object. This is what is called mixed metaphor, and is one of the groſſeſt abuſes of this figure; ſuch is Shakſpeare's expreſſion, "to take arms againſt a ſea of troubles." This makes a moſt unnatural medley, and confounds the imagination entirely. If we have occaſion to doubt whether metaphors be or be not of the mixed kind, we ſhould try to form a picture upon them, and conſider how the parts would agree, and what ſort of figure the whole would preſent, when delineated with a pencil. As metaphors ought never to be mixed, we ſhould alſo avoid crowding them together on the ſame object. Finally, metaphors ſhould not be too far purſued. This is called ſtraining a metaphor, and drawing it out into an allegory; by which we ſhall tire the reader, and render our own diſcourſe obſcure. Cowley, lord Shaftſbury, and Dr. Young, tranſgreſs in this way. Blair's Lectures, vol. i.

METAPHRAST, Metaphrastes, a tranſlator, or perſon who renders an author in another form, or another language, word for word.

A metaphraſe, μεταφρασις, uſually ſignifies ſomething more than either a paraphraſe, or a tranſlation: according to Baillet, a metaphraſt implies a tranſlator, gloſſator, and interpolator, all at once.

METAPHYSICS, Metaphysica, *Tranſnaturalis*, a branch of ſcience, about the nature and idea of which there is ſome difference among authors.

The word is formed from the prepoſition μετα, *trans*, *beyond* or *above*; and φυσις, *nature*, or φυσικη, *natural*.

Some define metaphyſics, that part of ſcience which conſiders ſpirits and immaterial beings; which others chooſe to diſtinguiſh by the name of *pneumatics*, or *pneumatology*.

Others, keeping cloſe to the etymology of the word, explain metaphyſics by *trans-natural*, or *præter-natural*, or even *poſt-natural philoſophy*: becauſe it is ſubſequent in contemplation to the phyſical, though prior to it in the real order of beings.

Others, with more propriety, conceive metaphyſics to be what ſome others call *ontology*, or *ontoſophy*, *i. e.* the doctrine *de ente*, or of being, *quatenus* being.

In the ſame view, ſome philoſophers call this ſcience by the name *philoſophia*, or *ſcientia generalis*, as being the foundation, or, as it were, the ſtamen or root from whence all the other parts of philoſophy ariſe, and wherein they all meet; its object being *being* in the abſtract, or general, not reſtrained to this or that ſpecies of beings; not to ſpirit any more than body; ſo that the doctrines of metaphyſics are applicable to all beings whatever.

Philoſophers, again, are divided as to the notion of a ſcience *de ente* in general. Some hold it real, preciſe, and ſolid enough to be demonſtrated; but others judge it too obſcure, faint, and confuſed, to be admitted into philoſophy.

Being, abſtracted from every ſort of ſpecies of being, is certainly a very vague term, and does not ſeem to give ſcope enough for a ſcience: we do not ſee how it can affect the mind as an object. Add, that the common metaphyſics cannot demonſtrate any part of its ſubject, but aſſume the whole: there are no principles or axioms, whereon to demonſtrate metaphyſics which contain the principles of all other ſciences.

The firſt who wrote profeſſedly on the ſubject of metaphyſics is Ariſtotle. Indeed, he is the firſt who uſes the word: Μεταφυσικα is the title of one of his books; but this ſome of his commentators will have to ſignify no more than *after the book of phyſics*. M. du Hamel, taking the prepoſition μετα in the ſenſe of *poſt*, is even of opinion, that the word was coined by Ariſtotle's followers: and that it was unknown to Ariſtotle himſelf.

Ariſtotle's metaphyſics ſeem to have been intended for a kind of natural theology. The metaphyſics of Ariſtotle have been lately illuſtrated by the ingenious Mr. Harris, in his treatiſe, intitled "Philoſophical Arrangements," 8vo. 1775.

Metaphyſics, ſays this ingenious author, are properly converſant about primary and internal cauſes; and the ſtudy of them is metaphyſical, becauſe, though prior in itſelf, it is ſubſequent in man's contemplation, whoſe road of ſcience is naturally upward, that is, from effect to cauſe, from ſenſible to intelligible.

Accordingly metaphyſics have been, not improperly, defined "the ſcience of the principles and cauſes of all things exiſting." Ariſtotle calls this ſcience "the firſt philoſophy," as it is not only ſuperior, but prior in the order of nature, to the whole circle of the other arts and ſciences. What is firſt in nature, however, is not firſt to man. Nature begins with cauſes which produce effects; whereas man aſcends from effects

effects to cauſes. Hence, as "Phyſics" was the name given by Ariſtotle to the philoſophy of body, ſome of his interpreters called that of mind "Metaphyſics," thus intimating not only that its ſubject is more ſublime and difficult, but that the ſtudy of it would be more properly and ſucceſsfully undertaken "after that of phyſics." The followers of Ariſtotle were led to adopt this appellation by their maſter himſelf, who to the books in which he pretends to elevate the mind above things corporeal to the contemplation of God and things ſpiritual, prefixed the Greek words μετα τα φυσικα. However ſignificant the name, in reference to the ſubjects which this ſcience recommends, it has, from miſapplication and abuſe, as well as from the decline and extinction of the Peripatetic philoſophy, ſunk into diſrepute: and although Malebranche and Mr. Locke have written much more clearly and conſiſtently of metaphyſics than any of the ancients; yet more modern writers have comprehended theſe ſubjects, which were formerly referred to metaphyſics, under the appellation of Philosophy *of the Human Mind.* Under this article we propoſe to give a general account of it, and to mention the particular ſubjects which it includes.

METAPHYSICAL, ſomething belonging to metaphyſics.

The word is alſo uſed to denote ſomething ſubtile, abſtract, and refined. In which ſenſe we ſay, ſuch a reaſoning, ſuch a proof is too metaphyſical, &c.

A metaphyſical caſe is an imaginary or chimerical caſe, which can ſcarcely ever happen, or not without much difficulty; and which ought not to be laid down as a rule for common occaſions.

Metaphysical *Certitude*, *Diſtinction*, *Evidence*, *Form*, *Perfection*, *Univerſality*. See the reſpective ſubſtantives.

Metaphysical *Sect*, in the *Hiſtory of Learning*, is one of the two great ſects into which the philoſophical world was divided about the beginning of the 17th century. This ſect followed the ſyſtem of Des Cartes, and conſidered truth as attainable by abſtract reaſoning; and from a ſmall number of abſtract truths, deduced a long ſeries of propoſitions, in order to arrive at a preciſe and accurate knowledge of God and nature, of body and ſpirit. The metaphyſical philoſophers, ſuppoſing that many things are known by man with the utmoſt certainty, diſcovered an undue propenſity to form their opinions and doctrines into a regular ſyſtem. The other ſect was the *Mathematical.* (See Cartesians.) A branch of the Eleatic ſect was denominated *Metaphyſical*, by way of contradiſtinction to the *Phyſical.* See Eleatic *Sect.*

METAPLASM, Metaplasmus, compounded of μετα, and πλασσω, *fingo*, in *Grammar*, a tranſmutation, or change, made in the word, by adding, retrenching, or altering a letter or ſyllable of it.

METAPLEXIS, in *Botany*, ſo called by Mr. R. Brown, from μετα, *together*, or *between*, and πλεκω, *to plait*, or *connect*, alluding to the alternation of ſmall leaves with the membranous-tipped anthers, compoſing a ſort of wreath in the centre of the flower. Brown in Wern. Tranſ. v. 1. 48.—Claſs and order, *Pentandria Digynia.* Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Eſſ. Ch. Corolla ſomewhat wheel-ſhaped. Crown of the ſtamens of five dwarf-hooded leaves, alternate with the membranous-tipped anthers. Maſſes of pollen tumid, pendulous, attached laterally. Stigma with an elongated undivided beak. Follicles . . .

A twining ſmooth *ſhrub*, found by ſir George Staunton, bart., in the province of Peckeley, in China. The *leaves* are heart-ſhaped. *Cluſters* on ſtalks, inſerted between the footſtalks. *Limb* of the corolla bearded. No ſpecific name is mentioned

METAPTOSIS, a word uſed by many phyſical writers to expreſs a change of one diſtemper into another, whether it be by *diadoche*, or *diadexis*, as it is called; when the change is for the better, and the morbid matter removes from a more noble to an ignoble part: or by *metaſtaſis*, when the change is for the worſe, and the morbid matter removes from an ignoble to a more noble part.

METASTASIO, l'Abate Pietro, in *Biography*, the beſt lyric poet and writer of operas, or dramas, for muſic in Italy, during the laſt century, or perhaps during any age, or in any country. This exquiſite poet, ſecond ſon of Felice Trapaſſi of Aſſiſi, and Franceſca Galaſti of Bologna, was born at Rome, January 6th, 1698, in the pariſh of Santi Lorenzo and Damaſo, where he was baptized the 19th of the ſame month, by cardinal Ottoboni. His father, though deſcended from a family in Aſſiſi, which had long enjoyed the privileges of free citizens, but which, by a gradual decline, was reduced to poverty, not being able to ſubſiſt in the place of his birth, liſted for a ſoldier in the regiment of Corſi, and ſoon after married Franceſca Galaſti, by whom he had many children beſides the poet.

While he was in garriſon, to the ſmall pay of a ſoldier he added ſomething towards the maintenance of his family, by becoming an amanuenſis. And at length, having ſerved the uſual time, and by extreme induſtry and economy ſaved a little money, he entered into partnerſhip with a ſhop-keeper at Rome, for the ſale of goods which belong to what the Romans call *l'arte bianca*, conſiſting of oil, flour, paſtry, and other culinary materials.

And having been ſomewhat proſperous in this kind of merchandiſe, he placed his two eldeſt ſons, Leopoldo and Pietro, at a grammar-ſchool. The latter diſcovered an extraordinary quickneſs and diſpoſition for literature, and a violent paſſion for poetry, with a power of making verſes, extempore, on any given ſubject, before he was ten years old.

This faculty he was habituated to exerciſe, after ſchool hours, at his father's ſhop, where great crowds uſed to aſſemble in the ſtreet of an evening to hear the young Trapaſſi ſing *all' improviſta;* who, beſides the harmony of his numbers, was gifted with the melody of a fine voice. During one of theſe tuneful fits, the learned civilian Gravina, having accidentally paſſed that way, was ſtruck with the ſweetneſs of the child's voice, and ſtill more with his verſes, which he ſoon found were extempore, and either upon perſons who ſtood near him, or on playful ſubjects of their ſuggeſting.

Gravina was ſo aſtoniſhed and pleaſed at the precocity of the little bard's talents, that he ſtopt to careſs and converſe with him, offering him money for his performance, which, however, the child modeſtly declined to accept. This ſo much increaſed the civilian's admiration, that he inſtantly conceived a wiſh to adopt him, for the pleaſure of cultivating a ſoil which nature had rendered ſo fertile, that even the ſpontaneous flowers and fruits it produced were of a ſuperior kind. Without heſitation he therefore applied to his parents, ſoliciting them to transfer to him the care of their ſon's education promiſing to become not only his preceptor, but father.

As the child was ſtill to remain at Rome, and no cruel preliminary was mentioned, by which his natural parents were prohibited from ſeeing him, and cheriſhing reciprocal affection, Felix was too wiſe, and zealous for the welfare of his ſon, to refuſe the proffered patronage; and the next morning, Pietro was conducted by his father and mother to the houſe of Gravina, and wholly conſigned to his care and protection.

Our young bard was now, from the legitimate child of a ſhop-keeper, become the adopted ſon of a man of letters. And as his learned patron was partial to Greek literature, and wiſhed to implant in the mind of the young Roman a reſpect and reverence for ancient lore, he tranſlated his name into Greek; calling him Metaſtaſio, inſtead of Trapaſſi; as Μεταϛασις, Mutatio, ſeemed at once to expreſs his former name of Trapaſſi, and his new ſituation as an adopted child.

And having changed his name, he undertook the more difficult taſk of changing, or at leaſt enlarging, his mental faculties; and at the ſame time that he was ſtudying the learned languages, and imbuing his mind with the ſciences, he wiſhed to make him an orator rather than a poet, and determined that he ſhould ſtudy the law as a profeſſion; that and divinity being the only two roads by which a man of learning could arrive at honours and dignity in Rome. Poets, indeed, were rewarded with barren praiſe and acclamation, but wealth and affluence were ſtrangers to their doors.

Yet while he was obliged to read the dry books of the law, and was ſeemingly occupied by other ſtudies, he found time, by ſtealth, to read the great models of the art of poetry, for which his inſtinctive paſſion increaſed from the difficulty of gratifying it. At the name of Homer and Arioſto, his favourite poets, he was unable to contain himſelf; and Gravina diſcovering, in ſpite of his pupil's determination to conform implicitly to his will, that this excluſive paſſion for poetry was inſuperable, at length permitted him to read thoſe poets which he himſelf thought not only the beſt, but the only models of perfection. At the age of fourteen, during the early period of this indulgence, Metaſtaſio produced his tragedy of "Giuſtino," conformable to the rigour of all the rules of the ancient Greek dramatic writers, with which his learned preceptor had ſupplied him.

We have his own opinion of this production, in a letter written to ſignor Calſabigi, in which he ſays: "I ſhould have wiſhed that none of my early productions, which favour too much of adoleſcence, might have appeared in the Paris edition, particularly the tragedy of Giuſtino, written at fourteen years of age: when the authority of my illuſtrious maſter did not ſuffer me to move a ſtep from the moſt religious imitation of the Greeks; and when my inexperience and want of diſcernment were unable to diſtinguiſh gold from lead, even in thoſe mines themſelves, of which he then began to diſplay to me the treaſures."

After producing this tragedy on the favourite model of his patron and preceptor, the learned civilian ſeems not only to have tolerated, but encouraged his pupil's adoration of the muſes; and at eighteen carried him to Naples, expreſsly to afford him an opportunity of ſinging extempore with the moſt celebrated improviſatori of Italy at that time. Metaſtaſio, in a letter to Algarotti, written in 1757, gives the following account of this poetical contention: "It is your wiſh to have ſpecimens of the verſes which I made extempore, during my childhood; but how can I poſſibly gratify this wiſh? I do not deny but that a natural talent for harmony and the muſes was diſcovered in me, that was thought ſomewhat uncommon, and more early than uſual, that is, at ten or eleven years old; that this phenomenon ſo dazzled my great maſter Gravina, that he was partial to it, and cheriſhed me as a ſoil worthy of his cultivation: and that, ſo late as the year 1716, he exhibited me to ſpeak verſes, God knows how, for the benefit of Georgio Lorentino, upon all kinds of ſubjects; at which time I had for competitors the illuſtrious Rolli, Vagnini, and the cavalier Perfetti, men who were then arrived at full maturity, and veterans in Pindaric battles."

At twenty years of age he had the misfortune to loſe his learned preceptor and patron, Gravina, who died in 1718, aged fifty-four. It has been doubted whether this event, which his heart inclined him to regard as the greateſt calamity, was not a fortunate circumſtance for his fame. Metaſtaſio, whoſe writings evince him to have been all tenderneſs, gratitude, and diſintereſted ſenſibility, bewailed this misfortune with the deepeſt affliction; and in the elegy, called "La Strada della Gloria," written on this occaſion, and read at a full aſſembly of the members of the arcadian academy founded by Gravina, he gave a public teſtimony of his ſorrow and gratitude, expreſſive of thoſe noble ſentiments, which he cheriſhed and practiſed to the end of his life. Nor did the beneficent will of his maſter diminiſh his grief or dry his tears, though, when opened, it was found to have been made in 1717, and that he had appointed him his heir.

By this liberal act, he verified his promiſe to the parents of Metaſtaſio, of treating him as his own child. The advantage to his talents and to the lovers of poetry, which is ſuppoſed to have been derived from this early loſs of his learned tutor, was the opportunity it afforded his genius to free itſelf from the trammels of Grecian rules and ſervile imitation. But though in his dramas he has more pathos, poetry, nature, and facility, than we are now able to find in the ancient Greek tragedians, yet his early ſtudy of them certainly elevated his ideas and ſtyle, and taught him how to ſhun the vulgarity and abſurdities with which the early popular dramatiſts of moſt countries abound. He may be ſaid to write with claſſic elegance, though he had liberated himſelf from claſſic chains.

Gravina's bequeſt to Metaſtaſio conſiſted of 15,000 Roman crowns, between 3 and 4000 pounds ſterling in money, an excellent library, and a great quantity of rich furniture, with three ſmall places of which he had put him in poſſeſſion before his deceaſe, and a little eſtate in the kingdom of Naples.

But our young poet, now become a free agent, and a deſpotic prince over no contemptible fortune, among all his acquirements had not the leaſt idea of prudence and economy. His converſation and verſes had too much excellence to want admirers; and his table was too well ſerved to want gueſts. He now wholly quitted the dry ſtudy of the law, and entirely devoted himſelf and his fortune to the muſes and his friends. There was no poetical aſſembly in which he did not read ſome new production; as our Garrick, in the early part of his life, was found wherever lovers of theatrical amuſements were aſſembled. Stimulated by the applauſe which every piece univerſally received, Metaſtaſio thought of nothing but how to have it renewed by another compoſition. The love of praiſe is an infirmity to which the beſt minds are perhaps the moſt ſubject. During this intoxication, not a thought ſeems to have been beſtowed on his preſent finances or future fortune. If he reflected at all during theſe times of diſſipation, it was on the number of his friends and admirers, and the certainty of patronage whenever he ſhould want it. What his predeceſſor Petrarca has ſaid of the temple of love, was ſtill more applicable to that of fortune by Metaſtaſio.

"Errori, ſogni, ed immagini ſmorte
Eran d'intorno all' arco trionfale,

E falſe opinioni in ſu le porte,
E lubrico ſperar ſu per le ſcale."

> " Errors and dreams and thoughts half form'd abound,
> And crowd the baſeleſs fabric all around;
> While at the threſhold falſe opinions ſtand,
> And on the ſteps, vain hope, with magic wand."

His patron's legacy was ſoon diſſipated, not in the ſupport of vice, but munificence and good cheer; ſo that at the end of two years, finding himſelf wholly reduced to his two ſmall Roman places, his Neapolitan poſſeſſions, and his library, he went to Naples with the firm reſolution of ſeriouſly reſuming the ſtudy of the law. Being arrived in that city, 1720, he placed himſelf under the guidance of an advocate of the name of Paglietti, earneſtly entreating his aſſiſtance in the ſtudy of juriſprudence, and promiſing, on his own part, to ſecond the inſtructions which he ſhould receive with all poſſible diligence and docility. Paglietti was one of the moſt eminent lawyers, at that time, in the city of Naples; but ſo rigorous a diſciplinarian, and ſo totally devoted to his profeſſion, that he not only deſpiſed but abſolutely hated every ſpecies of ornamental knowledge or literature. Poetry was therefore ranked by him among the moſt deadly ſins of which an advocate could poſſibly be guilty.

It is natural, therefore, to ſuppoſe that Paglietti, devoid of all taſte for the arts of elegance, which help to humanize and poliſh our ſavage nature, was rough, ſour, and forbidding in his addreſs and manners: he was all law, and of that ſevere and mercileſs ſort, which knows not how to pardon the ſmalleſt imprudence or deviation from worldly wiſdom.

Metaſtaſio was not ignorant of his ſeverity and invincible hatred for poetry; but inſtead of looking upon it as an evil, he was the more eager to place himſelf under his moſt rigid diſcipline, in order to prevent a relapſe into poetry, which had hitherto been to him ſo unprofitable a ſtudy. The reception of Metaſtaſio by this Lycurgus, and his firſt lecture, were perhaps rendered more auſtere and acrid by the fame of his poetical talents, with which not only Naples but all Italy was already filled; but Metaſtaſio, hearing it with heroic patience, renewed his promiſe of unwearied application, and kept it ſo well during his firſt reſidence under the advocate's roof, that he began to entertain great hopes of his becoming an excellent lawyer, and treated him with as much ſweetneſs as his bitter nature would allow. He knew that the ſtudies of his young diſciple were frequently impeded by the viſits of perſons of learning and diſtinction, to whom his poetical abilities were well known, and who remembered him when he was brought to Naples, as an *improviſatore*, by Gravina. But now their expectations were transferred to his legal abilities, upon which, from his learning and application, they had formed the higheſt hopes. It is certain that Metaſtaſio, at this time, exerciſing the greateſt tyranny over his natural inclination, refrained entirely, not only from writing verſes, but from ſpeaking them extempore, in ſpite of all ſolicitation. The firſt breach of contract with the rugged advocate, and firſt ſeduction of the muſe during his reſidence at Naples, was in the beginning of 1721, at the inſtigation of the counteſs of Althan, who prevailed on him to write an Epithalamium for the nuptials of her relation, the marquis Pignatelli, with a lady of the Pinelli family: it conſiſts of near one hundred octave ſtanzas, is full of elegance, and in the higheſt claſs of poetry. The drama of " Endymion," the firſt that he produced expreſsly for muſic, is ſaid to have been written on the ſame occaſion.

Metaſtaſio's next infringement of the laws laid down by the advocate Paglietti againſt the wicked practice of poetry, was occaſioned by an application from the viceroy of Naples himſelf, that he would write a drama for muſic, to be performed on the birth-day of the empreſs Elizabeth, conſort of the emperor Charles VI., who was then in poſſeſſion of that kingdom. It is ſaid that he was with difficulty prevailed upon to enter on this taſk, and only complied upon a promiſe that it ſhould be kept a profound ſecret. Our bard, in perpetual fear of the inexorable lawyer, was obliged to ſacrifice his hours of ſleep to this contraband commerce with the muſes. The piece was entitled " The Gardens of the Heſperides," and is one of the moſt beautiful of his early productions.

The next drama that was written at the expence of his legal ſtudies, or his moments of reſt and recreation, was " Angelica." This was printed at Naples in 1722, and ſet to muſic by Porpora for the empreſs's birth-day. It has been ſaid in ſome accounts of Metaſtaſio's early productions, that Farinelli's firſt public performance was in this ſerenata.

The poems which he produced at Naples were the admiration of all perſons poſſeſſed of a love and taſte for poetry, particularly " The Gardens of the Heſperides;" but none felt its beauties ſo forcibly as the Bulgarella detta Romanina, the greateſt female ſinger and actreſs of her time; who, having performed the part of Venus in that occaſional drama, was ſo enchanted with the uncommon beauty of the poetry, that ſhe could not reſt till ſhe had been introduced to the acquaintance of the author. Indeed, tradition ſays, that this drama had an effect upon the audience in general, which Naples had never before experienced. The recitative was hardly begun, when the ſpectators formed a more curious ſpectacle than the actors themſelves: ſo great was the change in their behaviour and mode of liſtening that was inſtantly produced. Violent noiſe and unbridled clamour uſed to reign in every part of that theatre, and could never be ſubdued but with great difficulty, even when ſome capital ſinger had a favourite air to perform; and it was no ſooner over than the din was renewed with ſuch vehemence, that even the orcheſtra could not be heard. But now, every one delighted by the new and decorous arrangement of the ſcenes, original beauty and ſweetneſs of the verſe, the force of the ſentiments, the texture of the parts, and all the wonders of Metaſtaſio's dramatic poetry, was foreed, almoſt inſenſibly, into profound ſilence and attention.

Univerſal curioſity was excited, and inquiries made, after the author, who, though a poet and fond of praiſe, is ſaid to have wiſhed to lie concealed. But the Bulgarini, who was not only pleaſed in common with the lovers of poetry, but impreſſed with the moſt lively gratitude to the author of the " Heſperides," for the flattering reception and unbounded applauſe which this piece had procured her, both as an actreſs and ſinger, was impatient to be perſonally acquainted with him. And having diſcovered that ſhe knew one of his intimate friends, ſhe prevailed upon him to try to bring the poet to her houſe. He at firſt reſiſted the ſolicitation; but at length, ceaſing to be inexorable, he was induced to make her a viſit. The Romanina (as ſhe was generally called from being a native of that city) had no ſooner ſeen him, than ſhe felt an uncommon regard for him. His poetical abilities, elegance of manners, and fine countenance, together with the circumſtance of his being her countryman, or rather townſman, all joined to increaſe her regard; while Metaſtaſio on his part felt equally unable, with all the ſtoiciſm he could muſter, to reſiſt the deſire of improving the acquaintance; and frequently returned to enjoy the pleaſure of her converſation.

He had ſoon reaſon to believe, from the countenance and behaviour of Paglietti, that neither his theatrical production, nor the new ſtage acquaintance which he had made, was unknown to him. The praiſes he received from the Romanina, and all thoſe to whom the ſecret had been divulged, and their preſſing inſtances that he would continue to write, awakened his paſſion for poetry, which he had flattered himſelf was wholly ſubdued. He now began to feel, that by the narrow and contracted ſtudy of the law, his genius could never expand in his own original ideas, but would be conſtantly tied down to thoſe of others. His reflections upon the ſordidneſs of ſacrificing his whole life to a diſtaſteful buſineſs, for the mere hope of acquiring wealth, (as he afterwards confeſſed to his confidential friends,) joined to the harſh treatment of the old advocate, which became more intolerable in proportion as the aſſiduity of Metaſtaſio diminiſhed, entirely determined him to quit both him and his profeſſion.

His female friend perceived the conflict and internal war; and in order to ſtimulate his courage and reſolution, ſhe and her huſband invited him in the moſt preſſing manner to reſide under the ſame roof, and aſſured him that they would contribute every thing in their power to render his life as eaſy and comfortable as poſſible. He remained ſeveral months in a ſtate of uncertainty; but at length determined to accept their offer, to return to poetry, and to enjoy the pleaſures of ſociety in full liberty. Yet he did not ſeem inſenſible of the apparent indecorum and want of fortitude which he manifeſted in quitting, with ſuch ſeeming levity, the purſuit of ſtudies which had been recommended to him by his deceaſed patron. Nor was he quite at his eaſe on the ſide of delicacy, as to appearances; the obligations to the Bulgarini, under which he was loading himſelf, frequently oppreſſed his mind. And yet ſo limited is our power of penetrating into future events, that the meaſures which he now purſued, far from impeding either his fame or fortune, were the foundations of all his ſubſequent celebrity. An Italian poet has well deſcribed the ſhortneſs of mental viſion.

"Sebben ſembra talor che torvo e iniquo
Il volto verſo noi volga la ſorte;
Ella ſeguendo ſuo coſtume antiquo
A inaſpettata gioja apre le porte:
E aſconde ſpeſſo ſotto calle obbliquo
Della felicità le vie più corte:
Onde non ſappia in mezzo ai torti, e ai guai
L'uom che temer, nè che ſperar giammai."

"Blind to the future, while he ſojourns here,
Man knows not what to hope or what to fear;
Amidſt misfortune, ſorrow, and diſmay,
Fate oft, in frowns, points out the ſhorteſt way
To fortune, fame, and unexpected joy,
By means which prudence trembles to employ."

The Bulgarini was engaged to ſing in the theatre of Naples, during the carnival of 1724; and being very ambitious of appearing to as much advantage in the next opera as ſhe had done in that for the birth-day of the empreſs, ſhe preſſed the poet to write a drama, in which, as firſt woman, ſuch a character might fall to her ſhare, as would give her an opportunity of diſplaying all her powers, both as an actreſs and ſinger. It is eaſy to imagine with what zeal the Abate went to work, in order to gratify her wiſh. After many heroines had paſſed in review, Dido was at length choſen, and the drama, entitled "Didone Abbandonata," produced; in which he choſe the period of the hero, Æneas, quitting the Carthaginian queen: as it furniſhed ſcenes of the greateſt force and paſſion, as well as more expreſſion for his pen, and more abundant opportunities for the diſplay of the Romanina's abilities, than any other. This was the firſt perfect muſical drama, perhaps, that ever graced the Italian ſtage. The applauſe it obtained was equal to that of the "Orti Eſperidi;" and though the ſtory was ſo well known, that no effects could be produced by ſurpriſe, yet the pleaſure of the audience was exceſſive. It was ſet by Sarro, and the part of Æneas was performed by Nicolini.

From the great and ſudden celebrity of "Didone," which, immediately after its firſt appearance at Naples, was ſet by the beſt compoſers of the time for the other principal theatres of Italy; the Venetian miniſter at Rome, where it had been performed to Sarro's muſic, was inſtigated to apply to Metaſtaſio to write the opera of "Siroe," which he ſent to Venice, where it met with a ſucceſs equal to that of Dido, to the great emolument of the author, who was magnificently rewarded for the ſuperior excellence of his poetry. This drama was ſet by Vinci at Venice, and performed and printed in 1726.

It appears from the original *libretti*, or printed books of the words, that the Romanina not only performed the principal female part in Metaſtaſio's four firſt dramas at Naples, but in "Didone" and "Siroe," with Nicolini, at Venice, in which city they were firſt repreſented in 1725 and 1726; and, according to Quadrio, (Storia d'ogni Poeſia,) Metaſtaſio himſelf was at Venice during theſe performances. It was during this period that he altered the old opera of "Siface," for the ſame performers, at the requeſt of Porpora.

In the carnival of 1726, while the dramas of Metaſtaſio received ſuch unbounded applauſe at Venice, "Didone," as ſet by Vinci, was received at Rome with acclamation. The famous ex-jeſuit Cordara, who was there at that time, in his eloge of Metaſtaſio, recited at Alexandria in 1782, deſcribes its reception in the following manner:

"Every ſcene produced one continued applauſe. But who can deſcribe the rapture of the pit, when the queen of Carthage, diſdainfully riſing from the throne, repreſſes the inſolent pretenſions of the king of Mauritania, with the dignity of an independent princeſs, by the ſpirited air, "Son Regina," &c.? The noiſe ſeemed to ſhake the theatre to its foundation. I was not there myſelf, as my habit did not allow me to be preſent at ſuch ſpectacles; but I almoſt heard the rumour in my cell, ſo full was all Rome with the fame of this production."

In 1727, the Romanina having fulfilled all her theatrical engagements at Naples and elſewhere, prepared to return to Rome, yet declared at the ſame time, that ſhe would never ſee her native city again, unleſs in the company of her dear friend. He remained for a while irreſolute; but, at length, the warm affection he retained for the place of his nativity, in ſpite of the neglect and diſappointment which had driven him thence, heightened perhaps by his regard for the Bulgarini, and fortified by the deſire of ſeeing his father, and the reſt of his family, determined him to quit Naples, in company with his benefactreſs; but not before he had obtained a promiſe from her, that, in return for the hoſpitality which he had received under her roof at Naples, ſhe and her family ſhould become his gueſts at Rome. To this propoſition all parties having acceded, he wrote to his agents, to provide a houſe ſufficient for the two families of Trapaſſi and Bulgarini. And from the time of his arrival in that city, till his departure for Germany, they all lived under the ſame roof, and conſtituted one family. The Romanina, as more rich and accuſtomed to the management of a family, was inveſted with the ſuperintendance of all houſhold concerns: the reſt had nothing to do, but to attend their own purſuits;

while Metaſtaſio received viſits, wrote verſes, improved his circumſtances, and increaſed his celebrity.

The firſt drama which he produced, expreſsly for Rome, was "Catone in Utica," which was ſet by Vinci, and performed in that city, 1728; and in 1729, at Venice, to the muſic of Leo. He choſe the ſubject purpoſely to pleaſe the Romans, ſuppoſing that he ſhould gain both applauſe and gratitude, by diſplaying the virtue of one of their own heroes. But as it ſeldom happens that a prophet or a poet (which in ancient times were united in the ſame perſon) receives due honour in his own country, particularly at Rome, which is proverbially called the reſidence of ſtrangers; in ſpite of the excellence of this drama, which abounds with ſublime, as well as tender ſentiments and delineations, of the paſſions of glory, ambition, anger, and love; and in which the conduct was natural, and cataſtrophe hiſtorical; it was inſtantly attacked by the ſatirical genius of the Romans, and the performance ſuſpended. The frivolous ſcenes, and feeble poetry to which they had been long accuſtomed, had corrupted the taſte of the Roman public in general; and, except a few learned men, leſs invidious than the reſt, who, if they knew of no modern Cato, had read, at leaſt, ſomething about the ancient, this piece was at firſt very coldly received; though afterwards, when their minds and taſtes were enlightened and refined by other original and beautiful works of our author, this drama was treated with more juſtice.

The next opera which our author produced was "Ezio," ſet by Porpora, in 1728, and "Semiramide Riconoſciuta," ſet by the ſame compoſer, 1729; but though both theſe dramas were received in the moſt favourable manner, and the praiſes beſtowed upon the poet were unbounded, his fortune was not greatly improved by their ſucceſs. Poetry has more frequently enriched the bookſeller than the author, in every country; but at Rome, it is a drug of leſs value, even to the bookſeller, than elſewhere; and Metaſtaſio's muſe, however chaſte, was but little better treated for not being meretricious. If Metaſtaſio had been a mere pſalmodiſt, or hymnologiſt, his monkiſh rhymes might have obtained him ſome eccleſiaſtical preferment; but the poetry which he produced on pagan and ſecular ſubjects precluded him from every avenue to the church. He was, however, far from neceſſitous; and with the aſſiſtance of the Romanina, whoſe purſe was always at his ſervice, his fortune and ſituation were tolerably eaſy. But the being ſometimes obliged to avail himſelf of the liberality of his generous friend, was a circumſtance which humbled and mortified him beyond any other. He could not bear to reflect on being a burthen to her, for whom chiefly he wiſhed to be rich, not only to exempt her from the expences which ſhe incurred on his account, but to manifeſt his gratitude for the benefits ſhe had already conferred on him.

His amiable friend tried every means in her power to ſet his mind at eaſe, concerning his obligations to her: aſſuring him that he had contributed much more to her profeſſional fame than it had been in her power to do to his fortune; that ſhe was in ſuch circumſtances as rendered the ſmall friendly offices, which ſhe had been able to perform, more a pleaſure than an inconvenience; and preſſed him, in the moſt urgent manner, to tranquillize his mind on that account, and to believe (which ſhe aſſured him was the truth) that he was doing her the greateſt favour, when he afforded her an opportunity of dividing with him her poſſeſſions.

The afflicted poet drew ſome comfort from theſe declarations, but it was of ſhort duration. He was perpetually convinced of the ingratitude of his pretended Roman friends, and the duplicity of his protectors; and having nouriſhed in his ſoul an ardent paſſion for general eſteem, reſpect, and admiration, his narrow circumſtances threw him into ſo profound a fit of melancholy, that he became incapable of receiving conſolation.

Such was his ſtate of deſpondency in 1729, when, to his great aſtoniſhment, he received a letter from prince Pio of Savoy, inſpector of the imperial theatre at Vienna, inviting him to engage in the ſervice of the emperor Charles VI., as the ſucceſſor of Apoſtolo Zeno, who, from the year 1718, had filled the place of imperial laureate, whoſe chief employment had been to furniſh dramas for muſic; and theſe had been juſtly thought the beſt which the Italian language could boaſt.

Metaſtaſio was infinitely more ſurpriſed and flattered by this unſolicited and ſplendid offer, from finding that he had been recommended to the emperor's notice by the learned Zeno himſelf, who, growing in years, wiſhed to retire to Venice, the place of his nativity, and had been applied to by his imperial majeſty to recommend a ſucceſſor.

And yet the offer of this employment to Metaſtaſio, however dazzling, was not long productive of joy without deduction. The quitting Rome, for which he had always a filial fondneſs, as well as leaving his family, friends, and, perhaps more than all, the Romanina, impreſſed his mind with a ſorrowful allay to his happineſs.

Upon conſulting with his family, they inſtantly conceived ſuch magnificent hopes of his future aggrandizement, as contributed much to their conſolation at loſing him; and the Romanina was ſo generous and diſintereſted, in ſpite of ſecret affliction, as to uſe her utmoſt eloquence in removing his doubts, and diminiſhing the cauſes of his repugnance, at quitting Rome and his friends.

After many conſultations and diſcuſſions of the ſeveral arguments for and againſt the acceptance of the propoſition from Vienna, the anſwer which he ſent, and which has been printed among his letters, contains ſo many characteriſtic traits of modeſty, propriety, and delicacy, that it deſerves to be preſerved as a model of conduct under ſimilar circumſtances.

The reſult of meditation, and the advice of his family and friends, was to accept the appointment, and to throw himſelf at the feet of his imperial maſter as ſoon as he could arrange his affairs, and fulfil his engagements to furniſh the Roman theatre with two new operas for the enſuing carnival.

His appointment at Vienna was ſettled at three thouſand florins *per annum,* and fifty pounds ſterling for the expences of his journey. After completing his two new dramas for Rome, which were "Artaſerſe" and "Aleſſandro nell' Indie," and which were both ſet by Leonardo Vinci, and performed before the poet's departure, he left his native city with a heavy heart, and a moſt ſovereign contempt for the friendſhip and flattering promiſes of the great, by whoſe deluſions he had ſo long entertained hopes of preferment in his native city; whence, at laſt, he was driven into a kind of ſplendid baniſhment, for the reſt of his life. Theſe early diſappointments, from being extremely credulous, rendered him incurably ſceptical, as to all future preſages of good fortune; and the effects of hoping too much in early life, and too little after, produced, perhaps, the principal defects in his character.

Upon quitting Rome, Metaſtaſio conſigned into the hands of his zealous and affectionate friend, the Romanina, all his effects, intereſts, and concerns; together with the management of his family affairs: ſhe moſt willingly ſubmitting to theſe ſeveral taſks, as well as to the care of the produce of the little places, and ſums of money, which he left behind him.

Of his reception at Vienna, where he arrived in July, 1730, by prince Pio and his imperial patron, there is among his letters an account written by himſelf to a friend at Rome, the day after he had been preſented. It was to the higheſt degree flattering. And the emperor, who was of a grave, religious, and moral character, ſeems to have honoured him not only with his favour but affection, on finding in him principles congenial with his own.

In his correſpondence with the Romanina, we have an account of his occupations at Vienna, during the firſt three years of his reſidence there; and the reception of his operas of “Adriano in Siria,” “Demetrio,” “Iſſipile,” and his oratorio of “Sant' Elena al Calvario.”

In 1734 he loſt the friend of his head and heart, the Romanina, who died at Rome, and manifeſted the ſincerity of her attachment to the poet, by bequeathing to him all her poſſeſſions, after the deceaſe of her huſband, to the amount of twenty-five thouſand crowns. But Metaſtaſio, always conſiſtent with his uſual rectitude and propriety, totally declined accepting of her intended kindneſs, and transferred the whole bequeſt to her huſband, whoſe real property, according to our Engliſh ideas of juriſprudence, it ſeems legally to have been. The teſtamentary laws of Italy may be different from thoſe of our country. Some Italian writers ſay, that the Romanina left Metaſtaſio *erede di tutto il ſuo patrimonio:* “heir to all her patrimony.” If by patrimony was meant an eſtate poſſeſſed by inheritance, and independently ſettled upon her at the time of her marriage, her teſtamentary diſpoſitions are reconcileable to Engliſh ideas of law in ſuch caſes; though preferring the friend to the huſband deviates ſomewhat from the general cuſtom of our country. That the bequeſt was legal has never been doubted by Metaſtaſio's biographers, who all ſpeak of his renunciation in the higheſt terms of panegyric, as uncommonly diſintereſted, generous, and heroic. And the poet himſelf, as well as all Italy, regarded it as a noble ſacrifice.

Whether Metaſtaſio's connection with the Romanina was purely platonic, or of a leſs ſeraphic nature, we ſhall not attempt to determine. But the huſband reſiding with them both at Naples and Rome, and the friendly manner in which the poet always mentioned him in his letters to the wife, and the openneſs with which he expreſſed his affliction in writing to him after her death, would, in England, be thought indications favourable to conjugal felicity. But a chaſte actreſs or opera ſinger is ſtill a more rare phenomenon in Italy than in Great Britain.

Yet though it is not thought abſolutely neceſſary for the female ſingers of Italy to be veſtals while ſingle, or Lucretias when married, they find it convenient to have a nominal huſband, who will fight their battles, contend with the firſt man, and impreſario of an opera; and, occaſionally, ſtand in the gap, as circumſtances may require.

But whether the poet's friendſhip for Bulgarini, the huſband, was pure and undiſſembled or not, his affliction for the death of his wife ſeems to have been unfeignedly deep and ſincere. The following pathetic letter, written immediately after he had received the news of her deceaſe, and of her teſtament in his favour, ſeems a faithful delineation of the ſtate of his mind at this time, and to correſpond with that goodneſs of heart, as well as thoſe tender feelings and lofty ideas of rectitude, which appear in all his other writings, and which have ennobled the general tenor of his life.

“To ſignor Domenico Bulgarini.

“Oppreſſed by the afflicting news of the death of our poor Marianna, I know not how to begin this letter. The tidings are intolerable to me on ſo many accounts, that I can deviſe no means to diminiſh the acuteneſs of my ſufferings; and, therefore, I truſt you will not accuſe me of want of feeling, if I am unable to ſuggeſt to you any conſolation for your loſs, as I have hitherto been utterly unequal to finding any for myſelf.

“The laſt diſpoſition of the poor deceaſed in my favour aggravates the cauſe of my ſorrow, and obliges me to give a public and inconteſtable proof of the diſintereſtedneſs of that friendſhip, which I profeſſed to her while living, and which I ſhall preſerve for her honoured memory to the laſt moment of my exiſtence. Knowing, therefore, how much affection, kindneſs, and zeal, for the welfare of the poor Marianna, you have always manifeſted, I ſhall beſt ſhew my gratitude to her, by entirely renouncing, in your favour, all claim to her effects; not through pride, God preſerve me from ſuch ingratitude! but becauſe it appears to be my duty, as an honeſt man and a Chriſtian. The advantage which I ſhall ſtill derive from this inheritance, even after renouncing it, will not be inconſiderable: as the knowing what was intended for me by the generous teſtatrix will be a laſting proof of her friendſhip; and the relinquiſhing it in your favour will be a proof of my diſintereſtedneſs with reſpect to her, and of my equity towards yourſelf. I am at preſent, thank God, in no need of ſuch aſſiſtance, as I am rewarded beyond my merit; ſo that I ſhall not ſuffer by the ſacrifice I make to you. Though I entangle you with no conditions in the renunciation which I encloſe, yet I have ſome requeſts to make, and counſels to ſuggeſt to you.

“My firſt requeſt is, that the relinquiſhing this claim may in no wiſe diſſolve our friendſhip; but that, according to the wiſh of the poor Marianna, our correſpondence may continue as entire as if ſhe were ſtill living; ſubſtituting you at all times, and in all places, for her repreſentative.

“My ſecond requeſt is, that you will undertake the trouble of receiving the ſalaries of my three offices in Rome, and the tranſacting of my Neapolitan concerns, exactly in the ſame manner as was done by our incomparable Marianna; for which purpoſe, I ſend you proper powers. I write likewiſe to ſignor Tenerelli, at Naples, who will treat you in the ſame manner as ſignora Marianna herſelf; remitting to you, from time to time, whatever ſums may be due to me from that quarter, continuing to my poor family the uſual aſſignments and proviſion, if you ſhall chuſe it, jointly with my brother.

“The advice which ſeems neceſſary for me to give you is, that you would aſſiſt the poor family of ſignor Franceſco Lombardi, by every means in your power; and try by acts of charity to do every thing for them, which, in a ſimilar ſituation, you would expect from them to you. I have ſpecified in my renunciation ſome particulars in which you ſhould aſſiſt them; but beſides my unwillingneſs to involve you in trouble and difficulty, I am ſo certain of the goodneſs of your heart, that I have left all the merit of your benevolence towards them to the liberality of your own determination.

“In all things elſe, you are at full liberty to act as occaſion, and your own prudence, ſhall ſuggeſt.

“At preſent, my mind is in too great perturbation for me to attempt giving you a plan for the regulation of your conduct. I ſhall only ſay, that it appears to me, as if you ſhould diſpoſe of all the effects you can ſpare, in order to raiſe a capital, and that you ſhould live in a ſmaller houſe.

"I can think of no other teſtimony to offer you, at preſent, of my friendſhip and confidence. Be equally open in your correſpondence, and conſider my intereſts as your own, and me as your brother. I am unable now to write a longer letter: when my mind is more tranquil, I ſhall communicate to you ſuch thoughts as may occur.

"In the mean time, love me, and endeavour to be comforted yourſelf. Be aſſured, if it were in my power, that I would try to contribute that to your conſolation, which I am unable to receive myſelf."

In a letter to his brother Leopold, apologizing to him for the renunciation of the Romanina's intended kindneſs, he ſays, "I ought not to abuſe the partiality of my poor deceaſed friend, at her huſband's expence; and God, I truſt, will permit me to proſper by ſome other means, for my integrity."

To a friend at Rome, on the ſubject of his affliction, he ſays, "I am now placed in the world as in a populous deſert, and in that kind of deſolation in which a man, if he were tranſported in his ſleep to China or Tartary, would find himſelf in waking, among people of whoſe language, inclinations, and manners, he was quite ignorant."

If platonic affection can ſubſiſt in human nature, we may ſuppoſe it poſſible, perhaps, to have been realized between the poet and ſuch a female friend as the Romanina; who, by what we can gather from Metaſtaſio's letters, ſeems to have poſſeſſed a ſtrong mind and great rectitude of heart.

The ſolemn manner in which ſo pious and moral a man as Metaſtaſio ſays in his letter to a Roman friend, "In the midſt of my gloomy imaginations, reaſon enough is left to tell me who, and what I am; but that is not ſufficient to free me from affliction. May God, in whoſe hands are all events, turn this affliction to my benefit, and teach me by ſuch a manifeſtation, what a vain hope it is to form ſyſtems of happineſs, without his aſſiſtance." The late Mr. Maſon, on reading this paſſage, regarded it as a proof that there had been nothing criminal between them.—"Such a man as Metaſtaſio, writing to a friend, would have expreſſed in this place ſome compunction, at leaſt he would not have invoked the Deity in ſuch a ſolemn manner."

We have dwelt the longer on this incident in the poet's life, which places him, like Alcides, between virtue and vice, in hopes that a character, ſo exemplary during every other period of his exiſtence, may, for the honour of humanity, deſcend ſpotleſs to poſterity. In all other reſpects, his private virtues merit equal praiſe with his poetry, which has ſo long delighted the moſt poliſhed and refined inhabitants of Europe.

Among the anecdotes, indeed, that were publiſhed after his deceaſe, concerning the private life of our admirable bard, ſome peculiarities have been related, which ſeem too ſerious for ridicule, and from which we ſhould be ſorry, for his honour, and for the honour of human nature, not to be able to defend him. What a diſgrace to practical virtue and benevolence would it be, to find a writer, whoſe works breathe the pureſt principles of virtue and morality, and whoſe life, during his long reſidence at Vienna, was unimpeachably innocent, and conſtant in the exerciſe of religious duties, to want, not only filial and fraternal affection, but even thoſe common and laudable partialities for his kindred and countrymen, to which the moſt vulgar minds are naturally prone! It has been ſaid with a degree of levity, perhaps more to enliven a period than from conviction, or a wiſh to degrade the poet's moral character, that "he refuſed to hear, and took pains not to know, whether he had, in his latter days, any relation left in the world." But in his correſpondence, publiſhed by his executor ſignor Giuſeppe Martinetz, aulic counſellor, and firſt keeper of the imperial library, there are letters to his father and brother, ſo full of filial and fraternal affection, as completely confute ſuch haſty and unjuſt charges.

The year 1733 ſeems to have been extremely fertile in the Parnaſſian domains of our bard. Not only the operas of "l'Olympiade" and "Demofoonte," with the oratorio of "Giuſeppe Riconoſciuto," but his charming canzonet, "La Libertà," were all productions of this year. This celebrated canzonet, "Grazie agl' inganni tuoi," was firſt ſet by the poet himſelf, but ſoon after by all the great compoſers of Italy, as a Venetian ballad, a canzonet, a duo, and a cantata, to much more elaborate and fanciful muſic than that of the poet: yet his own melody, which has been compoſed more than ſeventy years, has ſtill its merit; and, compared with airs of the ſame period and kind, is ſuperior to moſt of them in elegant ſimplicity.

In 1734, beſides his uſual occupations, we find, by his letters, that he was obliged, in the greateſt haſte, to write an entertainment for muſic, to be performed by the archducheſſes, and to inſtruct, direct, and aſſiſt them. "But in truth," he ſays, "it is a pleaſure which no other can equal, to have ſuch an opportunity of ſeeing and admiring the excellent qualities of theſe auguſt princeſſes. I ſhould not elſe have believed it poſſible to meet with ſuch attention, docility, patience, and gratitude. Oh, how many people, of the ſixteenth rank, have I known, who were not poſſeſſed of the thouſandth part of the courteſy of theſe incomparable perſonages! They have acted and ſung like angels, and it was truly ſacrilege, that the whole world was not permitted to admire them; for the feſtival was extremely private, as none but the Vienna ladies of the higheſt rank were able to obtain admiſſion, and even theſe were in maſks. As a return for inſtructing their ſerene highneſſes, I was preſented with a gold ſnuff-box, of about fourſcore hungheri (near 40*l.*) in weight; but the workmanſhip is of much more value."

This little dramatic poem was called "Le Grazie Vendicate," ſet by Caldara, and performed by the two archducheſſes, Maria Tereſa, afterwards empreſs-queen, and her ſiſter Marianne, with another lady of the court.

In the year 1734 he produced, for the emperor's birthday, "La Clemenza di Tito."

It ſeems as if the character and court of Charles VI. had directed the muſe of Metaſtaſio to chuſe a virtuous prince for the principal hero of moſt of the muſical dramas that were repreſented in the imperial theatre. The emperor was a religious prince, and a rigid obſerver of decorum himſelf, which conſequently kept licentiouſneſs at a diſtance from his court. And the poet, naturally a friend to virtue and morality, ſeems to have gratified his own feelings, by conforming to the ſerious ſentiments of his imperial patron.

In 1735 he produced, by command of the empreſs Elizabeth, a little opera, with three characters only, entitled "Le Cineſi," for the ſame two archducheſſes and a lady of the court to perform, as an introduction to a Chineſe ballet.

The ſame year he furniſhed "Il Palladio conſervato," and "Il Sogno di Scipione," pieces written for the celebration of the emperor and empreſs's name-day. Theſe were a kind of birth-day odes, but in a dramatic form, in which the praiſe was delicately diſguiſed in a fable or allegory.

In 1736, his "Themiſtocles," ſet by Caldara, firſt appeared; but while this was performing, Metaſtaſio had another taſk aſſigned him, the difficulties of which he frequently related to his friends, many years after.

To Betinelli, the printer, he writes: "I ſend you a copy of the opera of ‘ Achille in Sciro,’ which I have been obliged to write in eighteen days and a half, for the nuptials of the archducheſs Tereſa with the duke of Lorrain. Three months, which I uſed to allow myſelf for writing an opera, were never ſufficient to finiſh it to my mind: imagine whether it was poſſible to ſatisfy myſelf with this.”

The admirable drama of “ Ciro Riconoſciuto” was a production of this period.

It ſeems as if 1737 had been a ſabbatical year for our author and his muſe; for none of his poetical works bear that date, nor do any of his letters of that period appear in the collection.

In 1738 and 1739 he produced ſeveral ſmall occaſional pieces, chiefly for the archducheſſes to perform; which, though elegantly written, have not been of that general uſe to the reſt of Europe, which fell to the lot of moſt of his operas on a larger ſcale, for want of length and more characters.

In 1740, however, his dramatic muſe was better employed, and more propitious: for, beſides the opera of “ Zenobia,” and the oratorio of “ Iſacco,” he wrote “ Il Natale di Giove,” and the opera of “ Attilio Regolo,” for the birth-day of the emperor Charles VI.; but that prince dying before it had been repreſented, it was laid aſide, and not performed till 1750, when it was ſet by Haſſe, for the court of Dreſden.

The poet laments the death of his patron with great ſenſibility, in a letter to a friend. Indeed it was a calamity to all Europe, by the general war which immediately enſued.

This prince found in Metaſtaſio a man who encouraged and confirmed his love of virtue, decorum, and propriety; and Metaſtaſio found in his patron a prince ſuſceptible of receiving his recommendations of the moral and ſocial, as well as the heroic virtues. Indeed the poet and the patron ſeem to have been formed for each other.

Between the death of this emperor, in 1740, and 1745, when prince Charles of Lorrain, conſort to the empreſs-queen, was elected emperor, by the title of Francis I., the court of Vienna had little leiſure for being amuſed by the peaceful arts of poetry and muſic. We find, among the poet's works, but two complete dramas written during all that time: “ Antigono,” and “ Ipermeſtra.” One of theſe, “ Antigono,” was written expreſsly for the court of Dreſden. Both were ſet by Haſſe, who ranked high in the favour of Metaſtaſio, as a great compoſer and intelligent man.

Our author's poetical productions in 1746 conſiſt only of his two beautiful canzonette, “ La Partenza,” and “ La Palinodia a Nice,” thirteen years after he had ſo piouſly and elegantly thanked the gods for diſcovering to him her infidelities, in his “ Grazie agl' inganni tuoi.”

His correſpondence with the celebrated Farinelli began in 1747, to whom 38 of his letters are addreſſed, in the ſixth volume of his correſpondence, which ſeem the moſt affectionate and confidential in the collection. The poet and muſician were nearly of the ſame age. And having begun their career of fame and fortune together at Naples, in 1723, they, from that circumſtance, ever after called each other *Gemello*, or Twin, in their correſpondence, which laſted to the end of their lives. Many of the poet's letters were addreſſed to the great ſinger at Madrid, where, during two ſucceſſive reigns, he enjoyed the higheſt favour. See FARINELLI.

The bleſſings of peace, after the ſeven years' war, revived at Vienna the innocent pleaſures of the lyric theatre; and in 1751 produced Metaſtaſio's beautiful opera of “ Il Re Paſtore,” which was followed, in 1752, by “ l'Eroe Cineſe.” Theſe were performed in the imperial theatre by perſons of the higheſt diſtinction, ſome of whom are ſaid greatly to have ſurpaſſed, in many particulars, profeſſed opera ſingers of the firſt rank.

In 1756, at the requeſt of his friend Farinelli, and with the permiſſion of his imperial patrons, he furniſhed the court of Spain with a new opera, entitled “ Nitteti,” which was brought on the ſtage there, with the utmoſt ſplendour and magnificence, under Farinelli's direction.

The laſt three operas written by Metaſtaſio, were “ Il Trionfo di Clelia,” in 1762; “ Remolo ed Erſilia,” 1765; and “ Il Ruggiero,” in 1771; which were performed at three ſeveral places: the firſt at Vienna, on the delivery of Iſabella of Bourbon, firſt conſort of the emperor Joſeph II.; the next at Innebruck, on the marriage of the grand duke of Tuſcany with Maria, Infanta of Spain; and the laſt at Milan, on the nuptials of the archduke Ferdinand with Beatrice, princeſs of Modena, which terminated the dramatic labours of our admirable lyric bard.

His other poetical compoſitions, which are very numerous, conſiſt of oratorios, occaſional ſhort lyric pieces, hymns, and ſacred ſongs, cantatas, epithalamia, ſonnets, canzoni, complimentary verſes, &c., all replete with elegance, refined ideas, and every beauty of numbers which the Italian language ſo copiouſly can furniſh, and melody requires.

Among his proſe writings, the extracts from Ariſtotle's Poetics, and the Ars Poetica of Horace, are the principal; and theſe will long remain indiſputable proofs of his learning, good taſte, and perfect comprehenſion of the laws preſcribed by theſe great maſters, which he explains with the utmoſt clearneſs and practical utility; giving ſenſe to many paſſages that were thought obſcure and unintelligible.

In all his productions, religion, government, ſound policy, morals, manners, and even innocent prejudices, are ſo highly reſpected, that the moſt extreme delicacy never finds the leaſt ſentiment that can offend or alarm. His doctrines and practice in theſe particulars ſo perfectly agreed, that he conſtantly diſcountenanced in converſation all tendency to licence, diſreſpect, and diſputation on moral and ſacred ſubjects, though naturally cheerful, and pleaſantly metaphorical, in his converſation. This being his invariable practice during his long reſidence at Vienna, excited as much eagerneſs in travellers of all ranks to ſee and converſe with him, as the renown which he had juſtly acquired by his writings.

He was honoured with teſtimonies of reſpect and admiration from almoſt all the ſovereigns in Europe, where the Italian language and muſic were known, which he received with the utmoſt humility and gratitude.

Such were the delicacy and conſtancy of his friendly attachments and intercourſe, that death could only diſſolve them. The princeſs di Belmonte Pignatelli, the counteſs d'Althan of the ſame illuſtrious family, who knew and patroniſed him in his early youth; count Canale, baron Hagen, and count Perlas, who ſpent all their evenings with him at Vienna during their ſeveral lives; Farinelli, his correſpondent of 50 years duration, count Algarotti, and his brother, the advocate, Leopoldo, to whom 48 of his letters are extant; all theſe affections were habitual and deeply rooted in his heart.

His whole life appears to have been of that even tenour, which nothing but great accidents or public calamities could diſturb. His veneration and gratitude for his patroneſs, the empreſs queen, ſeem, during the laſt years of his life, to have been the ſtrongeſt paſſions to which he gave admiſſion in his breaſt. When unfortunate in war, or on account of the ſickneſs or death of any of her family, he was as much agitated as any of her moſt faithful and beſt ſubjects. But when her own life was endangered by diſeaſe, his equanimity and philoſophy totally left him. Then yielding to the natural ſenſibility and tenderneſs of a heart, neither chilled by apathy, nor petrified by ſtoiciſm, he became a common man; not too ſtubborn for affliction, or too proud and obdurate for the impreſſions of calamity. The ſickneſs of his brother, and death of the counteſs d'Althan, are likewiſe illuſtrations of this occaſional ſenſibility.

His converſation was uſually ſcientific, turning on new diſcoveries, new books, pleaſing events, but rarely on calamity or unpleaſant topics. By this means he kept his paſſions and affections in equilibrio, obtained proſperity in youth, and veneration in old age.

Though his longevity had extended to 84, yet his faculties were ſo entire, his perſon ſo free from any appearance of decrepitude, ſtill poſſeſſing a florid countenance, and his accuſtomed eloquence, and playful language in converſation, that he was expected to have many years in ſtore; but on the 1ſt of April, 1782, returning from his conſtant evening viſit to count Perlas, he complained of a chillineſs, eat very little at ſupper, and went to bed at his uſual hour or 12 o'clock. "The next morning, (ſays mademoiſelle Martinetz in her letter to Farinelli, giving him an account of his friend's deceaſe,) he called for my elder brother, Giuſeppe, and conſulted him whether he had beſt riſe and go to church, as he had intended, it being Eaſter Sunday; but was adviſed by him to remain in bed, as his pulſe was very quick: an hour after the fever increaſed to ſuch a degree, that it deprived him of ſpeech, and he remained oppreſſed by a heavy lethargic ſleep, which continued during two days, with ſhort intervals, in which he was only able to take the medicines preſcribed by Dr. Molinari, his phyſician. The fever diminiſhed ſo much on the morning of the fifth day, that he became tranquil, ſpoke freely, converſed with ſome of his friends, who viſited him, and was able, after dinner, to have the ſacrament adminiſtered to him. You may imagine, ſir, what great conſolation this afforded us; but our hopes were of ſhort duration, for at night the fever returned with ſuch violence, that every day he became more lethargic, and baffled all the ſkill of the moſt able phyſicians, who met in conſultation; ſo that on the 12th of April, between 11 and 12 o'clock at night, he finally, without much agony, expired."

Metaſtaſio, lamented by all who knew or had heard of him at Vienna, was interred at the pariſh church of St. Michael, the 14th of April. The funeral rites were performed with ſplendour, by his grateful heir, ſignor Joſeph Martinetz, in deſpite of the poet's injunctions, who had forbidden all kind of pomp. The inheritance of ſignor Martinetz conſiſted in a well-furniſhed habitation, a coach, horſes, a great quantity of princely preſents, a very ample and ſelect collection of books, with a capital of 130,000 florins; from which, however, were to be deducted, 20,000 for each of the executor's ſiſters, and 3000 for each of his younger brothers.

The poet's attachment to the Martinetz family was of long ſtanding. In the year 1730, on his arrival at Vienna, the firſt houſe in which he took up his reſidence, was that of ſignor Nicolò Martinetz, maſter of the ceremonies to the apoſtolic nuncio in that city. The eldeſt ſon of this gentleman he appointed his heir, jointly with his eldeſt ſiſter, ſignora Marianna Martinetz, educated under his eye, and univerſally admired for her talents and accompliſhments, particularly in muſic, not only as an excellent performer on the harpſichord, and an exquiſite ſinger, but for her genius and abilities in compoſition, ſhe was an elève of the great Dr. Haydn, who reſided three years under the ſame roof with Metaſtaſio during her muſical ſtudies; and had leſſons in ſinging from the celebrated Porpora, who had many years before been the poet's own muſic maſter. The productions of mademoiſelle Martinetz were communicated to, and approved by the greateſt maſters of Italy, and her name is inſcribed as a member of the Philharmonic academy in Bologna and Mantua.

Signor Saverio Mattei, the moſt uſeful of Metaſtaſio's biographers, though he rather gives advice to others, with looſe and indigeſted materials, than a regular life of the poet, ſays, that "whoever wiſhes to acquire an exact knowledge of his cuſtoms, manners, way of life, opinions of himſelf and others; of his preciſion in fulfilling his duties, of the changes in his fortune, his application, and the different degrees of favour with which his ſeveral productions were at firſt received, their chronology, the influence they had on the taſte of Italy, and on that of all Europe, with reſpect to the melodrama, or lyric ſtage, can only acquire ſuch information by the peruſal of his Letters."

"His Letters (ſays the abate Criſtini, the moſt accurate and ample of all his biographers, and editor of the Nice edition of his works) will do honour to all Italy, while they diſcover his moſt intimate attachments, his moſt ſecret thoughts, his favourite opinions, and the hiſtory of a man who was all heart and all virtue."

"His genius (ſays ſignor Arteaga, Revol. del Theatro Muſ. Ital.) may be compared to the goddeſs Chloris of the Greeks, who, in flying through the air, ſcattered roſes wherever ſhe went." The ſame grace, facility, and elegance of ſtyle appear in his proſe, as have rendered his poetry ſo juſtly celebrated. Till we ſaw theſe Letters, we uſed to think that there was no Italian proſe ſo eaſy to comprehend and conſtrue, by young ſtudents in the language, as the dramas of Metaſtaſio; but we are now convinced, that, in point of facility, the proſe of our author is to his own poetry, what the proſe of others is to their verſe.

What renders theſe Letters infinitely more natural and ſatisfactory is, that, like the Epiſtolæ Familiares of Cicero, they were not written with the leaſt view to publication; as is manifeſt by the lively complaints which he makes to his correſpondents, who, for the gratification of their own vanity, had betrayed his confidence.

Few writers have been fortunate enough to enjoy the favour of the public ſo completely during their lives as Metaſtaſio. But this felicity is not to be more aſcribed, perhaps, to the excellence of his writings, than to his modeſty, candour, and determination neither to give nor take offence by cenſuring the productions of others, or reſenting the cenſures of his own. He ſeems to have ſeen, with due horror, the effects of literary war on the combatants.

That celebrity which he enjoyed ſo indiſputably during life, was not diminiſhed by his deceaſe; his works are ſtill in every hand: the philoſopher, the courtier, the bigot, the man of the world, auſtere and gallant females, all equally read them, and all find them equally beautiful. His moral maxims are daily cited, and his productions are become the code of lovers. The ſetting and ſinging his verſes, have rendered Pergoleſi, Vinci, Jomelli, Sacchini, and Farinelli, Caffarelli, Pacchierotti, and Marcheſi, as celebrated in all parts of Europe, as Corneille, Racine and Voltaire. Had his dramas been regular tragedies, written for declamation, without muſic, perhaps we ſhould never have heard of them in England: but muſic being an univerſal language throughout Europe, they are certainly obliged to the compoſer and ſinger for a great part of their fame, at leaſt out of Italy, notwithſtanding the complaints of Metaſtaſio himſelf, and the admirers of tragedy, who are inimical to muſic, that they have been injured by compoſers and performers. Particular operas, and perhaps, at ſome time or other, all his dramas, may have fallen into the hands of compoſers without genius, and ſingers without talents; but upon the whole, excellently written as are Metaſtaſio's dramas, and exquiſite as is the Italian language, it muſt be owned, that muſic has been the vehicle in which the operas of Metaſtaſio have travelled into foreign countries. Cato, Regulus, Themiſtocles, Artaxerxes, Olimpiade, and Demoſoonte, are allowed to breathe a true tragic ſpirit, even through the effeminate languor of lengthened tones and long diviſions; but it is in the peruſal, perhaps, not the vocal performance, that the force and beauty of Metaſtaſio's dramatic ſcenes have been diſcovered out of Italy. When an air has been encored, it has not been for the beauty of the poetry, but the compoſition or performance of that air. It muſt be allowed, however, without the leaſt deduction, that Metaſtaſio's genius, good taſte, and ſound judgment, firſt achieved the difficult taſk of rendering ſo wild and incongruous a compound of ſeemingly heterogeneous ingredients and abſurdities, as an *opera*, a rational entertainment.

Even the church has defended the morality of Metaſtaſio's dramas. The ci-devant Jeſuit, father Cordaro, in his eulogy of our poet, ſays, "I well know that he has been accuſed by ſome of having brought the paſſion of love too forward in his dramas, at the riſk of ſeducing and enervating the heart and virtue of the hearers. How ſhall we defend him from this charge? He would certainly have done better, if he could have confined himſelf to the love of glory, and of our country, in diſplaying the virtues of valour, fidelity, and conſtancy, without meddling with the follies of lovers. But there are certain noble affections, concerning which, the vulgar have but little knowledge, and leſs taſte. On the contrary, every one underſtands love; and without that ſeaſoning every repreſentation, at preſent, ſeems inſipid. It is the predominant paſſion of the times. He was perhaps neceſſitated to comply with it; but with what precaution and reſerve! Has an unchaſte word ever eſcaped him? Or an idea that is not ſtrictly within the limits of the moſt perfect delicacy? This may be ſaid of his ſecular dramas taken from profane ſtory; but his ſacred dramas are not only exempt from blame with reſpect to the paſſion of love, but ſufficiently pure in morals and doctrine, to ſerve as correctives to whatever the moſt moroſe critics may object to his productions for the ſtage."

The chronology and *moral object* of each drama is indicated in the Engliſh Memoirs of his Life and Writings, vol. iii. p. 316. &c.

We dare extend this article no farther. Our biographical articles ſhould doubtleſs, in general, be confined to the battles of heroes, and books of the learned; but Metaſtaſio's private character, meriting as much diſplay as his public productions, we could not in our ſketch of his life help ſtopping on the road to look about us, and admire the beautiful views which a life well ſpent affords.

METASTASIS, in *Medicine*, μεταστασις, ſignifies a tranſlation or tranſition of diſeaſe from one part of the body to another, the part firſt affected recovering its natural functions at the time when the other begins to be diſeaſed.

Theſe tranſitions of diſeaſe have been noticed from the earlieſt hiſtory of the practice of medicine; and the writings of Hippocrates abound with inſtances of the fact, and with practical precepts, deduced from a careful obſervation of the conſequences that enſue under the various circumſtances of their occurrence. The older writers, who aſcribed all diſeaſes to the exiſtence of a morbid matter, which, in whatever part it prevailed, gave riſe to peculiar local ſymptoms, readily explained theſe inſtances of metaſtaſis, upon the ſuppoſition that the morbid matter was ſubſtantially tranſlated from the part firſt diſeaſed to the ſeat of the new affection: indeed, this tranſlation of the diſeaſe was deemed by them one of the proofs of the exiſtence of a *materies morbi*. But we have already ſhewn, at ſome length, that the exiſtence of ſuch a morbid matter, as the efficient cauſe of diſeaſes, is purely a gratuitous ſuppoſition, which more accurate inveſtigation has exploded; and that the fact of the tranſition of diſeaſe by what has been called *metaſtaſis*, although not eaſily explained upon any hypotheſis, is ſatisfactorily accounted for on the principle of ſympathy, through the medium of the nervous ſyſtem, which experiment has demonſtrated, as upon the notion of an actual transference of morbid matter, which is hypothetically aſſumed. See HUMORAL *Pathology*.

It is ſcarcely neceſſary here to point out examples of the metaſtaſis of diſeaſes, which are univerſally recogniſed: ſuch are the ſevere attacks of diſorders in the ſtomach, when the inflammatory gout ſuddenly diſappears from the extremities; the occurrence of diarrhœa or dyſentery, upon the ſudden retroceſſion of the meaſles, or other extenſive eruption on the ſkin; the appearance of epileptic convulſions upon the ceſſation of the hæmorrhoidal, or other habitual diſcharge; the inflammation of the teſtes in men, or of the mammæ in women, which enſues, when that of the parotid glands in the diſeaſe called *mumps*, ſuddenly diſappears; and other caſes of a ſimilar nature.

The tranſition by metaſtaſis, however, is only one of ſeveral modes in which diſeaſes are converted into each other. Of theſe we have already deſcribed the varieties in a former article, to which we refer the reader. See CONVERSION *of Diſeaſes*.

METASTASIS, Μεταϛασις, *Remotio*, in *Rhetoric*, is uſed for the removing the blame from the perſon accuſed to another perſon, or laying it upon ſomething as a cauſe. Thus, Adam's excuſing himſelf by blaming Eve, is an example of the former; and the laying the crime of drunkenneſs upon the wine, is an inſtance of the latter.

METASTELMA, in *Botany*, from μετα, ſignifying *a change*, and ϛελμα, *a crown*, becauſe the uſual crown of the ſtamens being wanting, its place is ſupplied by a five-toothed appendage to the mouth of the corolla. Brown in Wern. Tranſ. v. 1. 52.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Eſſ. Ch. Corolla bell-ſhaped; its mouth crowned with five prominent teeth, oppoſite to the ſinuſes, running down the tube. Crown of the ſtamens none. Anthers tipped with a membrane. Maſſes of pollen compreſſed, attached by their taper points, pendulous. Stigma pointleſs. Follicles. . . .

M. *parviflorum*. (Cynanchum parviflorum; Swartz Ind. Occ. 537. Willd. Sp. Pl. v. 1. 1258. Periploca ſcandens, nummulariæ foliis, flore albo; Plum. Ic. 209. t. 215. f. 1.)—Native of wild mountainous thickets in the Weſt Indies, in various iſlands of which it was gathered by Plumier, Swartz, Maſſon, and Von Rohr. The *ſtem* is ſomewhat ſhrubby, twining to a great extent, ſubdivided, ſlender, bluntly quadrangular, ſmooth like every other part of the herbage; its branches thread-ſhaped, oppoſite, ſpreading, and twining. *Leaves* about an inch long, oppoſite, diſtant, ſtalked, ovate, entire, thin, ſmooth on both ſides, with one rib, and ſeveral tranſverſe veins, tipped with a minute, rigid, awl-ſhaped point. *Umbels* nearly ſeſſile between the footſtalks, of about ſix or eight ſmall, ſtalked, greeniſh-white *flowers*, whoſe ſegments are acute, finely downy, thickened at the edges, and reflexed. Mr. Brown complains of the inaccuracy of Dr. Swartz's deſcription of the crown of the flower, and we have alſo to remark that the umbels are, as the former truly ſays, between the footſtalks, not axillary; and the leaves have a very conſpicuous rib, as well as numerous veins. The name was given by Dr. Solander, from whom, as well as Dr. Swartz, we have ſpecimens.

METATARSIUS, in *Anatomy*, the abductor minimi digiti pedis. See Abductor.

METATARSUM, in *Natural Hiſtory*, a name given by authors to a ſort of ſtone ſuppoſed to repreſent a human foot. See Metapedium.

METATARSUS, in *Anatomy*, one of the diviſions of the foot. See Extremities.

METATEPEC, in *Geography*, a town of Mexico, in the province of Guaſteca; 50 miles S. of Panuco.

METATHESIS, Μεταθεσις, formed of μετα, *trans*, and θεσις, *poſition*, *tranſpoſition*, a grammatical figure, whereby letters or ſyllables of a word are tranſpoſed, or ſhifted out of their natural ſituation; as *Evandre* for *Evander*; *I præ* for *prai*.

Metathesis, a word uſed by medical writers for a change of place in ſuch humours, or other diſeaſed parts, as cannot be abſolutely removed or ſent off. Thus a metatheſis of a cataract is a depreſſion thereof, ſo that it no longer ſhuts out the light.

METATOR, among the Romans, a quarter-maſter. Out of every legion a tribune, and ſome centurions, were appointed to go before the army, in order to chooſe a place for a camp, and aſſign and mark out quarters to each legion.

METAWAUMKEAG, in *Geography*, a large northerly branch of the river Penobſcot, in America.

METCHICOT, a lake of Canada. N. lat. 50° 22′. W. long. 88° 30′.

METCHIGAMIAS, a long narrow lake, or rather dilatation of the northern branch of the river St. Francis, in Louiſiana, which falls into the Miſſiſippi from the N.W. about four miles above Kappas Old Fort.

METE, a ſmall iſland in the Arabian ſea, near the coaſt of Adel. N. lat. 11° 10′. See Babelmandeb.

METEARA, a town of Hindooſtan, in Bahar; 23 miles S.E. of Saſeram.

METECAL, or Metical, in *Commerce*, a weight for gold, ſilver, and diamonds, in the Levant. At Aleppo it is uſed for weighing pearls and ambergris, and is 1½ drachm, or 73 Engliſh grains. At Damaſcus, ſilver is ſold by the ounce of 10 peſi, or 6⅔ metecalli, weighing 19 dwt. 4 gr. Engliſh troy. At Smyrna, gold and ſilver lace is ſold by the metical of 1½ drachm avoirdupois, or 72 grains troy weight, very nearly. See Weights.

METEGAVEL, in our *Old Writers*, a tribute or rent paid in victuals, which was a thing uſed in this kingdom, as well with the king's tenants as others, till the reign of king Henry I.

The word is Saxon, *metagavel*; *i. e. cibi gablum, ſeu vectigal.*

METELAR, in *Geography*, one of the Laccadive iſlands. N. lat. 12° 18′. E. long. 72° 25′.

METELE, a town of Lithuania, in the palatinate of Troki; 36 miles N. of Grodno.

METELEN, a town of Germany, in the biſhopric of Munſter; 19 miles N.W. of Munſter. N. lat. 52° 14′. E. long. 7° 10′.

METELIN. See Mitylene.

METELINOS, a town of the iſland of Samos; 2 miles N.E. of Cora.

METELLUS, Quintus Cæcilius, in *Biography*, the ſon of L. Cæcilius Metellus Calvus, was raiſed to the conſulate, during the Jugurthine war, with M. Junius Silanus, in the year B. C. 109. On caſting lots for the conſular provinces, that of Numidia fell to Metellus, who made immediate preparations for retrieving the honour of the Roman arms, which had lately fallen into diſgrace through the ſucceſſes of Jugurtha. He was extremely careful in the ſelection of the officers to ſerve under him, and choſe, among others, of known military talents, the famous Marius, who, for want of intereſt, had for ſome time remained unemployed at Rome. Having reſtored order and diſcipline in his army, he marched into the centre of Numidia, where he defeated and diſperſed the whole force commanded by Jugurtha in perſon. When the conſular year was ended, the command was continued to Metellus as pro-conſul, and he purſued the plan of ruining the country of Jugurtha, and cutting off his reſources. At length the circumſtances of the Numidian obliged him to enter into a treaty with Metellus, by which he delivered up all his elephants, a number of horſes and arms, and all the deſerters from the Roman army. The latter, to the diſgrace of the conqueror, were put to death, with great cruelty. Jugurtha took the firſt opportunity of appearing again in arms, and the people roſe upon a Roman garriſon, and maſſacred the whole, excepting the commander Turpilius. Metellus ſoon recovered the place, brought Turpilius to a court martial, and cauſed him to be put to death, on account of which he underwent the keeneſt remorſe: having been influenced in his deciſion rather by popular clamour than by the ſtrict rules of juſtice. Marius had been a leading actor in the condemnation of Turpilius, and triumphed in the conſequences which it had upon the mind of Metellus, whoſe character with the people he endeavoured to injure. The third year of his command was going on, and nothing deciſive had been effected. Of this his rival, Marius, made a handle, and by his repreſentations to the people was able, not only to procure his own election to the conſulate, but to obtain a decree for his ſuperſeding Metellus in the conduct of the Numidian war. Metellus deplored his hard fate with tears. He refuſed to ſee his rival; delivered up his army by a lieutenant, and immediately embarked for Rome. He was received with great honour by his friends and partizans, who obtained for him the honour of a triumph. Being charged with peculation by a tribune, he would have produced his books in his own juſtification; but the Roman knights who ſat as his judges refuſed to examine his accounts, declaring that they conſidered the whole tenor of his life as a ſufficient teſtimonial of his innocence. Having paſſed with honour through his military career, there remained a trial of his civic virtue and firmneſs, in which he obtained equal credit. In the year B. C. 100, the moſt violent meaſures were carried on by the popular leaders; and the tribune Apuleius Saturninus having prepared an Agrarian law, procured a clauſe to be previouſly paſſed, that the ſenate would ſwear to confirm whatever the people ſhould enact. Metellus oppoſed the propoſition; the ſenate, to a man, joined in a ſimilar oppoſition. Marius, who had led them to this determination, by pretending to entertain the ſame ſentiments, ſoon retracted, and took the oath; all the ſenators, excepting Metellus, followed his example. Metellus perſiſting in his reſolution was condemned to baniſhment. His friends offered to oppoſe this act of injuſtice, but he declared that not a drop of blood ſhould be ſpilt on his account. He ſaid, "either the ſtate of public affairs will change, and I ſhall be recalled; or, if they remain as they are, I ſhall be better off any where than at Rome." He then paſſed over to Rhodes, or Smyrna, where he paſſed his time in the ſtudy of philoſophy. In the following year, a decree was paſſed by a great majority for his return: the news was brought to him while he was aſſiſting at ſome public games, and though he was informed that the packet contained pleaſing intelligence, he would not open it till the ſpectacle, perhaps a religious ceremony, was over. On his return to Rome he was met at the gates by all the perſons of diſtinction in the city, and was accompanied to his houſe by great crowds of people, and at the next conſular election the public eſteem for him was ſhewn by accepting his recommendation of one of his own name and family. After this, we hear no more of this worthy man.

METEMPSYCHI, in *Church Hiſtory*, heretics, who, in imitation of the Pythagoreans, maintained the tranſmigration of ſouls. See METEMPSYCHOSIS.

METEMPSYCHOSIS, Μετεμψυχωσις, formed of μετα, *beyond*, and εμψυχω, *I animate*, or *enliven*, in the *Ancient Philoſophy*, the paſſage or tranſmigration of the ſoul of a man, after death, into the body of ſome other animal.

Pythagoras and his followers held, that, after death, men's ſouls paſſed into other bodies, of this or that kind, according to the manner of life they had led. If they had been vicious, they were impriſoned in the bodies of miſerable beaſts, there to do penance for ſeveral ages; at the expiration whereof, they returned afreſh to animate man. But if they had lived virtuouſly, ſome happier brute, or even a human creature, was to be their lot.

What led Pythagoras to this opinion was, the perſuaſion he had, that the ſoul was not of a periſhable nature: whence he concluded, that it muſt remove into ſome other body upon its abandoning this. According to Empedocles, human ſouls, in the courſe of the tranſmigration to which they are liable, may inhabit not only different human bodies, but the body of any animal or plant. Lucan treats this doctrine as a kind of officious lie, contrived to mitigate the apprehenſion of death, by perſuading men, that they only changed their lodging; and only ceaſed to live to begin a new life.

Reuchlin denies this doctrine; and maintains, that the metempſychoſis of Pythagoras implied nothing more than a ſimilitude of manners, deſires, and ſtudies, formerly exiſting in ſome perſon deceaſed, and now revived in another alive. Thus, when it was ſaid, that Euphorbus was revived in Pythagoras, no more was meant than that the martial virtue, which had ſhone in Euphorbus at the time of the Trojan war, was now, in ſome meaſure, revived in Pythagoras, by reaſon of the great reſpect he bore for the athletæ. For thoſe people wondering how a philoſopher ſhould be ſo much taken with men of the ſword, he palliated the matter, by ſaying, that the ſoul of Euphorbus, *i. e.* his genius, diſpoſition, and inclinations, were revived in him. And this gave occaſion to the report, that Euphorbus's ſoul, who periſhed in the Trojan war, had tranſmigrated into Pythagoras.

Ficinus aſſerts, that what Plato ſpeaks of the migration of a human ſoul into a brute, is intended allegorically, and is to be underſtood only of the manners, affections, and habits, degenerated into a beaſtly nature by vice. Serranus, though he allows ſome force to this interpretation, yet inclines rather to underſtand the metempſychoſis of a reſurrection.

Pythagoras is ſaid to have borrowed the notion of a metempſychoſis from the Egyptians (ſee EGYPT); others ſay, from the ancient Brachmans. It is ſtill retained among the Banians, and other idolaters, of India and China; and makes the principal foundation of their religion. (See BRACHMANS, BANIANS, and GENTOOS). So extremely are they bigotted to it, that they not only forbear eating any thing that has life, but many of them even refuſe to defend themſelves from wild beaſts. They burn no wood, leſt ſome little animalcule ſhould be in it; and are ſo very charitable, that they will redeem from the hands of ſtrangers any animals that they find ready to be killed. See PYTHAGOREANS.

METEMPTOSIS, from μετα, *poſt*, and πιπτω, *cado*, *I fall*, a term in *Chronology*, expreſſing the ſolar equation, neceſſary to prevent the new moon from happening a day too late.

By which it ſtands contradiſtinguiſhed from *proemptoſis*, which ſignifies the lunar equation, neceſſary to prevent the new moon from happening a day too ſoon.

The new moons running a little backwards, that is, coming a day too ſoon at the end of three hundred and twelve years and a half; by the proemptoſis, a day is added every three hundred years, and another every two thouſand four hundred years; on the other hand, by the metemptoſis, a biſſextile is ſuppreſſed each one hundred and thirty-four years; that is, three times in four hundred years. Theſe alterations are never made but at the end of each century; that period being very remarkable, and rendering the practice of the calendar eaſy.

There are three rules for making this addition, or ſuppreſſion, of the biſſextile day, and, by conſequence, for changing the index of the epacts. 1. When there is a metemptoſis without a proemptoſis, the next following, or lower index, muſt be taken. 2. When there is a proemptoſis without a metemptoſis, the next preceding or ſuperior index is to be taken. 3. When there are both a metemptoſis and a proemptoſis, or when there is neither the one nor the other, the ſame index is preſerved. Thus, in 1600, we had D; in 1700, by reaſon of the metemptoſis, C was taken; in 1800, there were both a proemptoſis and a metemptoſis; ſo the ſame index was retained. In 1900, there will be a metemptoſis again, when B will be taken, which will be preſerved in 2000, becauſe there will then be neither the one nor the other. This is as far as we need compute for it: but Clavius has calculated a cycle of 301,800 years; at the end of which period, the ſame indices return in the ſame order. See EPACT.

METEOR, from μετεωρος, *high*, *ſublime*, is a general term uſed to ſignify the tranſient, fiery appearances in the heavens; ſuch as are denoted by the more particular names of *ſhooting ſtars*, *globes of fire*, *ignes fatui*, *aurora borealis*, &c. The word is uſed by ſome writers to ſignify all the various phenomena of the atmoſphere, as *clouds*, *rain*, *hail*, &c. in which caſe meteors are divided into *fiery* and *watery*; but this laſt diſtinction is adopted by few. We ſhall under this head make a few obſervations upon the fiery meteors, or thoſe more generally deſignated by the name meteor, and leave the other to be conſidered under the article METEOROLOGY.

The phenomena called *ſhooting* or *falling ſtars* have been ſeen by every one, as theſe meteors are viſible in greater or leſs numbers every clear night; they need not therefore be particularly deſcribed. Theſe meteors are ſo very tranſient, not often exceeding one or two ſeconds in duration, that they afford no opportunity for obſervations by which their altitude can be determined with accuracy, and conſequently we are in a great meaſure ignorant of their height. If a few intelligent perſons were to agree to make the beſt obſervations they could on the altitudes of theſe meteors ſome ſuitable evening, ſuppoſing the obſervers to be ſtationed at the diſtance of ten, twenty, or more miles from each other, and to have their watches, &c. duly adjuſted, it is very probable that data might be obtained to aſcertain the height of theſe meteors, within certain limits at leaſt.

Though the general appearance of theſe meteors is that of ſtars ſhooting or falling, yet they occaſionally are obſerved of great magnitude and comparatively of long duration, ſometimes almoſt as large as the moon, and move through a celeſtial arc of 100°, more or leſs. As an inſtance of this kind we may take the great meteor of Auguſt 18th, 1783, an account of which was given in the Philoſ. Tranſact. 1784, by the late Mr. Cavallo, from his own obſervations, and thoſe of ſome intelligent friends who happened to be with him, at Windſor. "On the evening of the 18th of Auguſt 1783, we were ſtanding upon the N.E. corner of the above-mentioned (Windſor) terrace. The weather was calm, and agreeably warm; the ſky was ſerene, excepting very near the horizon, where a hazineſs juſt prevented the appearance of the ſtars. A narrow, rugged, and oblong cloud ſtood on the N.W. ſide of the heavens, reaching from the extremity of the hazineſs, which roſe as high as 18 or 20 degrees, and ſtretching itſelf for ſeveral degrees towards the eaſt, in a direction nearly parallel to the horizon. It was a little below this cloud, and conſequently in the hazy part of the atmoſphere, about the N. by W. half W. point of the compaſs, that this luminous meteor was firſt perceived. Some flaſhes of lambent light, much like the aurora borealis, were firſt obſerved on the northern part of the heavens, which were ſoon perceived to proceed from a roundiſh luminous body, nearly as big in diameter as the ſemidiameter of the moon, and almoſt ſtationary in the above-mentioned point of the heavens. It was then about 25 minutes after nine o'clock in the evening. The ball at firſt appeared of a faint blueiſh light, perhaps from being juſt kindled, or from its appearing through the hazineſs; but it gradually increaſed its light, and ſoon began to move, at firſt aſcending above the horizon in an oblique direction towards the eaſt. Its courſe in this direction was very ſhort, perhaps of five or ſix degrees; after which it directed its courſe towards the eaſt, and, moving in a direction nearly parallel to the horizon, reached as far as the S.E. by E. point, where it finally diſappeared. The whole duration of the meteor was half a minute, or rather leſs; and the altitude of its track ſeemed to be about 25 degrees above the horizon. A ſhort time after the beginning of its motion, the luminous body paſſed behind the above-mentioned ſmall cloud, ſo that during this paſſage we obſerved only the light which was caſt in the heavens from behind the cloud, without actually ſeeing the body from which it proceeded for about the ſixth or at moſt the fifth part of its track; but as ſoon as the meteor emerged from behind the cloud, its light was prodigious. Every object appeared very diſtinct; the whole face of the country, in that beautiful proſpect before the terrace, being inſtantly illuminated. At this moment the body of the meteor appeared of an oblong form; but it preſently acquired a tail, and ſoon after it parted into ſeveral ſmall bodies, each having a tail, or elongation; and all moving in the ſame direction, at a ſmall diſtance from each other, and very little behind the principal body, the ſize of which was gradually reduced after this diviſion. In this form the meteor moved as far as the S.E. by E. point, where the light decreaſing rather abruptly, the whole diſappeared.

"During the phenomenon no noiſe was heard by any of our company, excepting one perſon, who imagined to have heard a crackling noiſe, ſomething like that which is produced by ſmall wood when burning. But about ten minutes after the diſappearance of the meteor, and when we were juſt going to retire from the terrace, we heard a rumbling noiſe, as if it were of thunder at a great diſtance, which in all probability was the report of the meteor's exploſion; and it may be naturally imagined that this exploſion happened when the meteor parted into ſmall bodies, *viz.* at about the middle of its track.

"Now if that noiſe was really the report of the exploſion which happened at the above-mentioned place; the diſtance, altitude, courſe, and other particulars relating to this meteor, muſt be very nearly ſuch as are expreſſed in the following liſt; they being calculated with mathematical accuracy upon the preceding particulars, and upon the ſuppoſition that ſound travels at the rate of 1150 feet *per* ſecond. But if the noiſe we heard was not that of the meteor's exploſion, then the following reſults muſt be conſidered as quite uſeleſs and erroneous.

Diſtance of the meteor from Windſor caſtle - - - -	130 miles.
Length of the path it deſcribed in the heavens - - -	550 miles.
Diameter of the luminous body, when it came out of the clouds -	1070 yards.
Its height above the ſurface of the earth - - -	56½ miles.

The exploſion muſt have happened perpendicularly over Lincolnſhire."

The above account was written the day after the appearance of the meteor; and in his Natural Philoſophy this author farther obſerves, "Thoſe accounts which were ſent from various parts of this iſland, as alſo from the continent, confirmed, as nearly as can be expected, the above-mentioned reſults reſpecting its ſize, velocity, elevation, and exploſion over Lincolnſhire; but this meteor muſt have certainly had its origin much farther north than we imagined; and indeed, on account of the intervening cloud, it was impoſſible for us to perceive it at an earlier part of its courſe. It is alſo probable that it muſt have gone or terminated at a much greater diſtance than it appeared to us; for as its light diminiſhed until it vaniſhed, we muſt naturally have loſt ſight of it ſooner than thoſe who ſtood farther ſouth on the continent. The various accounts ſeem to eſtabliſh, that its courſe commenced beyond the northern extremity of this iſland, probably ſomewhere over the northern ocean. It paſſed a little weſtward of Perth, and perhaps a little eaſtward of Edinburgh; it proceeded over the ſouth of Scotland, Northumberland, the biſhopric of Durham, Yorkſhire, Lincolnſhire, over which it ſeemed to have deviated gradually to the weſtward, and in the courſe of that deviation to have ſuffered the burſting or partition. It then paſſed over Cambridgeſhire, Eſſex, and the ſtraits of Dover, entering the continent probably not far from Dunkirk, where, as well as at Calais and Oſtend, it was thought to be vertical. It was ſeen at Bruſſels, Paris, Nuits in Burgundy, and, it is ſaid, even at Rome. Upon the whole, it muſt have deſcribed a track upwards of 1000 miles in about half a minute; an aſtoniſhing rate of going, vaſtly ſwifter than the motion of ſound." Vol. iv. p. 363.

In corroboration of the general accuracy of the above account, the author of this article may add his teſtimony, having been a witneſs of the meteor nearly during the whole of its apparition from Kendal in Weſtmoreland, a place, as it ſhould ſeem from the above account, ſituated near to the middle of the meteor's track. The meteor, as ſeen from thence, roſe near the N.W., moved nearly in the direction of the magnetic meridian, and diſappeared in the S.E. The apparent velocity was leaſt at firſt and at laſt, and greateſt during the middle or higheſt part of the track; but the variation was not more than what would ariſe from a really uniform velocity, owing to the optical illuſion in ſuch caſe. The greateſt altitude of the meteor ſeemed to be very nearly 50°, and its duration was about half a minute, more or leſs ; its altitude, when firſt ſeen, might be about 15° or 20°, and nearly the ſame at its diſappearance. The ſky was quite clear, except a hazineſs in the S.E. horizon ; the twilight was conſiderable ; yet the firſt attention to the meteor aroſe from obſerving the moving ſhadow of a window frame. No ſubſequent report was heard ; but this might be from the attention being at that time otherwiſe engaged. From a compariſon of obſervations at different places, its height was eſtimated to be about 60 miles.

Upon the whole it may be pretty ſafely concluded, that the height of this meteor was not leſs than 50, nor more than 60 miles above the earth's ſurface ; and that its motion was nearly in a horizontal direction during the whole of its courſe.

From the general reſemblance of the ſmall meteors or ſhooting ſtars to the large globes of fire, except in ſize and duration, it can ſcarcely be doubted that they are of the ſame nature. Whatever hypotheſis may be laid down to explain the one, muſt be expected to apply to the other ; and if the reſults of the recent obſervations and inveſtigations reſpecting the ſtones fallen from the atmoſphere are to be credited, theſe laſt phenomena are intimately connected with the former.

Dr. Halley conjectured, that a ſtratum or train of inflammable vapour, gradually raiſed from the earth, and accumulated in an elevated region, ſuddenly took fire at one end, and burning like a train of gunpowder, exhibited the meteoric phenomena. (Philoſ. Tranſ. vol. 30. N° 360.) But this notion appears to have been entirely laid aſide, as altogether untenable.

In later times, ſince the diſcoveries in electricity, meteors have been very generally aſcribed to that agent. There ſeem, however, inſuperable difficulties in explaining their phenomena upon electrical principles. The air, at the height of fifty miles, is probably 30,000 times more rarified than at the earth's ſurface ; in ſuch circumſtances, we are almoſt certain that the electric fluid would either not paſs at all, or paſs in a very thin, attenuated ſtate, ſo as to be far from exhibiting that denſely luminous appearance which accompanies all the meteors in the form of balls. But admitting that large denſe balls of electric fluid could be formed and conveyed through theſe high regions of the atmoſphere, we ſhould ſtill be at a loſs for materials to form thoſe ponderable metallic maſſes which ſeem occaſionally to be precipitated upon the ſurface of the earth, after the appearance of the meteor.

Profeſſor Clap, late preſident of Yale college, in New England, in his theory of meteors, ſuppoſes them to be "terreſtrial comets, revolving about the earth in the ſame manner as the ſolar comets revolve about the ſun. That moving in very excentric orbits, when in perigee, they paſs through the atmoſphere, are highly electrified, and conſequently become luminous. As they approach their lower apſide, their electricity is diſcharged, the body diſappears, and a report is heard. This being admitted, it is not ſtrange that, by the violence of the ſhock, portions of the meteor ſhould be thrown to the earth, while the main body, not ſenſibly affected by ſo ſmall a loſs, continues to move on in its orbit, and of courſe ceaſes to be luminous." Silliman on Meteoric Stones, American Philoſ. Tranſ. vol. 6. p. 335.

In the Philoſ. Tranſact. 1784, Dr. Blagden has given "An account of ſome late fiery meteors ; with obſervations." He conſiders the meteors under the following heads, in all of which he makes various appropriate obſervations. 1. Their general appearance. 2. Their path. 3. Their ſhape or figure. 4. Their light and colours. 5. Their height. 6. Their noiſe. 7. Their ſize. 8. Their duration : and, 9. Their velocity. In diſcuſſing the opinions of philoſophers on the ſubject, he refers to profeſſor Clap's, as follows : "A ſtrong objection to this hypotheſis of permanent revolving bodies, is derived from the great number of them there muſt be to anſwer all the appearances. Such a regular gradation is obſerved from theſe large meteors, which ſtrike all beholders with aſtoniſhment, and occur but rarely, down to the minute fires, called ſhooting ſtars, which are ſeen without being regarded in great numbers every clear night, that it ſeems impoſſible to draw any line of diſtinction between them, or deny that they are all of the ſame nature. But ſuch a crowd of revolving bodies could ſcarcely fail to announce their exiſtence by ſome other means than merely a luminous train in the night, as for inſtance, by meeting or joſtling ſometimes near the earth, or by falling to the earth in conſequence of various accidents ; at leaſt one might expect they would be ſeen in the day-time, either with the naked eye, or teleſcopes, by ſome of the numerous obſervers who are conſtantly examining the heavens. Another argument of great weight againſt the hypotheſis that fire-balls are terreſtrial comets, is taken from the great velocity. A body falling from infinite ſpace towards the earth, would have acquired a velocity of no more than ſeven miles a ſecond, when it came within 50 miles of the earth's ſurface ; whereas theſe meteors ſeem to move at leaſt three times faſter. And this objection, if there be no miſtake in regard to the velocity of the meteors, as I think there is not, abſolutely overſets the whole hypotheſis." Page 223.

Dr. Blagden proceeds to explain theſe meteors on the hypotheſis that they are electrical phenomena. His arguments are ; 1ſt. From the great rapidity of their motion, which ſeems to exceed any other we are acquainted with beſides that of electricity. 2dly. From certain electrical phenomena, which ſometimes accompany theſe meteors ; and 3dly. From the connection which they have with the aurora borealis, or northern lights. Theſe laſt are well known to regard the magnetic meridian ; and moſt of the great meteors have been obſerved to move in a direction nearly coincident with the ſame meridian. Upon this head he obſerves ; "the tendency towards the magnetic meridian, however, ſeems to hold good only with regard to the largeſt ſort of fire-balls ; the ſmaller ones move more irregularly, perhaps becauſe they come further within the verge of our atmoſphere, and are thereby more expoſed to the action of extraneous cauſes. That the ſmaller ſort of meteors, ſuch as ſhooting ſtars, are really lower down in the atmoſphere, is rendered very probable by their ſwifter apparent motion ; perhaps it is this very circumſtance which occaſions them to be ſmaller, the electric fluid being more divided in more reſiſting air. But as theſe maſſes of electricity, which move where there is ſcarcely any reſiſtance, ſo generally affect the direction of the magnetic meridian, the ideas which have been entertained of ſome analogy between theſe two obſcure powers of nature, ſeem not altogether without foundation." P. 230.

Dr. Blagden concludes, that there are *three* regions of the atmoſphere, diſtinguiſhed by electrical phenomena peculiar to each. 1ſt. The loweſt region, in which the phenomena of thunder and lightning occur. 2dly. The middle region, where the fire-balls and ſhooting ſtars are obſerved ; and, 3dly. The higheſt region, where the aurora borealis diſplays a peculiar kind of electric agency.

Though many of the arguments which Dr. Blagden has advanced in favour of the hypotheſis of electricity being the origin of meteors, are of conſiderable weight, yet the circumſtances which have ſince occurred reſpecting the falling of ſtones from the ſky, effectually remove one of his objections to the reception of profeſſor Clap's hypotheſis; namely, that of the meteors not "falling to the earth in conſequence of various accidents," and at the ſame time they riſe up againſt the electrical hypotheſis; unleſs indeed another be attached to it, that electricity condenſes and fuſes the earthy and metallic exhalations in the atmoſphere, which are thus precipitated to the earth's ſurface in greater or leſs portions. The other great objection to Clap's hypotheſis, that of the velocity of fire-balls being greater than is conſiſtent with a body revolving round the earth, however, remains in full force, except it can be ſhewn that the velocity of meteors has been much overrated From the law of gravitation it is demonſtrable, that the velocity of a body revolving round the earth cannot, even when in perigee, and near the ſurface of the earth, be leſs than five, nor more than ſeven miles *per* ſecond. Hence, then, if the velocity of a meteor exceeds ſeven miles *per* ſecond, it cannot be a body revolving in an orbit round the earth. It does not appear, however, to be ſatisfactorily aſcertained that the velocity of fire-balls exceeds ſeven miles *per* ſecond. It is not perhaps going beyond probability to ſay, that no obſerver ſaw the great meteor of Aug. 18th, 1783, for more than an extent of 200 miles; as a proof, it may be remarked that the burſting of the meteor, ſaid to have taken place over Lincolnſhire, was not obſerved at Kendal, though the diſtance from the neareſt point, or that of greateſt apparent altitude, was not more than 100 miles. Now if the meteor took 30 ſeconds to move 200 miles, it gives 6⅔ miles *per* ſecond; which is within the required limits. And, farther, let thoſe who ſaw the meteor paſs nearly through the zenith, endeavour to eſtimate the time it ſeemed to take in paſſing through an arc of 10°, or let the like obſervation be made upon a ſhooting ſtar. Perhaps few, if any, will be found to inſiſt upon the time being ſo little as one ſecond; at leaſt the writer of this article is not inclined to adopt the affirmative from his own obſervation. But 10° in one ſecond would correſpond only to eight miles of velocity, at the height of 50 miles above the earth's ſurface. It may therefore perhaps be ſtill deemed problematical, whether the velocity of either the larger or ſmaller meteors ever exceeds ſeven miles *per* ſecond; as alſo whether it ever falls ſhort of five miles *per* ſecond.

Upon the whole, the hypotheſis of fire-balls being ſomething of the nature of comets, that is, bodies revolving around the earth in excentric orbits, appears in the preſent ſtate of the ſcience to be as probable as any other. The light and heat acquired in paſſing through the perigee might be variouſly accounted for; but it would be premature to enter into a diſquiſition on this head, as long as ſuch doubts remain reſpecting the real velocity of this ſort of meteors. See BALLS *of Fire* and FALLING *Stones*

Ignis fatuus is the name of a luminous meteor, ſaid to be ſeen occaſionally in the night, hovering over moiſt ground, and about church-yards. Though it is ſtated by writers to be a common meteor, we find few authentic accounts of its nature and appearance; and ſome accounts are evidently mixed with ſuperſtitious notions reſpecting the origin of the meteor, and particularly with regard to its effects in miſleading travellers. See IGNIS *fatuus* for more on this head.

One of the moſt ſplendid and moſt ſurpriſing of the luminous meteors is the *aurora borealis*, or *northern lights*. An account of this meteor may be ſeen under the article AURORA *Borealis*; but as ſome of the lateſt, and perhaps the moſt accurate obſervations on theſe ſtriking phenomena, have been omitted in that account, it will be proper to introduce them here. The obſervations are thoſe of Mr. Dalton, publiſhed in his Meteorological Eſſays, 1793. This diligent obſerver reſided in the north of England (at Kendal), during a period when theſe phenomena were very frequent; namely from 1786 to 1793. The aurora borealis has ſeldom appeared ſince that period; and it ſhould ſeem, from the hiſtory of this meteor, that it is one in ſome way ſubject to periodical apparition.

Mr. Dalton has given the times and appearances of the aurora borealis, ſome of them deſcribed minutely, with accompanying obſervations on the variation of the magnetic needle. It ſeems the number of the phenomena ſeen at Kendal and Keſwick, was as under:

	Number of Auroræ Boreales.
1786	16
1787	27
1788	53
1789	45
1790	36
1791	37
1792	23

From ſuch a number of obſervations, and from thoſe previouſly made by others, to be found in various philoſophical works, the author was enabled to generalize the phenomena of the aurora borealis. He obſerves, "the appearances of the *aurora* come under four different deſcriptions. Firſt, a *horizontal light*, like the morning *aurora*, or break of day. Secondly, fine, ſlender luminous beams, well defined, and of denſe light; theſe continue ¼, ½, or 1 whole minute, ſometimes at reſt apparently, but oftener with a quick lateral motion. Thirdly, *flaſhes* pointing upward, or in the ſame direction as the beams, which they always ſucceed; theſe are only momentary, and have no lateral motion, but they are generally repeated many times in a minute; they appear much broader, more diffuſe, and of a weaker light than the beams; they grow gradually fainter, till they diſappear. Theſe ſometimes continue for hours, flaſhing at intervals. Fourthly, *arches*, nearly in the form of rainbows; theſe, when complete, go quite acroſs the heavens, from one point of the horizon to the oppoſite point.

When an *aurora* takes place, thoſe appearances ſeem to ſucceed each other in the following order: Firſt, the faint rainbow-like arches; ſecondly, the beams; and, thirdly, the flaſhes; as for the northern horizontal light, it will appear in the ſequel to conſiſt of an abundance of *flaſhes* or *beams* blended together, owing to the ſituation of the obſerver relative to them. Theſe diſtinctions, and the terms appropriated for them, muſt be kept in view, in attending to the following phenomena.

Phenom. 1.—The beams of the *aurora borealis* appear, at all places alike, to be arches of great circles of the ſphere, with the eye in the centre, and theſe arches, if prolonged upwards, would all meet in one point.

Phenom. 2.—The rainbow-like arches all croſs the magnetic meridian at right angles: when two or more appear at once, they are concentric, and tend to the magnetic eaſt and weſt: alſo, the broad arch of the *horizontal light* tends to the magnetic eaſt and weſt, and is biſected by the magnetic meridian; and when the aurora extends over any part of the hemiſphere, whether great or ſmall, the line ſeparating the illuminated part of the hemiſphere from the clear part, is half the circumference of a great circle, croſſing the magnetic meridian at right angles, and terminating in the magnetic eaſt and weſt; moreover, the beams apparently perpendicular to the horizon, are only thoſe on the magnetic meridian.

Phenom. 3.—That point in the heavens to which the beams of the aurora appear to converge at any place, is the ſame as that to which the ſouth pole of the *dipping-needle* points at that place.

Phenom. 4.—The beams appear to riſe above each other in ſucceſſion, ſo that of any two beams, that which has the higher baſe has the higher ſummit alſo, or its ſummit nearer the point of concourſe; the angle ſubtended by the length of each beam is not the ſame, it being greateſt about half way from the horizon to the zenith, and leſs above and below; alſo the beams to the ſouth ſubtend leſs angles than thoſe to the north, having the ſame altitude. The greateſt angle to the north ſeems to be about 25° or 30°; and that to the ſouth 15° or 20°.

Phenom. 5.—Every beam appears broadeſt at, or near, the baſe or bottom, and to grow narrower as it aſcends, in ſuch ſort that the continuation of its bounding lines would meet in the common centre to which the beams tend; yet the ſummit of the beam is not flat, but pointed; the higheſt beams ſeem about 3° broad, and the loweſt 1°.

In order to derive the true ſituation and poſition of the ſeveral objects preſented in theſe phenomena, it was neceſſary to have recourſe to the principles of geometry or perſpective. Mr. Dalton premiſes five propoſitions. The firſt is to ſhew that any line in a plane paſſing through the eye, appears in the heavens to be an arch of a great circle. The other four propoſitions relate to the perſpective appearance of one or more cylinders, ſuppoſed to be arranged upon a horizontal plane at any given elevation above the earth's ſurface, the cylinders being parallel to each other, and making a given angle with the horizontal plane. The propoſitions are illuſtrated by ſuitable diagrams, and demonſtrated in the uſual way. By a compariſon of the data of theſe propoſitions with the above phenomena, the author makes certain inferences reſpecting the aurora borealis, and draws ſuch concluſions as ſeem to be warranted by the eſtabliſhed methods of reaſoning in natural philoſophy. Theſe are,

1. The luminous beams of the aurora borealis are cylindrical, and parallel to each other, at leaſt over a moderate extent of country.

2. The cylindrical beams of the aurora borealis are all *magnetic*, and parallel to the dipping-needle at the places over which they appear.

3. The height of the rainbow-like arches of the aurora, above the earth's ſurface, is about 150 Engliſh miles.

4. The beams of the aurora are ſimilar, and equal in their real dimenſions to one another.

5. The diſtance of the beams of the aurora from the earth's ſurface is equal to the length of the beams nearly. This diſtance is ſubſequently eſtimated at 75 miles.

6. That appearance which we have called the *horizontal light*, and which is always ſituate near the horizon, is nothing but the blended lights of a group of beams, or flaſhes, which makes the appearance of a large luminous zone.

The author next proceeds to develope, at ſome length, an hypotheſis, by which he propoſes to explain theſe wonderful phenomena. It is ingenious, but cannot be conſidered as ſatisfactory. Future inveſtigation may derive from it ſome uſeful hints. The following is a brief ſketch of it.

Mr. Dalton conceives an extremely ſubtile elaſtic fluid of a *ferruginous* nature, or at leaſt ſuch as is capable of being acted upon magnetically, to exiſt in the higher regions of the atmoſphere; perhaps without the verge of the common atmoſphere. That this elaſtic fluid is collected into parallel cylindrical beams, and horizontal rings, over the regions of the earth near the magnetic pole, by virtue of the earth's magnetiſm; and that the beams, &c. are preſerved in their due form and poſition, and diſtinct from each other by their mutual magnetic action. This fluid is ſuppoſed to be an imperfect conductor of electricity. When the electricity of the upper regions of the atmoſphere is diſturbed, it is ſuppoſed the electric fluid runs along theſe beams and rings from one part of the atmoſphere to another, to reſtore the equilibrium. The reaſon why the diffuſe flaſhes ſucceed the more intenſe light of the beams, is becauſe the electricity diſperſes the elementary particles of the beams in ſome degree, which collect again after the electric circulation ceaſes. Hence too, he conceives, is the reaſon of the fluctuations of the magnetical needle below, while the magnetiſm of the upper regions of the atmoſphere is thus affected. The general obſervations on the diſturbance of the needle are ſtated as under.

1. When the aurora appears to riſe only about 5°, 10°, or 15° above the horizon, the diſturbance of the needle is very little, and often inſenſible.

2. When it riſes up to the zenith, and paſſes it there, it never fails to be a conſiderable diſturbance.

3. This diſturbance conſiſts in an irregular oſcillation of the horizontal needle, ſometimes to the eaſtward, and then to the weſtward of the mean daily poſition, in ſuch ſort that the greateſt excurſions on each ſide are nearly equal, and amount to about half a degree each in this place.

4. When the aurora ceaſes, or ſoon after, the needle returns to its former ſtation.

One ſection on the aurora borealis is deſtined to the enquiry, How far the moon has an effect in producing this meteor, or whether the phenomenon is influenced by the aerial tides? It appeared that the average number of auroræ obſerved during the period of ſpring tides, was to the number obſerved during the period of neap tides, as 4 to 3. Alſo, it appeared that ſpring and autumn (ſeaſons in which the tides are uſually higheſt) are moſt favourable for the production of this meteor, as may be ſeen by the following table.

	Number of Auroræ.		Number of Auroræ.
January	18	July	2
February	18	Auguſt	21
March	26	September	23
April	32	October	36
May	21	November	38
June	5	December	9

Some of the moſt ſplendid appearances of the aurora borealis were obſerved in a troubled and rather tempeſtuous ſtate of the atmoſphere; but it did not appear in general that this meteor affords any deciſive prognoſtic of the weather. See Aurora Borealis, Falling *Stones*, &c. Alſo, for other luminous meteors, ſee Rainbow, Halo, Parhelia, Zodiacal Light, &c.

METEORIC Stones. See Falling *Stones*.

METEORISMUS, in *Medicine*, from μετέωρος, *ſublimis*, has been applied by medical writers to that tumid ſtate of the belly, ariſing from flatulence, which diſtends only the upper parts, as the pit of the ſtomach and the hypochondriac regions. See Sauvages Noſol. Method, claſs x. gen. 16, who has made four ſpecies of Meteoriſmus: alſo Caſtelli Lexic. Med. Art. *Meteoros*.

METEOROLOGICAL Journal, is a table recording the daily ſtate of the air, exhibited by the barometer, thermometer, hygrometer, anemometer, and other meteorological inſtruments. We have many journals of this kind kept at the houſe of the Royal Society, and by different obſervers in other places, in the Philoſophical Tranſactions, the Memoirs of the Academy of Sciences, and ſimilar publications.

METEOROLOGY is a ſcience which treats of the weather, or of the various affections and phenomena of the atmoſphere, as *winds*, *clouds*, *rain*, *hail*, *ſnow*, *dew*, *thunder* and *lightning*, and the fiery meteors. The univerſal importance of this ſcience is acknowledged; and it may be ſaid that for 150 years paſt, or ſince the invention of the barometer and the air-pump, almoſt every diſtinguiſhed natural philoſopher has contributed to its advancement, either by the diſcuſſion of hypotheſes or by the obſervation of facts. The difficulty, however, of forming a correct theory of the phenomena of the atmoſphere may eaſily be conceived, when we conſider that it is requiſite for a perſon to have a large collection of facts, and an extenſive acquaintance with ſeveral collateral ſciences; for inſtance, with mechanics, pneumatics, electricity, and chemiſtry.

The principal inſtruments of uſe in meteorology are, the barometer, by which the weight or preſſure of the atmoſphere over any place is known; the thermometer, which aſcertains the temperature of the air; the hydrometer, to denote the moiſture or dryneſs of the air; the pluviameter, or rain-gauge, to meaſure the depth of rain that falls; the evaporation-gauge, to ſhew the depth of water evaporated; the wind-dial, to point out the direction of the wind; the anemometer, to meaſure its force; and the electrometer, to aſcertain the kind and intenſity of electricity in the air. See theſe different inſtruments deſcribed under their appropriate heads.

In order to form a proper notion of the phenomena of the atmoſphere, as exhibited at any one place, it will be neceſſary to obtain a correct notion of the atmoſphere itſelf at large. It appears to be a collection or mixture of various elaſtic fluids in very different proportions, retained on the ſurface of the earth by their gravitation. The principal part of the weight of the atmoſphere ariſes from the permanently elaſtic fluids, azotic gas, and oxygenous gas, the quantities of which are as 4 to 1 nearly: about one part in a thouſand of the atmoſphere is conſtituted of another permanently elaſtic fluid, carbonic acid. The reſt of the atmoſphere conſiſts of aqueous vapour or ſteam, an elaſtic fluid ſubject to partial condenſation by a diminution of temperature. The quantity of this elaſtic fluid is variable at different places and in different ſeaſons; it may perhaps conſtitute $\frac{1}{70}$th of the weight of the whole atmoſphere, conſidered as a general average for the earth; but in ſome places within the torrid zone it may amount to $\frac{1}{30}$th of the weight of the incumbent atmoſphere; and in the polar regions may ſometimes be leſs than $\frac{1}{10.000}$dth part of the atmoſphere. It is this portion of the atmoſphere which more immediately occaſions ſome of the principal phenomena in meteorology, particularly clouds, rain, hail, ſnow, dew, and thunder and lightning: it has conſiderable influence on the temperature of the atmoſphere; but it has little effect in the production of winds, or on the variation of the barometer.

The atmoſphere decreaſes in denſity as we aſcend in a geometrical progreſſion to equal aſcents. As far as experience warrants the concluſion, the ſeveral kinds of gas decreaſe in denſity in the ſame ratio: thus, if at three miles in height, the weight of the atmoſphere is one-half what it is at the earth's ſurface; then will the proportions of the ſeveral elaſtic fluids found in a given volume of air, at that place, be the ſame as what they are in a like volume of air taken at the ſurface of the earth; all the kinds being diminiſhed one-half nearly in weight and denſity. This concluſion is not, perhaps, ſtrictly true for every height, nor for any two heights; but experiments have not been made with ſufficient accuracy to aſcertain the deviation from this law. At ſix miles elevation the barometer would ſtand at $\frac{1}{4}$ the height at the ſurface, or at $7\frac{1}{2}$ inches; at 9 miles of elevation, $3\frac{3}{4}$ inches; at 12 miles, $1\frac{7}{8}$ inch; and at 15 miles, nearly 1 inch. Hence it ſeems that the greateſt part of the atmoſphere is at all times within 15 or 20 miles of the ſurface of the earth; and it is probable that the ordinary phenomena of winds, clouds, rain, &c. are chiefly confined within much narrower limits.

Origin of Winds.—If the atmoſphere ſhould be perfectly calm at any one time all over the ſurface of the earth, it is evident that there muſt be an equilibrium of preſſure, or the weight of air incumbent over every place muſt be the ſame, and the real velocity of the air over any place ariſing from the earth's rotation around its axis, would be the very ſame as that of the place itſelf; namely, at the equator the velocity would be about 1000 miles *per* hour, from W. to E.; and in the lat. of London the velocity would be 620 miles from W. to E.; and at the poles of the earth, the air would have no velocity. If an equilibrium of this kind were once obtained, there appears to be no mechanical reaſon why it ſhould be diſturbed, ariſing out of the circumſtance of the earth's rotation. But if any cauſe ſhould ariſe which diſpoſes the air to move from any part of the earth in a northerly or ſoutherly direction, it is alſo evident that the rotation of the earth would conſpire with this cauſe to modify the direction, and to accelerate the velocity of the current of air ſo produced. For inſtance, ſuppoſe a body of air in the lat. of London was to receive an impulſe or ſeries of impulſes, ſuch as to compel it to move 10° ſouthward in a day, with an uniform velocity; this current of air gradually paſſing through other air of greater velocity eaſtward, will in part be carried along with the current, and when it arrives at the 10th parallel it will find air diſpoſed to move from W. to E. with a velocity of 750 miles *per* hour, being the velocity of the place; whereas its own velocity in that direction was only 620 miles. Now if the moving current of air have not acquired the additional velocity of 130 miles *per* hour from W. to E., it muſt appear at the place to have a motion from E. to W. with a velocity equal to the difference or deficiency; ſuppoſe it has only acquired 105 miles additional velocity eaſtward, then it will appear to move at the rate of 25 miles *per* hour weſtward; and as it moves alſo 25 miles ſouthward each hour, it is manifeſt its direction will be truly that of a N.E. wind, and its velocity 35 miles *per* hour. If the air is impelled northward, inſtead of ſouthward, then *vice verſâ*, a S.W. wind is produced. It appears, then, that as ſoon as any cauſe operates to impel a portion of the atmoſphere either north or ſouth, that inſtant the rotation of the earth on its axis begins to manifeſt an effect, which is to accelerate the apparent velocity of the current, and to divert its direction. We are then directed to look for ſome natural cauſe or ſtimulus which may, either occaſionally or conſtantly, operate in impelling the atmoſphere in a meridional direction. This cauſe is found in the unequal temperature of the atmoſphere in the different zones of the earth. The torrid zone is always the warmeſt region of the earth. The temperate zones are colder; but alternately approximate to the temperature of the torrid zone. The frigid zones are colder ſtill, but they alſo alternately make ſome approximation to the temperature of the torrid zone. Now it is well known that air is expanded by heat, and hence becomes ſpecifically lighter; the air over the torrid zone being then ſpecifically lighter than the air in the temperate zones, it will have a tendency to aſcend, whilſt the air in the two temperate zones will preſs forward to ſupply the vacancy, and the air in the frigid zones will follow after upon the ſame principle. Hence it appears that there muſt always be a draught of air from the polar towards the equatorial regions, greater or leſs according to the exiſting difference of temperature. As, however, an accumulation of air in the torrid zone would thus enſue, and a deficiency in the other zones, means muſt be found to return the exceſs of air over the torrid zone into the northern and ſouthern regions. This is effected, without doubt, by the upper regions of the atmoſphere in the torrid zone meeting with a leſs lateral preſſure than is adequate to ſupport them. The air riſes up, and overflows in ſome degree, ſo that currents northward and ſouthward are eſtabliſhed, in oppoſite directions to the two former currents, and ſuperior to them. The two under currents, as has been ſhewn, will be N.E. and S.E. winds; the two upper currents, by a like method of reaſoning, will be S.W. and N.W. winds. The two under currents, or the N.E. and S.E., meeting each other in the torrid zone, their velocities N. and S. are deſtroyed by their oppoſition, but their velocity from E. to W. continues, and occaſions the regular or trade-winds. But it is not our deſign in this place to do more than point out the great active principles, which are conſtantly at work to produce a motion and circulation of the atmoſphere; a more particular deſcription and detail will be given under the article WINDS. The principle, however, cannot but be allowed by thoſe who duly conſider the effect of the earth's rotation, and the currents of air we ordinarily obſerve in any room containing a fire.

Origin and Nature of Clouds.—Clouds are conſtituted of an infinite number of very minute drops of water; they are formed by the condenſation of ſteam or vapour by cold. In order to underſtand their origin, we muſt take a view of the atmoſphere of ſteam already mentioned, and conſider its riſe and properties. Steam, as every one knows, is an elaſtic fluid ariſing from the union of water and heat; and it is again condenſible into water by cold, ſo as to loſe its elaſticity. Steam is formed almoſt inſtantaneouſly from water incloſed in a vacuum; the maximum effect is at once produced, and there is an end of the evaporation, unleſs the temperature is increaſed. The ſame effect is produced when the water is incloſed in the ſame volume of perfectly dried common air, or any other kind of air perfectly dried, not acting chemically on water. The ſame quantity of water, in this caſe as in the former, is converted into vapour, and the ſame elaſtic force of ſteam is produced for the maximum effect; but there is this difference in the two caſes, the latter requires a ſenſible *time,* in order that the maximum effect may be produced. This demonſtrates that the preſence of air retards evaporation, and that in all probability is, by reaſon of its preſſure on the ſurface of the water. From all theſe obſervations it might be expected that evaporation would go on, and the quantity of ſteam in the air increaſe till the maximum effect was produced over all the earth, and then there would be a total ceſſation. But we find that evaporation is unceaſingly going on in almoſt every place, and even at the very place where rain is deſcending. This curious fact would appear at firſt view to be of difficult explanation; but the difficulty is not inſurmountable, as will preſently be ſhewn.

It appears that the quantity of ſteam that can be contained in a veſſel, either with or without air, increaſes nearly in geometrical progreſſion to equal intervals of temperature. Mr. Dalton contends that the increaſe is *accurately* in geometrical progreſſion, and that the intervals of temperature are not duly meaſured by the common thermometer; however this may be, there can be no doubt that the former increaſes more rapidly than the latter. It has been found, that if the maximum of ſteam in air of 32° be denoted by 2, that of air of 52° will be denoted by 4, and that of air of 72° by 8. (See Dalton's Chemiſtry, p. 14.) Hence it is obvious, that if equal portions of air of 32° and 72°, both ſaturated with vapour, were mixed together, the mean temperature would be 52°, and the quantity of vapour preſent in the mixture would be 10; whereas, the greateſt quantity of vapour that the air of that temperature could contain, is only 8, according to the above ſtatement; whence two parts muſt be condenſed, and would firſt appear in the ſhape of a cloud, and be ultimately depoſited. Here, then, we perceive the origin of clouds and rain. It has been ſhewn that an unceaſing circulation of air between the equatorial and polar regions takes place; and as both currents of air muſt be ſuppoſed to be near the point of ſaturation with vapour, there muſt frequently be a cloud formed by their mixture. The current from the equator is warm and full of vapour, compared with the air of like altitude in the northern and ſouthern regions; and *vice verſâ* with regard to the air from the north and ſouth towards the equator. This laſt air is cold, but nearly ſaturated with vapour for its temperature; and hence will precipitate vapour from warm air. Were the currents of air to and from the equator quite ſaturated with vapour at their departure, there muſt be perpetual cloudineſs to accompany their progreſs; but the circulation of air is ſo quick, and the ſaturation with vapour is ſlowly effected by reaſon of the preſſure of the atmoſphere, that it rarely happens for the currents to be ſaturated at their commencement. It is eaſy to ſee, then, that this circumſtance, with others equally obvious, may modify the effects ſo far, as that the atmoſphere may be either clear or cloudy over any place whilſt the general currents are making their ordinary progreſs. It is owing to the ſame circumſtance (the ſlowneſs with which ſteam circulates itſelf through the air) that two currents of air may meet in the higher regions of the atmoſphere, and a precipitation of vapour may enſue, when the inferior ſtrata of air are not ſaturated with vapour. This, indeed, is generally the caſe in ſhowery weather, but never in long continued rain. The more particular details of this theory of rain will be better deferred till the article *Rain* is compoſed. See RAIN, alſo CLOUDS, EVAPORATION, &c.

If any doubt ſhould remain as to the correctneſs of the above views in regard to the formation of clouds and rain, it may be completely removed, if we will take the trouble to examine the phenomena of a drying ſtove. We may there ſee the proceſs above deſcribed completely copied in miniature. The moment we open the door to enter the ſtove, the cold air ruſhes in, and a prodigious cloud is inſtantly formed, ſo as to render ſurrounding objects inviſible: ſoon after the door is ſhut, the cloud diſappears, and the internal air reſumes its uſual tranſparency. Here, then, is an inſtance of a current of cold air ruſhing into warm, both of them being below the point of ſaturation with vapour, and yet a great precipitation takes place. Again, if we notice the air which has aſcended the air-flues of the ſtove and is mixing with the atmoſphere, we find a copious ſtream or cloud of condenſed vapour ſpreading itſelf all around. This is formed by the current of warm air ruſhing into the cold atmoſphere, though both of them are uſually below the point of ſaturation with vapour.

Height of the Clouds.—We ſhall ſubjoin the reſults of a ſeries of obſervations on the height of the clouds: theſe are the more valuable, as very few meteorologiſts have an opportunity of making ſimilar obſervations. They were made by Mr. Croſthwaite, of Keſwick, in Cumberland. In mountainous countries the clouds frequently ſurround the hills, like a girdle, and exhibit a ſmooth horizontal ſurface; if the height of the hill at the point of interſection be known by previous obſervation, then the mountain may be made into a ſcale to meaſure the altitude of the clouds. The mountain Skiddaw was fixed upon for that purpoſe, and Mr. Croſthwaite determined its height above Derwent lake to be 1050 yards. This altitude is probably too great, but the error will have no material effect in the preſent conſideration.

"The reſult of five years' obſervations is contained in the following table. In order to determine what effect the ſeaſons of the year have upon the clouds in this reſpect, we have kept the obſervations in the ſeveral months diſtinct. It is to be noted, that the column containing the number of obſervations when the clouds were above Skiddaw, includes thoſe obſervations when there were no clouds viſible; but Mr. Croſthwaite has noted this laſt circumſtance alſo in the journal, and it appears that about one obſervation in thirty, of thoſe in that column, ſhould be deducted on that account.

	Clouds from 0 to 100 Yards high.	From 100 to 200 Yards high.	From 200 to 300 Yards high.	From 300 to 400 Yards high.	From 400 to 500 Yards high.	From 500 to 600 Yards high.	From 600 to 700 Yards high.	From 700 to 800 Yards high.	From 800 to 900 Yards high.	From 900 to 1000 Yards high.	From 1000 to 1050 Yards high.	Above 1050 Yards high.	Number of Obſervations.
January -	0	9	12	28	53	39	37	32	30	39	36	116	431
February -	5	10	5	15	41	45	45	27	43	38	29	94	397
March -	2	1	6	11	22	40	32	36	24	32	44	184	434
April -	0	4	5	18	24	34	37	26	23	38	35	206	450
May -	0	1	4	8	13	31	22	25	30	34	27	270	465
June -	0	2	2	6	24	24	29	21	34	41	34	233	450
July -	0	2	2	18	35	36	35	25	35	48	38	191	465
Auguſt -	0	4	5	13	27	39	35	26	25	45	30	215	464
September	0	1	7	13	38	38	32	30	27	51	27	186	450
October -	2	0	5	13	26	49	31	31	46	61	37	164	465
November	0	0	3	13	30	58	42	38	46	45	47	128	450
December	1	8	6	23	41	53	39	50	47	46	35	111	460
Total -	10	42	62	179	374	486	416	367	410	518	419	2098	5381

"It may be proper to obſerve, that the ſuppoſition of the clouds riſing or falling with the barometer, or as the denſity of the air increaſes or diminiſhes, is not at all countenanced by theſe obſervations. Alſo, that in very heavy and continued rains the clouds are moſtly below the ſummit of the mountain; but it frequently rains when they are entirely above it." Dalton's Meteorology, p. 40.

By comparing the parts of the above table, it is manifeſt that clouds are at an average higher in ſummer than in winter; and by analogy, we may conclude that clouds are higher in the torrid zone than in the temperate zones, and higher in theſe laſt than in the frigid zones. From the above obſervations it would ſeem, that the large, denſe, opaque clouds ſeldom are found more than one mile elevated in this country; but the thickneſs of the cloudy ſtratum is unknown, and may perhaps be ſeveral hundred yards. Different ſtrata of clouds are ſometimes obſerved one above another, in ſummer eſpecially. Small white ſtreaks of cloud are ſometimes ſeen at the elevation of three, four, five miles, or more. In theſe high regions, any condenſation that can take place is probably inſufficient to produce a cloud of great denſity or opacity.

Suſpenſion of Clouds.—It appears to many people wonderful how large and denſe clouds, conſiſting of drops of water, ſhould be ſo long ſuſpended in the air, as ſome of them ſeem to be, without materially deſcending; eſpecially as water is 800 times the weight of air. This is to be explained on two principles: the one is, that bodies in a ſtate of extreme diviſion are much more reſiſted in their motion through the air, or any other fluid, than when in large portions. Gravity, or the force of deſcent, remains the ſame whether the body is divided or not; but the ſurface increaſes with the diviſion of the body, and the reſiſtance increaſes with the ſurface. Hence it is that the extremely ſmall drops, conſtituting clouds, fall very ſlowly, till they begin to coaleſce or increaſe in ſize. The other principle is, that ſmall drops falling into a ſtratum of air not ſaturated with vapour, are frequently reſolved again into ſteam; thus, that part of the cloud which actually deſcends diſappears; and it not unfrequently happens that the whole cloud vaniſhes in this way, being again converted into vapour, and blended with the general maſs of the atmoſphere.

Rain, Snow, Hail, and Dew.—Whenever two currents of air of different temperatures meet and intermix, each of which is previouſly near the point of ſaturation with vapour, or whenever a body of atmoſpheric air is ſuddenly cooled (as by the rarefaction occaſioned by the ſtroke of an air-pump, or by opening the cock of a condenſing engine), a cloud is formed, and a precipitation often enſues. The precipitation is in the form of rain if the temperature be above 32° Fahr., but in the form of ſnow if the temperature be below the ſaid degree. Rain or ſnow is ordinarily obſerved in all latitudes; but in the torrid zone the latter is confined to the ſummits of the higheſt mountains. Hail is an extraordinary form in which the vapour is precipitated; it ſeems to ariſe from an inverſion of the ſtrata of the atmoſphere, by which a cold ſtratum is placed beneath a warmer one, contrary to the general diſpoſition of the atmoſphere. Rain is formed in the upper ſtratum, and this falling through the under ſtratum is cooled and frozen, receiving at the ſame time a conſiderable acceſſion from the condenſation on the ſurfaces of the frozen drops. Hail-ſhowers occur in all ſeaſons of the year, but more rarely in the ſummer months; they, however, ſometimes accompany thunder in thoſe months, and are peculiarly deſtructive and formidable. Hail ſeems to be confined principally to the temperate zones: it is probable that in this quarter of the globe hail is ſeldom obſerved, except between the parallels of 40° and 60° of latitude. It is more frequent in mountainous places than on plains; in the former hail-ſhowers uſually occur on five or ſix days of the year at an average.

Dew is formed when, inſtead of cold air mixing with warm, a cold ſolid or liquid body is preſented to (comparatively) warm air. There exiſts a determinable temperature at all times, which is juſt capable of ſupporting the vapour of the atmoſphere in an elaſtic ſtate. (See HYGROMETRY, *on the Dew-point.*) If the temperature of the cold body be below this, then the vapour of the atmoſphere is gradually condenſed into water on its ſurface: this is a well-known phenomenon, and preſented on various occaſions. The dew on the graſs and the hoar on walls after the breaking of a froſt, are two of the more ſtriking appearances of this kind.

Temperature of the Atmoſphere.—This important ſubject has already been treated upon at large under the heads, ATMOSPHERE, *Temperature of the;* and HEAT, in *Geography*, to which we muſt therefore refer. There is, however, one remarkable character of the atmoſphere, namely, that of the uniform decreaſe of temperature in aſcending, which has never been ſatisfactorily explained. An ingenious eſſay on this ſubject has lately been publiſhed, from which we ſhall here give an extract.

" It is a remarkable fact, and has never, I believe, been ſatisfactorily accounted for, that the atmoſphere in all places and ſeaſons is found to decreaſe in temperature in proportion as we aſcend, and nearly in an arithmetical progreſſion. Sometimes the fact may have been otherwiſe, namely, that the air was colder at the ſurface of the earth than above, particularly at the breaking of a froſt I have obſerved it ſo; but this is evidently the effect of great and extraordinary commotion in the atmoſphere, and is at moſt of a very ſhort duration. What then is the occaſion of this diminution of temperature in aſcending? Before this queſtion can be ſolved, it may be proper to conſider the defects of the common ſolution. Air, it is ſaid, is not heated by the direct rays of the ſun, which paſs through it as a tranſparent medium, without producing any calorific effect, till they arrive at the ſurface of the earth. The earth being heated, communicates a portion to the contiguous atmoſphere, whilſt the ſuperior ſtrata, in proportion as they are more remote, receive leſs heat, forming a gradation of temperature, ſimilar to what takes place along a bar of iron when one of its ends is heated.

" The firſt part of the above ſolution is probably correct: air, it ſhould ſeem, is ſingular in regard to heat; it neither receives nor diſcharges it in a radiant ſtate; if ſo, the propagation of heat through air muſt be effected by its conducting power, the ſame as in water. Now we know that heat applied to the under ſurface of a column of water is propagated upwards with great celerity, by the actual aſcent of the heated particles: it is equally certain, too, that heated air aſcends. From theſe obſervations it ſhould follow, that the cauſes aſſigned above for the gradual change of temperature in a perpendicular column of the atmoſphere, would apply directly to a ſtate of temperature the very reverſe of the fact; namely, to one in which the higher the aſcent, or the more remote from the earth, the higher ſhould be the temperature.

" Whether this reaſoning be correct or not, it muſt, I think, be univerſally allowed, that the fact has not hitherto received a ſatisfactory explanation. I conceive it to be one involving a new principle of heat; by which I mean a principle that no other phenomenon of nature preſents us with, and which is not at preſent recogniſed as ſuch. I ſhall endeavour in what follows to make out this poſition.

" The principle is this:—*The natural equilibrium of heat in an atmoſphere, is when each atom of air in the ſame perpendicular column is poſſeſſed of the ſame quantity of heat;* and, conſequently, *the natural equilibrium of heat in an atmoſphere is when the temperature gradually diminiſhes in aſcending.*

" That this is a juſt conſequence cannot be denied, when we conſider that air increaſes in its capacity for heat by rarefaction; when the quantity of heat is given or limited, therefore, the temperature muſt be regulated by the denſity.

" It is an eſtabliſhed principle, that any body on the ſurface of the earth unequally heated is obſerved to tend conſtantly towards an equality of temperature: the new principle announced above, ſeems to ſuggeſt an exception to this law. But if it be examined, it can ſcarcely appear in that light. *Equality of heat and equality of temperature,* when applied to the ſame body in the ſame ſtate, are found ſo uniformly to be aſſociated together, that we ſcarcely think of making any diſtinction between the two expreſſions. No one would object to the commonly obſerved law being expreſſed in theſe terms: *When any body is unequally heated, the equilibrium is found to be reſtored when each particle of the body becomes in poſſeſſion of the ſame quantity of heat.* Now the law thus expreſſed is what I apprehend to be the true general law, which applies to the atmoſphere as well as to other bodies. It is an *equality of heat,* and not an *equality of temperature,* that nature tends to reſtore.

" The atmoſphere, indeed, preſents a ſtriking peculiarity to us in regard to heat: we ſee in a perpendicular column of air, a body without any change of form, ſlowly and gradually changing its capacity for heat from a leſs to a greater; but all other bodies retain a uniform capacity throughout their ſubſtance.

" If it be aſked why an equilibrium of heat ſhould turn upon the equality in *quantity* rather than in *temperature?* I anſwer, that I do not know; but I reſt the proof of it upon the fact of the inequality of temperature obſerved in aſcending into the atmoſphere. If the natural tendency of the atmoſphere was to an equality of temperature, there does not appear to me any reaſon why the ſuperior regions of the air ſhould not be at leaſt as warm as the inferior.

" The arguments already advanced on behalf of the principle we are endeavouring to eſtabliſh, are powerfully corroborated by the following facts:—By the obſervations of Bouguer, Sauſſure, and Gay Luſſac, we find that the temperature of the air at an elevation where its weight is $\frac{1}{2}$ that at the ſurface is about 50° Fahrenheit leſs than that at the ſurface; and from my experiments (Manch. Memoirs, vol. v. p. 525.) it appears that air being ſuddenly rarified from 2 to 1, produces 50° of cold. Whence we may infer, that a meaſure of air at the earth's ſurface being taken up to the height above-mentioned, preſerving its original temperature, and ſuffered to expand, would become two meaſures, and be reduced to the ſame temperature as the ſurrounding air; or *vice verſâ,* if two meaſures of air at the propoſed height were condenſed into one meaſure, their temperature would be raiſed 50°, and they would become the ſame in denſity and temperature, as the like volume of air at the earth's ſurface. In like manner we may infer, that if a column of air from the earth's ſurface to the ſummit of the atmoſphere were condenſed, and brought into a horizontal poſition on the earth's ſurface, it would become of the ſame denſity and temperature as the air around it, without receiving or parting with any heat whatever.

“ Another important argument in favour of the theory here propoſed, may be derived from the contemplation of an atmoſphere of vapour. Suppoſe the preſent aerial atmoſphere were to be annihilated, and one of ſteam or aqueous vapour were ſubſtituted in the place; and ſuppoſe, further, that the temperature of this atmoſphere at the earth's ſurface were every where 212°, and its weight equal to thirty inches of mercury. Now at the elevation of about ſix miles the weight would be fifteen inches or one-half of that below, at twelves miles it would be 7.5 inches, or one quarter that at the ſurface, &c. and the temperature would probably diminiſh 25° degrees at each of theſe intervals. It could not diminiſh more; for we have ſeen (p. 14.) that a diminution of temperature of 25° reduces the force of vapour one-half; if, therefore, a greater reduction of temperature were to take place, the weight of the incumbent atmoſphere would condenſe a portion of the vapour into water, and the general equilibrium would thus be diſturbed perpetually from condenſations in the upper regions. But if we ſuppoſe, on the other hand, that the diminution of temperature in each of theſe intervals is leſs than 25°, then the upper regions would admit of more vapour without condenſation; but it muſt take place at the ſurface, becauſe vapour at 212° cannot ſuſtain more than the weight of thirty inches of mercury.” Dalton's New Syſtem of Chemical Philoſophy, p. 123.

Thunder and Lightning.—Of all the atmoſpherical phenomena there are none more awfully ſublime than thoſe of thunder and lightning. Reſpecting the nature and cauſe of theſe it would be uſeleſs to cite the opinions of ancient philoſophers, as all our real knowledge on theſe ſubjects is derived from modern diſcoveries, and particularly thoſe in electricity. Dr. Franklin aſcertained the identity of lightning and electricity; ſince then the attention of philoſophers has been directed to the inquiries, how the electric fluid or energy circulates from the earth to the air and back again to the earth; by what means it is raiſed into the atmoſphere, how it becomes redundant, and how it is returned to the earth again. The aqueous vapour, or ſteam of the atmoſphere, appears to be the vehicle. The dry and permanent elaſtic fluids have probably no more to do than as non-conductors of electricity to obſtruct its paſſage through the atmoſphere. When water is evaporated it takes along with it a greater quantity of electricity, as well as heat, than it had before; that is, the capacity of vapour for electricity is greater than that of water. This fact has been obſerved by moſt of thoſe who have, of late years, carefully attended to electrical phenomena. (See *Electricity of the* ATMOSPHERE.) Of courſe when the ſteam is condenſed into water, there muſt be a redundance of electricity as well as of heat; and if the air be a non-conductor (as it undoubtedly is when dry), the drops of water, or the cloud formed, muſt be electrified poſitively. This is aſcertained to be the fact; indeed it may be ſeen in the article above referred to, that the electricity of the atmoſphere is almoſt univerſally poſitive. If, during a thunder-ſtorm, and on ſome few other occaſions, the atmoſphere exhibit ſigns of negative electricity, it can ſcarcely be doubted that this is occaſioned by the action of ſome ſuperior cloud, which being poſitively electrified, makes the other, or the circumambient air, negative by induction, agreeably to the well-known law of electricity. The reaſon why the atmoſphere cannot be negatively electrified is, that in the ordinary courſe of nature *no evaporation of water inſulated by the atmoſphere can ever take place;* the evaporation being always originally from the earth's ſurface. We have obſerved, indeed, that clouds are ſometimes re-diſſolved in the air; but then theſe clouds being inſulated muſt have their exceſs of electricity about them, and conſequently will not rob the atmoſphere at large of any electricity that naturally belongs to it.

Conformably to theſe obſervations then, we may lay it down as an eſtabliſhed maxim, that *the electricity of every cloud at its formation is poſitive.* It will remain then to be explained how the phenomena of thunder and lightning are to be accounted for on this poſition. One moſt obvious queſtion occurs; if the electricity of one cloud find it expedient to force its way to the earth by a violent diſcharge, why is it not univerſally the caſe, and why are not thunder and lightning as frequent as clouds and rain?

Before this queſtion can be ſatisfactorily anſwered, we muſt make ourſelves acquainted with the circumſtances that uſually accompany thunder and lightning. It will be generally allowed, that the frequency of thunder and lightning, in this part of the world at leaſt, is in proportion to the quantity of aqueous vapour in the atmoſphere, or, which nearly amounts to the ſame thing, to the temperature of the air. The following extract from Dalton's Meteorology, being the reſult of five years' obſervations, will ſupport this aſſertion. See pages 29 and 46.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Mean temperature each month	37°	39°	39°	45°	51°	56°	57°	58°	53°	46°	41°	35°
Number of days when thunder was heard	1	0	0	3	7	5	12	7	4	2	0	1

In fact, thunder is very rare in winter, perhaps never known in froſt, more frequent in ſpring and autumn; but it is in the months of May, June, July, Auguſt, and September, which are the warmeſt months in the year, that we uſually expect, and have to record thunder-ſtorms of any conſequence or duration. Of theſe months, July, which is the middle of the ſeries, is generally the warmeſt, and from the above ſtatement appears pre-eminent for thunder-ſtorms. It is further remarkable, that when thunder is obſerved in winter, *it is always during a low barometer, and an unuſually warm vapoury ſtate of the atmoſphere;* alſo in ſummer, whenever the dew-point temperature arrives at a maximum for the ſeaſon (that is, from 55° to 62°, or upwards), it is reduced for the moſt part by a thunder-ſtorm and conſiderable rain. With regard to other climates, it is known that thunder is frequent and violent in low latitudes, and in all places where the extremes of heat and moiſture are found; but we do not often hear of its effects in high latitudes where neither heat nor moiſture can be long prevalent. Whenever vapour is precipitated from the atmoſphere by the cauſes we have already aſſigned, the quantity will be greater in proportion as the abſolute quantity of aqueous vapour in the atmoſphere is greater: this ariſes from the increaſe of vapour being in a geometrical progreſſion to that of temperature in arithmetical progreſſion. Rain, with the dew-point at 60°, will be twice as heavy, all other circumſtances the ſame, as rain with the dew-point at 40°; becauſe there is twice as much ſteam in the air in the former caſe. It has already been obſerved, that the clouds are higher or more elevated above the ſurface of the earth in ſummer than in winter. From combining theſe obſervations we may, perhaps, obtain a ſatisfactory reaſon for thunder not accompanying every cloud and ſhower of rain. In winter the clouds are low, leſs denſe, and conſequently leſs electric, than in ſummer; their electricity ſilently and ſlowly ſteals away to the earth's ſurface. In ſummer the intenſity of the electricity is double, in conſequence of its quantity being as the vapour condenſed, and it is more removed from the earth, or inſulated by its ſuperior altitude; hence its energy may be ſo far increaſed as to overcome the reſiſtance of the air. Thus, if an imperfectly rounded ball be preſented at a proper diſtance from the conductor of an electrical machine, it will ſlowly and ſilently draw off the electricity; but if the intenſity of the electricity be increaſed ſufficiently, nearly the whole will come away in an inſtant in the ſhape of a denſe ſpark, with a ſnapping noiſe.

There is another circumſtance which probably has conſiderable influence in giving a highly vapourized air its character for favouring thunder. It admits of ſeveral ſtrata of clouds arranged one beneath another, which will operate like the ſeries of plates in the Voltaic pile in increaſing the intenſity of their electric charge. This diſpoſition cannot well occur in winter, as the higher air is too deficient in vapour to ſpare an adequate quantity for the purpoſe.

One very remarkable character of thunder has not been duly noticed by philoſophers; that is, the long continuance of each ſingle peal. It may, perhaps, be ſafely aſſerted, that the duration of a peal of thunder is at an average about twenty ſeconds; it is certainly longer in many inſtances. Now, as the flaſh of lightning is inſtantaneous, we have no rational method of explaining the continuance of the ſound, but by ſuppoſing the diſcharge to extend for a great many miles; if the ſound continue half a minute, the diſcharge cannot be leſs than through the ſpace of ſeven miles, but may be twice as much, or more. How, then, is this great length of the diſcharge to be explained? In order to meet this queſtion, we may remark, that clear air is a bad conductor of electricity, but that clouded air poſſeſſes a kind of middle quality, of being neither a good conductor, nor a good non-conductor. We may ſuppoſe that the ſame electric energy which forces a way through 100 yards of clear air, may be capable of forcing a way through 10,000 yards of denſely-clouded air. Hence we may account for the long continuance of thunder, by ſuppoſing that the electricity of a ſuperior cloudy ſtratum ſtrikes an inferior ſtratum at the neareſt point, and runs along it for a number of miles. The ſound arrives at the ear from the neareſt point of the courſe firſt, and afterwards ſucceſſively from the more remote points, and thus occaſions the continuance of the ſound. This view of the ſubject is corroborated by the obſervation, that whenever a clap of thunder is noticed to be remarkably near, or to ſucceed the flaſh immediately, by one inhabitant of any large town, it is noticed in like manner by moſt of the other inhabitants, though ſituate ſome miles diſtant from each other.

Thunder may be heard to the diſtance of ten or fifteen miles, but ſeldom further; this is aſcertained from a calculation of the velocity of ſound during the interval between the flaſh and the report in a dark night. It is uncertain to what diſtance lightning may be ſeen; we ſometimes ſee it in the night when no clouds are viſible; in this caſe it muſt be at a great diſtance, perhaps one or two hundred miles, or more. In ſuch caſes the flaſhes are obſerved to be much more frequent than when the thunder is near; this ſeems to indicate that in the latter inſtance we do not perceive all the lightning of the ſtorm.

Cauſes of the Variation of the Barometer.—One of the moſt difficult problems in meteorology is to aſſign the cauſes for the daily changes in the weight of the atmoſphere. Various opinions have been held with regard to theſe cauſes, many of which are too futile to merit animadverſion. This ſubject has already received an ample diſcuſſion under the head BAROMETER, *Cauſe of the Phenomena of*, ſo that we ſhall be brief on the preſent occaſion. It may be proper, in the firſt place, to ſtate the leading facts: namely, that the variation of the barometer is leaſt in the torrid zone, and is greater, as we proceed thence northward or ſouthward; that in the temperate and frigid zones, the variation is always greater in winter than in ſummer. We ſhall take for granted that the whole atmoſphere of the earth continues the ſame in quantity, and that the variations of the barometer ariſe from unequal diſtribution of the atmoſphere, and not from any generation or deſtruction of elaſtic fluids. We ſhall alſo take for granted that any changes in the aqueous vapour of the atmoſphere are inſufficient to explain the phenomena, becauſe if the whole quantity of aqueous vapour in the atmoſphere were withdrawn from any place on any occaſion, it would not depreſs the barometer one quarter of what is frequently obſerved in high northern latitudes in winter.

Mr. Kirwan's idea that the atmoſphere is higher over the equator than over the poles, owing to the difference of temperature in thoſe two regions, and that the currents occaſioned thereby are inſtrumental in producing the changes of the barometer, is certainly entitled to our conſideration. On this principle Mr. Dalton has conſtructed a table to ſhew the relative heights of the barometer at given elevations over the equator, the north of England, and the north pole. (Meteorology, page 83.) "The mean heat at the earth's ſurface under the equator is ſuppoſed 84°; the mean heat in theſe parts for the hotteſt month of ſummer at 60°, and for the coldeſt month of winter at 35°. The mean annual temperature at the north pole being ſuppoſed 31°, the mean temperature for the coldeſt month of winter at that place may perhaps be ſtated at 2°."

Elevation of the Barometer above the Level of the Sea in Engliſh Miles.	Height of the mercurial Column of the Barometer in Inches.			
	Above the Equator.	Above the North of England.		Above the North Pole.
		In Summer.	In Winter.	In Winter.
0	30.00	30.00	30.00	30.00
2	20.55	20.10	19.58	18.81
4	13.61	12.96	12.24	11.19
6	8.66	7.98	7.26	6.24
8	5.25	4.65	4.03	3.19
10	3.00	2.52	2.05	1.45
12	1.58	1.24	.93	.56

From this table it ſhould ſeem, that the weight of air in a vertical column of ſix miles over the equator is nearly equal to that of a column of five miles over the pole in winter: that is, the heights of the atmoſphere at the equator and pole are as 6 to 5 nearly. But the relation between the equator and the north of England in this reſpect, in ſummer is as 16 to 15, and in winter as 8 to 7 nearly. Now when the variations in the altitudes are greateſt (in winter), the energy or velocity of the great northern and ſouthern currents of air is greateſt, as has been ſhewn above on winds, and therefore the irregularities occaſioned by the interference, &c. of theſe currents muſt then be alſo at their greateſt. Theſe irregularities are ſhewn by the barometer. If we were to ſuppoſe that, from ſome extraordinary incidents, the atmoſphere over the north of England

land in winter were raiſed to the ſame elevation as that over the equator, all other circumſtances being the ſame, the barometer muſt riſe nearly four inches; and it would ſink four inches if the atmoſphere were depreſſed as much below the mean. But this ſuppoſition is much too extravagant to be admitted, and indeed the facts do not call for any thing near it. The barometer rarely riſes or falls more than one and a half inch from the mean in this country; and conſequently a ſlight variation of the mean altitude of the atmoſphere is all that is required, and ſuch may well be admitted.

Beſides this variation of the mean altitude of the atmoſphere, Mr. Dalton thinks there is another cauſe that acts in combination with it to produce the extraordinary falls of the barometer in winter, (which are obſerved to go below the mean more than the riſes go above it.) He ſuppoſes, that during a violent S.W. wind on the occaſion of a thaw (at which time the minimum uſually takes place), a temporary change in the law of temperature in aſcending exiſts. That the temperature in aſcending is then more nearly uniform than at other times; by which means the elaſticity in the lateral directions will be equal to any force that may be oppoſed, whilſt the weight of a vertical column will be leſs than otherwiſe. See Meteorology, page 109.

For further information on meteorology, ſee Anemometer, Atmosphere, Barometer, Cloud, Dew, Evaporation, Fog, Hail, Hygrometry, Lightning, Meteor, Rain, Snow, Thermometer, Thunder, Wind, &c.

METEOROMANCY, a ſpecies of divination by meteors, principally by lightning and thunder: this method of divination paſſed from the Tuſcans to the Romans, with whom, as Seneca informs us, it was held in high eſteem.

METEOROS, μετεωρος, from μετα, and αιρω, *to elevate*, in *Medicine*, elevated, ſuſpended, ſublime, erect, tumid. Thus μετεωρα αλγηματα, are expounded by Galen, Com. ad. Aph. 7. lib. vi. ſublime pains: thoſe which are above the peritonæum, or affect the ſuperficial and external parts of the body. Theſe pains are oppoſed to ſuch as are deeply ſeated, and called τα μη μετεωρα, not ſublime, but deep, and ſeated within the peritonæum.

METEOROSCOPE, from μετεωρος, *high*, and σκοπος, of σκεπτομαι, *I view*, *obſerve*, a name which the ancient mathematicians gave to ſuch inſtruments as they uſed for obſerving and determining the diſtances, magnitudes, and places of the heavenly bodies; many of which they regarded as meteors.

The name, however, may much more properly be applied to meteorological inſtruments.

METEPEC, in *Geography*, a town in the province of Mexico.

METERISCH, a town of Moravia, in the circle of Iglau; 17 miles E. of Iglau.

METESSIB, an officer of the eaſtern nation, who has the care and overſight of all the public weights and meaſures, and ſees that things are made juſtly according to them.

METEYARD, in *Rural Economy*, a term applied to a ſtaff or beam of a certain length for taking meaſures.

METEZAU, Clement, in *Biography*, a celebrated French architect, who flouriſhed in the former part of the 17th century, was a native of Dreux, but ſettled at Paris, became architect to Lewis XIII., and acquired much fame by carrying into execution, with Tiriot, a Pariſian maſon, the plan ſuggeſted by cardinal Richelieu for reducing Rochelle, by means of an immenſe dyke, in imitation of what Cæſar had done at Durazzo, and Alexander the Great at Tyre. This ſcheme was to run a ſolid wall acroſs a gulf upwards of 740 fathoms, or more than three quarters of a mile broad, into which the ſea rolled with great force, and when the wind was high, with an impetuoſity which ſeemed to ſet at defiance the art of man. Thoſe who had undertaken the buſineſs were not to be turned aſide by any obſtacles: they began, by throwing in huge rocks, to lay a kind of foundation; upon theſe were placed vaſt ſtones, cemented by the mud thrown up by the ſea. Theſe were ſupported by immenſe beams, driven into the bottom with incredible labour. It was raiſed ſo high, that the ſoldiers were not incommoded by the water, even at ſpring tides. The platform was nearly 30 feet wide, and 90 feet at the foundation. At each extremity there was a ſtrong fort, in the middle there was an open paſſage of 150 paces, ſeveral veſſels being ſunk immediately before it, together with high ſtakes in a double row, and before theſe 35 veſſels linked together, ſo as to form a kind of floating palliſade. This amazing dyke was completed in ſomewhat leſs than ſix months, and proved the principal means of occaſioning the ſurrender of the city. So honourable were the exertions of M. Metezau in this buſineſs, that his portrait was circulated widely through France, to which were attached the following lines,

> "Dicitur Archimedes Terram potuiſſe movere:
> Æquora qui potuit ſiſtere, non minor eſt."

METH, Meti, or *Mott*, in *Geography*, a ſmall iſland near the coaſt of Africa, at the entrance of Babelmandeb, with a town upon it. N. lat. 11° 15′. E. long. 48° 45′.

METHANA, a town of the Morea, near the coaſt of the gulf of Engia; 56 miles E.S E. of Napoli di Romania.

METHEGLIN, a drink prepared of honey; one of the moſt pleaſant and general drinks the northern parts of Europe afford; and much uſed among the ancient inhabitants.

The word is Welſh, *meddyglin*, in which it ſignifies the ſame. There are divers ways of making it; one of the beſt of which follows: put as much new honey, naturally running from the comb, into ſpring water, as that, when the honey is thoroughly diſſolved, an egg will not ſink to the bottom, but be juſt ſuſpended in it; boil this liquor for an hour, or more, till ſuch time as the egg ſwim above the liquor about the breadth of a groat; when very cool, next morning, it may be barrelled up; adding to each fifteen gallons an ounce of ginger, as much of mace and cloves, and half as much cinnamon, all groſsly pounded: a ſpoonful of yeaſt may be alſo added at the bung-hole, to promote the fermentation. When it has done working, it may be cloſely ſtopped up; and, after it has ſtood a month, it ſhould be drawn off into bottles. See Mead.

METHO, in *Geography*, a ſmall independent country of Africa, S.E. of Fittré.—Alſo, a town of the Morea; 34 miles E.S.E. of Napoli di Romania.

METHOD, Methodus, from μεθοδος, in *Logic* and *Rhetoric*, the art or rule of diſpoſing things in ſuch a manner, as that they may be eaſily comprehended; either in order to diſcover the truth, of which we ourſelves are ignorant; or to ſhew or demonſtrate it to others when known, or to fix it in the memory. See Disposition.

Gaſſendus diſtributes method, with regard to its object, into three kinds, or branches, *viz.* inventionis, *the method of invention*, or diſcovering a truth unknown.

Methodus judicii, the method of judging or determining of a truth, or poſition, propoſed.

And *methodus demonſtrationis*, or method of demonſtration; that is, of exhibiting it to another.

Method is diſtributed by others into two general kinds, *viz. natural* and *arbitrary*. *Natural* method is that which obſerves the order of nature, and proceeds in ſuch a manner, as that the knowledge of things which follow depends in a great meaſure on the things which go before. *Arbitrary* method leaves the order of nature, and accommodates itſelf to many purpoſes: as to treaſure up things, and retain them in the memory; to harangue and perſuade mankind to any practice in the religious or civil life; or to delight, amuſe, or entertain the mind. This kind of method is chiefly purſued in poetry and oratory.

Natural method is again ſubdivided into two kinds; the one of *reſolution*, which is that we generally uſe in our enquiry after truth. The other of *compoſition*, by which the truth, once found, is taught or imparted to others.

In the method of *reſolution*, called alſo by geometers the *analytic* method, we proceed from ſome general known truths to others, which belong to ſome particular or ſingular thing.

In the *method of compoſition*, called alſo the *ſynthetic* method, we propoſe ſome certain general truths, from which we produce particular truths.

If, in the method of reſolution, we lay down any axioms, it is not immediately in the beginning, and all together, but as they are found neceſſary in the diſquiſition: on the contrary, in the method of compoſition, they are propoſed all together in the beginning, before there is any abſolute need of them.

The two methods differ from each other, as the methods of ſearching out a genealogy, either by deſcending from the anceſtors to their poſterity, or by aſcending from the poſterity to the anceſtors: both of them have this in common, that their progreſſion is from a thing known to another unknown. Thoſe things that are known in each are ſet in the front, or firſt place, that by them we may be able to arrive at thoſe which are not known.

Dr. Watts, in his excellent Treatiſe on Logic, has compriſed the general requiſites of true method in the purſuit or communication of knowledge, under the following heads. It muſt be, 1. Safe or ſecure from error: in order to which great care ſhould be uſed in laying the foundations of a diſcourſe, or the ſcheme of our thoughts, on any ſubject; the primary and fundamental propoſitions ſhould not only be evident and true, but made familiar to the mind by dwelling on them before we proceed farther; our ground ſhould be made firm in every ſtep; and we ſhould draw up all our propoſitions and arguments with ſo much caution, and expreſs our ideas with ſuch a juſt limitation, as may preclude or anticipate any objections. 2. Plain and eaſy: for which purpoſe, we ſhould begin always with thoſe things that are beſt known and moſt obvious, and proceed by regular and eaſy ſteps to things that are more difficult; nor ſhould we affect exceſſive haſte in learning or teaching any ſcience, nor hurry at once into the midſt of it; nor again crowd too many thoughts and reaſonings into one ſentence or paragraph, beyond the apprehenſion or capacity of our readers or hearers; we ſhould alſo avoid too many ſubdiviſions; and acquire in early life a clear and eaſy way of expreſſing our conceptions. 3. Diſtinct: in order to which no needleſs heterogeneous matter ſhould be introduced; every complicated theme or idea ſhould be divided into its diſtinct ſingle parts, as far as the nature of the ſubject, and our preſent deſign, require; we ſhould call every idea, propoſition, and argument, to its proper claſs, and keep each part of the ſubject in its own place; and in the partition of our diſcourſe into diſtinct heads, take heed that particulars do not interfere with the general, nor with each other. 4. Full, or without defect: and this is neceſſary in explaining a ſubject; in enumerating its parts or properties; in aſſerting or proving any truth; in illuſtrating or arguing a point of difficulty; in drawing up a narrative; and in ſolving any difficulty. 5. Short, or without ſuperfluity: for this purpoſe, all needleſs repetitions, tedious prolixity, long parentheſes, uſeleſs explications, proofs, and refutations, and all ſcholaſtic forms, ſhould be carefully avoided. 6. Proper to the ſubject, the deſign, and the age and place in which we dwell. 7. Connected: in order to this, we ſhould keep our main deſign always in view, and preſerve an apparent tendency in all the parts of our diſcourſe towards it; the mutual relation and dependence of the ſeveral branches of our diſcourſe ſhould be ſo juſt and evident, that every part may lead onward to the next; and we ſhould acquaint ourſelves with all the proper and decent forms of tranſition from one part of the diſcourſe to another, and practiſe them as occaſion offers.

The *ſynthetic* method is only practicable in things whoſe principles we perfectly know; as in geometry, which is wholly employed in the conſideration of abſtract modes, of which our mind has clear and adequate ideas. When the inquiry is into ſubſtances, as in phyſics, we cannot make uſe of the method of *compoſition*, becauſe their kinds and intimate eſſences are unknown to us.

This method has not been by any ſo juſtly and accurately obſerved as by the mathematicians, whoſe principles are perfectly known: its laws, therefore, will be beſt drawn from their practice; for which, ſee COMPOSITION.

The ſupreme law of the philoſophical method is, to premiſe that which is neceſſary towards the underſtanding or eſtabliſhing what follows.

The mathematical and philoſophical methods are the ſame, as may be ſeen by the practice of the geometers of antiquity, who conſtantly obſerve the law here mentioned.

Several authors, as Ramus, Meſſrs. de Port-Royal, &c. have accuſed Euclid of want of method. Had theſe gentlemen attended to the ſupreme law of all true method, they would have been more cautious in their cenſures.

METHOD, *Methodus*, is more particularly uſed, in *Mathematics*, for divers particular proceſſes for ſolving problems. In this ſenſe we ſay,

METHOD *of Exhauſtions*. See EXHAUSTIONS.
METHOD *of Fluxions*. See FLUXIONS.
METHOD *de Maximis & Minimis*, &c. See MAXIMA, &c.
METHOD *of Tangents*. See TANGENTS.
METHOD *Differential*, &c. See DIFFERENTIAL.
METHOD *Exponential*. See EXPONENTIAL.
METHOD *Poriſtic*. See PORISTIC.

METHODIC SECT. See METHODISTS, and MEDICINE, *Hiſtory of*.

METHODISTS, in *Eccleſiaſtical Hiſtory*, is a denomination applied to different ſects, both Papiſts and Proteſtants.

The *Popiſh* Methodiſts were thoſe polemical doctors, of whom the moſt eminent aroſe in France towards the middle of the ſeventeenth century, in oppoſition to the Huguenots or Proteſtants. The Methodiſts, from their different manner of treating the controverſy with their opponents, may be divided into two claſſes. The one may comprehend thoſe doctors, whoſe method of diſputing with the Proteſtants was diſingenuous and unreaſonable, and who followed the examples of thoſe military chiefs, who ſhut up their troops in intrenchments and ſtrong holds, in order to cover them from the attacks of the enemy. Of this number were the Jeſuit Veron, who required the Proteſtants to prove the tenets of their church by plain paſſages of ſcripture, without being allowed the liberty of illuſtrating thoſe paſſages, reaſoning upon them, or drawing any concluſions from them; Nihuſius, an apoſtate from the Proteſtant religion; the two Walenburgs, and others, who confined themſelves to the buſineſs of anſwering objections and repelling attacks; and cardinal Richelieu, who reſtricted the whole controverſy to the ſingle article of the divine inſtitution and authority of the church.' The Methodiſts of the ſecond claſs were of opinion, that the moſt expedient manner of reducing the Proteſtants to ſilence, was not to attack them partially, but to overwhelm them at once, by the weight of ſome general principle or preſumption, ſome univerſal argument, which comprehended, or might be applied to all the points conteſted between the two churches: thus imitating the conduct of thoſe military leaders, who, inſtead of ſpending their time and ſtrength in ſieges and ſkirmiſhes, endeavour to put an end to the war by a general and deciſive action. Theſe polemics reſted the defence of popery upon preſcription; the wicked lives of Proteſtant princes who had left the church of Rome; the crime of religious ſchiſm; the variety of opinions among Proteſtants, with regard to doctrine and diſcipline; and the uniformity of the tenets and worſhip of the church of Rome. To this claſs belong Nicole, the Janſeniſt doctor, the famous Boſſuet, &c. Moſh. Eccl. Hiſt. vol. v. 8vo.

The *Proteſtant* Methodiſts form a very conſiderable claſs, principally of the lower people in this country. They ſprung up about the year 1729, at Oxford, and were ſoon divided into two parties, the one under the direction of the two brothers, John and Charles Weſley, and the other under that of Mr. George Whitefield, who joined them in the year 1735. Theſe leaders, and, if we except Mr. William Law, the celebrated myſtic, founders of Methodiſm, were educated at Oxford, and received epiſcopal ordination; and always profeſſed themſelves advocates for the articles and liturgy of the eſtabliſhed church: though they commonly practiſed the diſſenting mode of worſhip. The appellation of Methodiſts is ſaid to have been derived from the regular diſtribution of their time, their orderly and compoſed demeanour, and the ſuppoſed purity of their religious principles. Conceiving a deſign of forming ſeparate communities, ſuperior in ſanctity and perfection to all other Chriſtian churches, and impelled to a very conſiderable degree by a zeal of an enthuſiaſtic and extravagant kind, they became itinerant preachers, and, being excluded from moſt of our churches, exerciſed their miniſtry in private houſes, fields, &c. not only in Great Britain and Ireland, but alſo in America: thus collecting a very conſiderable number of hearers and proſelytes, both amongſt the members of the eſtabliſhed church and the diſſenters. The theological ſyſtem of Mr. Whitefield and his followers is Calviniſtic: that of Mr. Weſley and his diſciples, Arminian; and the latter maintain the poſſibility of attaining ſinleſs perfection in the preſent ſtate. The ſubordinate teachers of both theſe claſſes of Methodiſts are generally men of no liberal education, and they pretend to derive their miniſterial abilities from ſpecial communications of the ſpirit. The Methodiſts of both parties, like other enthuſiaſts, make true religion to conſiſt principally in certain affections and inward feelings, which it is impoſſible to explain, but which, when analyſed, ſeem to be mechanical in their ſpring and operation, and they generally maintain, that Chriſtians will be moſt likely to ſucceed in the purſuit of truth, not by the dictates of reaſon, or by the aids of learning, but by laying their minds open to the direction and influence of divine illumination: and their conduct has been directed by impulſes.

Such is the account given of the followers of Whitefield in Moſheim's Eccl. Hiſt. tranſlated by Dr. Maclaine (vol. vi. p. 36. ed. 1811, 8vo.); but though it may be true in general, as comprehending Methodiſts of both deſcriptions, at their firſt riſe and in their early progreſs, it admits, in the preſent ſtate of this ſect, of many exceptions; and it would be unjuſt and uncandid to charge upon a whole body of Chriſtians, reſpectable both as to number and character, the errors in ſentiment and irregularities in practice, into which the exceſſes of enthuſiaſm may have betrayed ſome of their number. Much as we may diſapprove theſe errors and irregularities, truth requires us to declare from our own knowledge, that thoſe who have paſſed under the denomination of Methodiſts have been eminently uſeful in awakening into conſideration the unthinking, and in reſtraining the profligate, among the lower claſſes of mankind. We perceive with ſatisfaction a change of conduct: the idle and diſſolute have become diligent and virtuous; religion finds votaries among thoſe who were accuſtomed to treat it with neglect and contempt; the ſtate of families has been amended, and the community in general, compoſed of individuals and of domeſtic aſſociations, has derived benefit from the aſſiduity and zeal of the Methodiſts. We look forward with pleaſure to a period, when, by the diffuſion of knowledge among perſons in the inferior ſtations of life, many of thoſe who are now deemed erroneous enthuſiaſts will become enlightened, rational, and exemplary Chriſtians. Having rendered this tribute of juſtice to the Methodiſts in general, we ſhall now proceed to give a more particular and detailed account of the two leading claſſes into which they have been divided.

The opinions of Mr. Whitefield, which we have already ſtated to have been Calviniſtic, as well as his piety, recommended him to the notice of a devout peereſs, the counteſs dowager of Huntingdon, who became his patron, and liberally promoted the erection of meeting-houſes for the Calviniſtic Methodiſts; and when her preachers could not obtain epiſcopal ordination, eſtabliſhed a college at Trevecca, in Breconſhire, not far from Brecknock, for the education of miniſters in the Whitefieldian connection. This ſeminary, not being endowed, expired with the counteſs; but a new one was ſoon after eſtabliſhed at Cheſhunt, which has furniſhed the Methodiſts of this deſcription with uſeful preachers.

We may here obſerve, that the proſelytes of Whitefield were leſs numerous than thoſe of Weſley; and that their aſſociation was leſs compact. Their miniſters and places of worſhip were reſpectively ſupported by the different congregations, aided for a time by the liberality of the counteſs above-mentioned and her friends in the higher ranks of life; not, like thoſe of the Weſleyan ſect, by a general fund. The former had no annual aſſembly for the government of the whole body; but the latter had a regular ſeſſion, under the name of a "Conference," in which the affairs and the circumſtances of the confederacy were inveſtigated, funds provided, abuſes corrected, and grievances redreſſed. This meeting was compoſed of preachers choſen by the aſſemblies of different "diſtricts" as repreſentatives of the Methodiſt connection, and of the ſuperintendants of the "circuits," or inferior diviſions. It was at firſt limited to 100 of the ſenior itinerant preachers; but, in proceſs of time, all the preachers were permitted to aſſiſt, if they were ſo inclined, or had an opportunity of attending. At firſt, laymen were allowed to preach; but miniſters were afterwards ordained for that purpoſe by the clerical heads of the ſociety. Our readers hardly need to be informed, that Weſley and ſome of his aſſociates had taken orders in the church of England; and this circumſtance increaſed their miniſterial reſpectability in the general eſtimation; but it gave them no additional importance in the opinion of the peculiar votaries of this connection, who were diſpoſed to liſten with profound attention to the effuſions of the loweſt and moſt illiterate mechanics. Mr. Weſley, ſpeaking of theſe unlettered men, affirmed, that they had "help from God for that great work, the ſaving of ſouls from death, ſince he had enabled, and did enable them ſtill, to turn many to righteouſneſs.—Thus hath he deſtroyed the wiſdom of the wiſe, and brought to nought the underſtanding of the prudent." Mr. Weſley introduced among his followers "agapæ," or love-meetings. Once in every quarter of a year, after the religious ſervice of the day, a conſiderable number of perſons, of both ſexes, "broke bread" with each other. Alms were then collected for the poor members of the ſociety. At theſe meetings the preachers and others related their reſpective "experience," and the ſervice was enlivened by hymns, which were ſung at certain intervals. Theſe love-feaſts were derived from the Moravians, with whom Mr. Weſley at firſt aſſociated, but whoſe communion he ſoon renounced. In order to counteract the miſconceptions which ſome perſons might form of the character of the Methodiſts, Mr. Weſley ſtated the "diſtinguiſhing marks" of his followers. Theſe marks, he ſaid, were to be found, not in "their opinions of any ſort," in their words and phraſes, or in any deſire of being "diſtinguiſhed by actions, cuſtoms, or uſages, of an indifferent nature, undetermined by the word of God;" nor did they lay the whole ſtreſs of religion upon any ſingle part of it. But they were diſtinguiſhed by having the love of God ſhed abroad in their hearts, by being always happy in God, ever reſting on him, giving thanks for every thing, praying conſtantly with earneſtneſs and fervour; by purifying their hearts from the luſt of the fleſh and of the eye, from envy and malice, from pride and petulance; by doing kind offices to neighbours and ſtrangers, to friends and enemies; and by other fruits of a "living faith." Nothing, he added, was required by St. Paul but the faith here mentioned. By that alone could any one be juſtified, or accounted righteous before God; and the remiſſion of ſins could only be obtained through the merits of Chriſt, not by the good works or ſuppoſed deſerts of individuals. Holineſs of heart and life would flow from ſuch faith; but good deeds without it would be inoperative and nugatory. No man could produce it in himſelf, as it was the work of omnipotence. It was the free gift of God to thoſe who were before "ungodly and unholy, and fit only for everlaſting deſtruction." He who received it was born again, yet was not ſo perfectly regenerate, as to be fully ſanctified; for there would ſtill be ſome ſtruggles between the old and the new man, which would not ceaſe before the Holy Spirit had given to the zealous Chriſtian "a new and clean heart." He would then attain the "acmé" of ſanctification, and be qualified for the ſociety of "juſt men made perfect."

Among theſe Methodiſts diſſentions exiſted at the time of the deceaſe of their founder; but an interval of ſix years elapſed before their difference of ſentiment produced an actual ſeparation. The liberties of their church, and the rights of the people, formed the grounds of diſpute. On pretence of giving due ſupport to the plan of itinerancy, ſome leading miniſters had endeavoured to obtain an exorbitant degree of power over the community and junior preachers; and they managed the conference in a way which tended to ſecure this power. Diſguſted at theſe arbitrary proceedings, Mr. Kilham, and other members of the ſect, applied to the general aſſembly for a redreſs of grievances, and for an admiſſion of the laity to a proper ſhare in the general government of the ſociety. Repeated applications and remonſtrances being wholly fruitleſs, and Mr. Kilham being expelled from the fraternity by the ruling party, about 5000 diſcontented members ſeceded from the connection in the year 1797, and formed independent arrangements on a popular baſis. Another body of ſeceders, aſſuming the uncouth appellation of "Chriſtian Revivaliſts," "claimed," ſays an hiſtorian of the Weſleyan ſect, "a right to indulge their propenſities to prayer and praiſe, at all times, and on all occaſions." See Nightingale's "Portraiture of Methodiſm," cited in the laſt edition of Moſheim's Eccl. Hiſt. by Dr. Coote, vol. vi. p. 308—315. 8vo.

Before we cloſe this article, we ſhall obſerve that Methodiſts of both deſcriptions are, in general, members of the eſtabliſhed church; though they have been erroneouſly confounded with Proteſtant diſſenters. Mr. Weſley would never allow of a ſeparate communion, and required his followers to frequent the eſtabliſhed church, when they had no opportunity of hearing their own preachers, and there to communicate. Of late, indeed, ſome alteration has taken place in this reſpect; and parties of the Weſleyans approach more nearly in principles and practice to Proteſtant diſſenters. It is alſo well known, that the Methodiſts in Mr. Whitefield's connection, though intermixed with many who call themſelves Diſſenters, belonged for the moſt part to the church; and their more general departure from it was occaſioned, when, at the requeſt of the pious counteſs above-mentioned, epiſcopal ordination was refuſed to her miniſters. Few of them yet underſtand or adopt the diſcriminating principles of Diſſenters. The miniſters, who have been qualified for the exerciſe of their functions by ordination according to the rites of the church, and who ſtill continue in it, are in popular language called Methodiſts, or now, more generally, *evangelical* clergy; an appellation appropriating to themſelves a diſtinguiſhing and peculiar character, which others of their own body are not diſpoſed to allow them, and which, as ſome of them ſay, is, with reſpect to their ſentiments and preaching, invidious and degrading. It is our province, in a work of this nature, to ſtate facts and opinions juſtly and candidly as far as we are able; and we leave contending parties, both *in* and *out* of the church, to ſettle their differences among themſelves.

Methodists, in *Medical Hiſtory*, a title aſſumed by a ſect of phyſicians at Rome, in order to diſtinguiſh themſelves from the two oppoſite ſects, the Empirics and Dogmatiſts, (ſee Empiric,) with either of which they refuſed to arrange themſelves. The Methodiſt phyſicians, as Celſus informs us, generally conſidered Themiſon as their founder, who was followed as a leader by Theſſalus, and afterwards by Soranus of Alexandria, the laſt of whom practiſed at Rome, during the reigns of Trajan and Hadrian. A bold charlatan, Aſclepiades, who ſettled at Rome about the time of the Mithridatic war, was the firſt, however, who maintained the principles adopted by this ſect. Borrowing the doctrine of atoms laid down by Epicurus, he attempted to account for all diſeaſes upon the obſtruction to the circulation of the atoms, occaſioned by two oppoſite ſtates of the ſyſtem, which he denominated *ſtrictum* and *laxum*, or ſtates of conſtriction and relaxation. Every diſeaſe, which exhibited obvious marks of retention, or appearances of hardneſs, tumefaction, or external inflammation, was aſcribed to the ſtate of conſtriction; and the oppoſite phenomena of augmented diſcharges, ſoftneſs and diminution of bulk, to the condition of laxity. This doctrine became popular, partly in conſequence of the ſelf-confidence of its profeſſors, and the loudneſs of their declamation againſt former ſyſtems, and partly from the preciſion and formality of the regimen which they preſcribed: and its progreſs was, perhaps, not a little aided by the ſimplicity with which it ſeemed to explain all the phenomena of diſeaſe, and by the indolence which it ſanctioned in the practitioner; inaſmuch as it rendered all nice diſcrimination of ſymptoms, and particular inveſtigation of local diſeaſe, unneceſſary. It was enough to aſcertain the claſs in which any diſeaſe was to be arranged, and the general treatment would ſerve for all; the obſervation both of exciting and of proximate cauſes was deemed entirely ſuperfluous. "As ſoon as it was known," ſays Celſus, "to which of theſe claſſes a diſtemper belonged, if the body were bound, it muſt be opened; if it laboured under a flux, it muſt be reſtrained; and if it were of a mixed nature, the moſt urgent malady muſt be firſt oppoſed." For they were obliged to admit, in ſome caſes, the inconſiſtency of both *ſtrictum* and *laxum* occurring at the ſame time, in different organs of the body.

The abſurdity of founding the practice of medicine upon theſe very general principles has been pointed out, with his uſual force, by Celſus. He conſidered the Methodiſts as even below the Empirics, in the accuracy of their practical views: ſince the Empirics attended to many circumſtances of a diſeaſe, while the Methodiſts only obſerved the moſt obvious, and even the moſt common appearances. Like the farriers, who ſuperintend the diſeaſes of ſheep and cattle, but cannot learn from theſe dumb animals the peculiar ſymptoms of their complaints, they regard only a few, which are common to all. "Neque adjectum quicquam Empiricorum profeſſioni, ſed demtum eſt; quoniam illi multa circumſpiciunt, hi tantum facillima, et non plus quam vulgaria. Nam et hi, qui pecoribus ac pimentis medentur, cum propria cujuſque ex mutis animalibus noſſe non poſſint, communibus tantummodo inſiſtunt." (Celſ. de Medicina. *Præf.*) This intelligent writer then goes on to ſhew the inſufficiency of ſuch general indications in practice. In the ſtate of laxity, for inſtance, he remarks, "it is one thing to vomit bile, another to vomit blood, and another to reject the food; and there is much difference between a ſimple purging, and one attended with tormina; *i e.* between a mere diarrhœa and a dyſentery; and likewiſe between a waſting from profuſe ſweats, and a mere maraſmus. And not one of theſe complaints is to be cured exactly in the ſame manner as another."

We have already pointed out the ſimilarity between this doctrine and that of the Brunonian ſyſtem, which has been the cauſe of much controverſy in our own times; the diſtinguiſhing features of which were, the reference of all diſeaſes to two oppoſite conditions of the conſtitution, *ſthenia* and *aſthenia*, or ſtrength and debility, (which might with almoſt equal propriety have been called *ſtrictum* and *laxum*,) and the conſequent excluſion of all particular inveſtigation of the minute diſtinctions in the phenomena of diſeaſes, which it encouraged. See Medicine, *Hiſtory of.*

The practice of the Methodiſts was particularly diſtinguiſhed by their rejection of purgative medicines; by their rigid and formal regimen, eſpecially in the methodical abſtinence which they enforced for a certain number of days; and by their copious uſe of warm ablutions, fomentations, cataplaſms, and frictions with oil, together with free bleeding, in diſeaſes aſcribed to ſtricture; and a ſimilar routine with cold drinks, and cold and corrugating applications, in diſorders attributed to laxity. An epitome of *methodiſtic* medicine has been handed down by Cælius Aurelianus, who tranſlated the original work of Soranus, which is loſt. See his treatiſe "De Morbis Acutis et Chronicis:"—alſo Le Clerc Hiſt. de la Medecine; Walker's Memoirs of Medicine.

METHODIUS, in *Biography*, a Chriſtian biſhop and martyr, who flouriſhed towards the cloſe of the third century; and unleſs there were two of the ſame name, who lived about this period, he was biſhop of ſeveral places, *viz.* of Olympus, in Lycia, of Tyre, and of Patara, &c. He is not mentioned by Euſebius in his Eccleſiaſtical Hiſtory, which has been aſcribed, not without probability, to his reſentment againſt him for having written with ſeverity againſt Origen, of whom, it is known, that Euſebius was a great admirer. There were two opinions concerning the death of this prelate; ſome ſay he ſuffered under Decius, or Valerian, and others contend, that he was one of thoſe who ſuffered in Diocleſian's perſecution. He is highly applauded by Epiphanius, Jerome, and others, by whom he is characteriſed as a learned and eloquent man, and a zealous defender of the truth. Lardner has given a pretty full account of his works, for which we refer to the third volume of the 8vo edition, 1788. This learned and candid critic ſays, that in the Remains of Methodius there are many interpretations of texts of ſcripture, which, in his opinion, do little honour to the author's judgment, and he gives inſtances in proof of this deciſion. Dr. Lardner likewiſe obſerves, that the Remains of Methodius clearly prove, that he admitted into the canon of the holy ſcriptures the four goſpels, the acts of the Apoſtles, the epiſtles of St. Paul, and the epiſtle to the Hebrews as one of them. He alſo owned as authentic the firſt epiſtle of St. Peter, and the firſt of St. John. His opinion about the reſt is not known. He quotes the Revelations as a book of ſacred ſcripture, written by John, whom he probably regarded as the apoſtle and evangeliſt. Lardner.

Methodius, ſurnamed the *Confeſſor*, who flouriſhed about the middle of the ninth century, was born at Syracuſe. Having received a good education, he went to Conſtantinople, where he embraced a religious life, and took up his reſidence in a monaſtery at the iſle of Chios. He was afterwards ordained prieſt by the patriarch Nicephorus, and upon the expulſion of that prelate from the ſee of Conſtantinople, was ſent by him to Rome to implore aſſiſtance from pope Paſchal in his behalf. Upon his return to Greece, after the death of that patriarch, he ſignalized himſelf by his zeal for image-worſhip, on which account he was committed to priſon, and endured many indignities for ſeveral years. He recovered his liberty completely in the year 842, and was in a ſhort time preferred to the patriarchate of the church of Conſtantinople. As ſoon as he was quietly ſettled in his ſee, he introduced the ſuperſtition of image-worſhip into the Greek church. Methodius died in the year 847. He was author of ſeveral works, among which was a "Conſtitution, or Manual for Perſons who, after having apoſtatized, returned again to the Profeſſion of the Chriſtian Faith." Moreri. Moſheim's Eccl. Hiſt.

METHONICA, in *Botany*, Juſſ. 48. Herm. Lugd. Bat. 688. t. 689, the Malabar name of the Superb Lily. See Glorioſa.

METHUEN, in *Geography*, a town of America, in Eſſex county, Maſſachuſetts, on the N. bank of Merrimack river, between Dracut and Haverhill. It contains two pariſhes and 1253 inhabitants.

METHULLY, a town of Hindooſtan, in Guzerat; 15 miles S.W. of Gogo.

METHWOLD, a ſmall market-town in the hundred of Grimeſhoe and county of Norfolk, England, is ſituated four miles from Stoke Ferry, and 86 from London. It derived its name from its ſcite, and was anciently written Methelwalde, or Midlewolde, being the wold between Northwolde and Hockwolde. The church, which appears to have been built in the reign of Edward II., is a regular edifice with a nave, aiſles, and chancel. At the weſt end of the nave is a ſquare tower, embattled; on this is raiſed another tower of an octangular ſhape; and from the latter riſes a ſpire. The population of Methwold in the year 1801, according to the return then made to parliament, was 865, occupying 134 houſes. The market, which is kept on Tueſdays, was formerly conſiderable, but is now almoſt diſuſed: an annual fair is held on St. George's day. The town has been, from time immemorial, proverbially famous for its extenſive rabbit warrens.

In this pariſh ſtood Steveſholm or Shiſham priory, which was given by William earl of Warren, in the reign of king Stephen, as a cell to the priory of Caſtle Acre. At the diſſolution it was granted to the family of Mundeford, and was afterwards conveyed to that of Seabright. Blomefield's Hiſtory of Norfolk, vol. ii. Beauties of England, vol. xi. by J. Britton.

METI, a town of Abyſſinia, near the coaſt of the Red ſea. N. lat. 13° 30′. E. long. 42° 30′.

METIMCUS, two iſlands of America, near the coaſt of Main. N. lat. 43° 50′. W. long. 68° 15′.

METIMIN, a town of Ruſſia, near the Pacific ocean. N. lat. 64° 55′. E. long. 180° 34′.

METITCHE, or Mettijiah, a plain in the territory of the city of Algiers, which commences about half a mile N.E. of the city and ſtretches 50 Engliſh miles in length, and 20 in breadth, as far as the branch of mount Atlas, at the foot of which lies the town of "Belida." This plain is well cultivated and well watered, and is in this reſpect ſuperior to the other diſtricts of the kingdom. It is juſtly reckoned, as Shaw ſays, the garden of the whole kingdom.

METIUS, Adrian, in *Biography*, a celebrated Dutch mathematician, who flouriſhed in the 16th and 17th centuries, was a native of Alkmaer. He purſued his ſtudies at a German univerſity, where he afterwards taught the mathematics with great reputation for ſeveral years, and afterwards became profeſſor of thoſe ſciences at the univerſity of Franeker. He was author of ſeveral books on ſpherics, aſtronomy, and arithmetic. He had a brother James, for whom he claimed the honour of having been the firſt inventor of the teleſcope: but according to Borelli's account of the diſcovery of that inſtrument, it is highly improbable, as it is generally believed, that Zacharias Janſen, a ſpectacle maker at Middleburg, was the original inventor, (ſee Telescope,) and that James Metius purchaſed teleſcopes of Janſen's children, by which he became acquainted with their conſtruction and principles.

METKERKE, Adolphus van, was born at Bruges in 1528, and ſpent the greateſt part of his life in the ſervice of the revolted ſtates of the Low Countries, in the quality of counſellor of ſtate, and envoy to the foreign potentates. In the latter ſtation he was at the court of queen Elizabeth, when he died, in 1591, of grief, it was ſaid, on account of the loſs of his ſon Nicholas, an active commander before Deventer. He was a man of great learning, and was author of the following works; "A Tranſlation, with Notes, of ſome Pieces of Theocritus, Bion, and Moſchus;" "Latin Poems;" "A Treatiſe in Latin on the true Pronunciation of the Greek Language;" "A Collection of the Proceedings at the Peace concluded at Cologne in 1579." He took a part in other works, particularly in "The Lives of the Cæſars;" "The Medals of Magna Grecia," and "The Faſti Conſulares," publiſhed by Goltzius.

METO, or Meton, a celebrated mathematician of Athens, who flouriſhed 432 B.C., was the ſon of Pauſanias. He obſerved, in the firſt year of the 87th Olympiad, the ſolſtice at Athens, and publiſhed his cycle of 19 years by which he endeavoured to adjuſt the courſe of the ſun and moon, and to make the ſolar and lunar years begin at the ſame point of time. This is called the Metonic period, or cycle. It is alſo called the golden number, from its great uſe in the calendar. (See Cycle.) It is known that Meton was living about the year 412 B.C., for when the Athenian fleet was ſent to Sicily, he eſcaped from being embarked on that diſaſtrous expedition by counterfeiting an appearance of idiotiſm. Moreri.

METOCHE, Μετοχη, in the *Ancient Architecture*, a term uſed by Vitruvius, to ſignify the ſpace or interval between the dentils. See Denticles.

Baldus obſerves, that, in an ancient MS. copy of that author, the word *metatome* is found for *metoche*. Hence Daviler takes occaſion to ſuſpect, that the common text of Vitruvius is corrupted, and concludes, that it ſhould not be *metoche*, but *metatome*, q. d. ſection.

METOCHITA, Theodore, in *Biography*, a modern Greek hiſtorian, who flouriſhed in the 13th and 14th centuries. He attained to high honours in the Conſtantinopolitan empire, but in the reign of Andronicus the younger, he was baniſhed and his goods confiſcated. He was afterwards recalled, and ended his life in a monaſtery of his own foundation, in 1332. He was a man of extenſive and very deep learning, and was entitled by his contemporaries a living library. He wrote "A Compendium of Roman Hiſtory, from Julius Cæſar to Conſtantine," firſt publiſhed with notes and a Latin verſion by Meurſius, in 1618; "A Conſtantinopolitan Hiſtory," in one book; "A ſacred Hiſtory;" and "A Paraphraſe on Ariſtotle's Phyſics."

METONIC Cycle, in *Chronology*. See Cycle, and *Golden* Number.

METONYMY, Μετωνυμια, from μετα, *trans*, and ονομα, *nomen*, *name*; a rhetorical trope conſiſting in a tranſmutation or change of names; or a putting of the effect for the cauſe, or the ſubject for the adjunct; and *vice verſâ*.

The metonomy is the moſt conſiderable of all the tropes next to a metaphor, whether we conſider its force and elegancy, or the frequent uſe of it both in ſpeaking and writing. It is ſometimes alſo called *tranſnominatio*, and differs not much from the hypallage.

There are four kinds of metonymies in principal uſe: the *firſt*, called a metonymy of the *cauſe*, when the external cauſe is put for the effect; this cauſe is either efficient or final. Of the former kind are ſuch metonymies, where we put the inventor for the thing invented; as Bacchus for wine, Ceres for bread. Metonymies of the final cauſe are ſuch, by which the end in doing a thing is put for the thing done. Such is that of Virgil (Eclog. x. v. 41.), "Phillis ſhould garlands crop," by which are meant flowers for making garlands. The *ſecond* metonymy puts the effect for the cauſe, whether the agent or only the means and inſtrument: thus Virgil, Æn. vi. v. 844, calls the two Scipios the deſtruction of Libya, becauſe they were the agents who effected it; and Horace, Carm. i. 1, 2. compliments Mæcenas with the titles of being his guard and honour, that is, his guardian and the author of his honour: and the author is put for his works. The *third* is, when the ſubject is put for the adjunct. By ſubject here, in a large ſenſe of the word, may be underſtood that, wherein ſome other thing is contained, or about which it is converſant; as likewiſe the poſſeſſor with reſpect to the thing he poſſeſſes, and the thing ſignified when put for the ſign of it: thus, in the firſt of theſe ways, the ſeat of any faculty or affection is put for the faculty or affection itſelf; as in the phraſes, a man of a clear head or of a warm heart: the place, where any actions are performed, is put for the actions done in it; the country or place of reſidence for the inhabitants; the time for the perſons living in it: in the ſecond way, the object is uſed for the perſon, or thing employed about it: as when Cicero, pro Mil. cap. 4. ſays, in time of battle, the laws, *i. e.* the judges, are ſilent. By the third way, we ſay to deſtroy or ruin a man, meaning not his perſon but his eſtate. In the laſt way, ſtatues and pictures are called by the names of the perſons whom they repreſent.

The *fourth* kind of metonymy is that in which the adjunct is put for the ſubject, which is done in the ſame variety of ways as the former. Thus Virgil ſays, (Æn. i. v. 704.) "they lie down upon purple," that is, couches dyed with purple. Alſo, "Hope deferred maketh the heart ſick," where hope is put for the thing hoped for. Titus is thus called by Suetonius "the love and delight of mankind." Thus alſo, we ſay of a perſon, "He has ſerved ſo many campaigns," meaning ſo many ſummers. Moreover, thus a "ſceptre" is put for the regal dignity, and the "ſword" for the authority of the magiſtrate.

Voſſius adds two other ſpecies of metonymy, *viz.* of the antecedent and the conſequent, which bear ſome analogy to the cauſe and effect, as the one does at leaſt give occaſion to the other. By the former, "to hear," when ſpoken of a ſuperior, ſometimes ſignifies to grant or comply with, and of an inferior to obey: by the latter it is not unuſual to ſay, "I ſubſcribe," or ſet my hand to ſuch a thing, meaning that we aſſent or agree to it, &c.

METOPE, or Metopa, in *Architecture*, the ſquare ſpace or interval between the triglyphs, in the Doric frieze.

The word, in the original Greek, ſignifies the diſtance between one aperture or hole and another, or between one triglyph and another; the triglyphs being ſuppoſed to be ſolives or joiſts that fill the apertures. It is derived from μετα, *inter*, *between*, and οπη, *foramen*.

The ancients uſed to adorn theſe parts with carved works, or paintings repreſenting the heads of oxen, veſſels, baſons, and other utenſils of the heathen ſacrifices.

As there is found ſome difficulty in diſpoſing the triglyphs and metopes in that juſt ſymmetry which the Doric order requires; ſome architects make it a rule, never to uſe this order but in temples.

Metope, *Semi*, is a ſpace ſomewhat leſs than half a metope, in the corner of a Doric frieze.

Le Clerc obſerves, that the beauty of metopes conſiſts in their regularity, on appearing to be perfect ſquares; and yet, when they are equally ſquare, they appear to be leſs in height than in breadth, on account of the projecture of the little bandelet; for which reaſon they ſhould be made a minute or two more in height than in breadth, in order to make their appearance uniform.

He alſo obſerves, that when the triglyphs and metopes follow each other regularly, the columns muſt only ſtand one by one; excepting thoſe of the inner angles, which ought always to be accompanied by two others, one on each ſide; and here it is worth remarking, that theſe two columns, which accompany that of the angle, are not leſs neceſſary on account of the ſolidity of the building, than of the regularity of the intercolumniations.

METOPIUM, in *Botany*, a name given by Pliny to the plant which produces the gum ammoniacum. He ſays that the ancient Greeks called it alſo by this name, but in that he errs. See Ammoniac.

METOPOSCOPY, Μετωποσκοπια, from μετωπον, *frons*, *a forehead*, and σκοπια, *inſpection*, of σκεπτομαι, *I view*, the art of diſcovering the temperament, inclinations, and manners of perſons, by inſpecting their features, and the lines in their faces, and eſpecially of their foreheads.

Metopoſcopy is no more than a branch of phyſiognomy; the latter taking its conjectures from all parts of the body; but both the body and the branch are extremely precarious, not to ſay vain.

Ciro Spontoni, who has written on the ſubject of metopoſcopy, obſerves, that there are ſeven principal lines to be conſidered in the forehead; each of which has its peculiar planet. The firſt is the line of Saturn, the ſecond of Jupiter, &c.

METOSIS, in *Surgery*, an amauroſis, or rather a blindneſs, from exceſſive ſhort-ſightedneſs, ſince *amauroſis* implies that the defect of ſight is owing to torpor, or inſenſibility of the retina and optic nerve. See Gutta *Serena*.

METRAHENNY, or Miniet Rahiné, in *Geography*, a town of Egypt; 6 miles S. of Gizeh.

METRAMA, a river of Naples, which riſes in Calabria Ultra, and runs into the Mediterranean; 4 miles S. of Nicotera. N. lat. 38° 30′. E. long. 16° 15′.

METRE, or Meter, Μετρον, in *Poetry*, denotes a ſyſtem of feet of a juſt length. Ariſtides defines metre, a ſyſtem of feet compoſed of diſſimilar ſyllables, of a juſt extent. In which ſenſe metre amounts to much the ſame with genus carminis, or the ſort of verſe, and differs from rhythm. See Prosody.

It was during the reign of Edward VI. that metrical pſalmody, in the ſame manner as is ſtill practiſed in our parochial churches, had its beginning, or at leaſt became general in England, by the verſion of Thomas Sternhold, John Hopkins, and others; which, though it now appears bald, coarſe, and deſpicable, was then equally refined with the poetical taſte of the moſt polite courtiers and poliſhed ſcholars of the nation. But time, which has added ſtrength and energy to the *proſe* tranſlation of the pſalms, as well as other parts of ſcripture, and made them ſtill more venerable, has rendered the *verſe* of theſe tranſlators a diſgrace to our literature and religion. See Psalmody, *Metrical*, Clement Marot, Goudimel, and Claude le Jeune.

Metre, in the *French Meaſures*, is the ten millionth part of a quadrant of the meridian, which is adopted as the unit of length; and from which, by multiplication and diviſion, all other meaſures are derived. The length of the quadrant was computed by meaſuring an arc of the meridian between the parallels of Dunkirk and Barcelona, and found to be 5,130,740 French toiſes. This number, divided by ten millions, gives 443,296 French lines, the length of the metre, which is equal to 36.9413 French inches, or 39.3702 Engliſh inches. See Measure and Standard.

Metre, or *Meter*, a meaſure for oil and other liquids in Turkey. The meter weighs eight okes, or 22½lb. avoirdupois.

METRETES, the name of a meaſure uſed among the ancients, containing ſomewhat more than nine gallons.

METRICAL Verses, are thoſe conſiſting of a determinate number of long and ſhort ſyllables; as thoſe of the Greek and Latin poets.

Capellus obſerves, that the genius of the Hebrew language is incompatible with metrical poetry.

METRICE, or Metrica, among the *Ancients*, was that part of poetry employed about the quantities of ſyllables, feet, ſorts of metre, or verſe, &c.

METRO, in *Geography*, a river which traverſes the duchy of Urbino, and runs into the Adriatic, N. lat. 43° 50′.

METROCELIDES, from μητηρ, *a mother*, and χηλις, *a mole*, in *Surgery*. See Nævus *Maternus*.

METROCOMIA, from μητηρ, *mother*, and κωμη, *town*, or *village*, a term in the *Ancient Church Hiſtory*, ſignifying a borough, or village, that had other villages under its juriſdiction.

What a metropolis was among cities, a metrocomia was among country towns. The ancient metrocomiæ had each its chorepiſcopus or rural dean, and here was his ſee or reſidence. See Metropolis and Chorepiscopus.

METROMETER, Fr., a machine to determine the time of a piece of muſic. It requires a pendulum, which, while a movement is performing, may be lengthened or ſhortened at the pleaſure of the compoſer, till the oſcillations exactly agree with the bar, or any of its accented parts. The length of the pendulum muſt be ſpecified at the beginning of a piece. Many attempts at ſuch an expedient have been made; but we believe it has never been brought to perfection: if it had in Handel's time, many of his compoſitions would not be frequently injured by being performed too faſt or too ſlow, to ſatisfy thoſe who remember his works performed under his own direction.

METRONOMII, Μετρονομοι, among the Athenians, officers that inſpected all ſorts of meaſures, except thoſe of corn; there were five of them in the city, and double that number in the Pyræus, in which the greateſt mart in Attica was kept.

METROPI, in *Geography*, a town of European Turkey, in the province of Livadia; 28 miles S. of Athens. —Alſo, a ſmall iſland in the gulf of Engia; 3 miles W. of Engia.

METROPOLI, a town of the iſland of Crete or Candia, ſaid to be ſituated on the ſcite of the ancient *Gortyna;* which ſee; 22 miles S. of Candia. N. lat. 35° 1′. E. long. 25° 4′.

METROPOLIS, Μητροπολις, from *μητηρ*, *mother*, and ϖολις, *city*, the *mother-city*, &c. the capital of a country, or province: or the principal city, and, as it were, mother of all the reſt.

Metropolis is alſo applied to archiepiſcopal churches, and ſometimes to the principal, or mother-church of a city. The Roman empire having been divided into thirteen dioceſes, and one hundred and twenty provinces, each dioceſe and each province had its metropolis, or capital city, where the proconſul, or the vicar of the empire, had his reſidence.

To this civil diviſion the eccleſiaſtical was afterwards adapted, and the biſhop of the capital city had the direction of affairs, and the pre-eminence over all the biſhops of the province. His reſidence in the metropolis gave him the title of *metropolitan*. See Diocese.

The erection of metropolitans is referred to the end of the third century, and was confirmed by the council of Nice. Indeed archbiſhop Uſher, and De Marca, maintain it to be an eſtabliſhment of the apoſtles; but in vain: for it is next to certain, that the eccleſiaſtical government was regulated on the plan of the civil; and that it was hence the name and authority of metropolitans were given to the biſhops of the capital cities of the empire, or the provinces that compoſed it. This is ſo true, that, in the conteſt between the biſhop of Arles and the biſhop of Vienne, each of whom laid claim to the metropolitanſhip of the province of Vienne, the council of Turin appointed, that whichever of them could prove his city to be the civil metropolis, ſhould enjoy the title and rights of eccleſiaſtical metropolitan.

Nothing is more evident than the perfect equality that reigned among the primitive churches; nor does there even appear, in the firſt century, the ſmalleſt trace of that aſſociation of provincial churches, from which, ſays Moſheim, councils and metropolitans derive their origin. (See Diocese.) The order and decency of thoſe aſſemblies which were called councils, and introduced towards the cloſe of the ſecond century, required, ſays this author, that ſome one of the provincial biſhops met in council, ſhould be inveſted with a ſuperior degree of power and authority; and hence, he adds, the rights of metropolitans were derived. See Patriarchs.

Though the eccleſiaſtical government, however, was modelled on the political, yet, in Gaul, and ſome other countries, the diſtinctions of metropolitan and primate were not obſerved till very late. As the præfectus Galliæ reſided by turns at Trevoux, Vienne, Arles, and Lyons, he communicated the rank and dignity of metropolitan and primate to each of them in their turn; and yet none of the Gallican biſhops aſſumed to themſelves the rights, nor even the precedence, of metropolitans. The epiſcopate levelled them all, and they had no regard but to the privileges of ſeniority. This equality laſted till the fifth century, when the conteſt between the biſhops of Vienne and Arles was ſet on foot.

M. Du Pin obſerves, that in the provinces of Africa, excepting thoſe of which Carthage was the metropolis, the place where the moſt aged biſhop reſided became the metropolis: the reaſon of which, without doubt, was this, that neither the proconſul, nor præfectus, ever fixed their reſidence any where.

The ſame author obſerves, alſo, that in Aſia there were metropoliſes merely nominal; that is, which had no ſuffragan, nor any rights of metropolitans. The biſhops of Nice, Chalcedon, and Berytus, had the precedence of the other biſhops, and the title of metropolitans, but this, without any other prerogative beſides the honour of the appellation; they themſelves being ſubject to their metropolitans.

A metropolitan has the privilege of ordaining his ſuffragans; and appeals from ſentences paſſed by the ſuffragans are preferred to the metropolitan. See Archbishop.

The name metropolis was originally given to thoſe Greek cities, which had eſtabliſhed colonies in other places; and to theſe certain rights or privileges belonged, partly *honorary*, and partly *profitable*. Thoſe of the firſt kind principally related to religion. *E. g.* The colonies were obliged to ſend annually to their metropolis deputies for offering ſacrifices on their behalf to the gods of the country, and to preſent to them their firſt fruits. If the ſacred fire ſhould by any accident be extinguiſhed, the colonies could not rekindle it any where but in the prytaneum of their founders. The colonies were under an obligation to provide themſelves with prieſts, particularly thoſe of their tutelar deity from their metropoles. The firſt places in the public ſolemnities, their games, &c. belonged to citizens of their reſpective metropolis. It was alſo the cuſtom for the colonies to adorn the temples of their ancient country with conſiderable preſents, ſuch as the ſpoils of enemies, trophies, ſtatues, and other embelliſhments; and it was alſo uſual for the greater number of the Greek cities to pay a yearly tribute of certain meaſures of grain to that of Athens. Among the profitable rights we may reckon the following: the citizens of the metropolis had power of forming alliances, contracting marriages, &c., without having their children conſidered as ſtrangers; they had likewiſe the power of purchaſing land, and other commodities, in the territory of the colonies; the rights of hoſpitality took place between the metropolis and its colonies; and, moreover, the metropolis had a right of appointing legiſlators for their colonies, eſtabliſhing their form of government, and reviving certain practices that had been aboliſhed: they might alſo ſend new citizens into their colonies, who might ſhare in common the benefits of the ancient coloniſts: generals were ſometimes obtained from the metropolis, and new eſtabliſhments required its ſanction; but the moſt important right was that of demanding

manding ſuccour from its colonies in time of war, both of ſoldiers and of ſhips, and affording an aſylum to the citizens of the beſieged metropolis. Beſides theſe general privileges, ſome metropoles had peculiar claims on their colonies. The metropolis, on the other hand, had certain ſervices which they were required to perform on behalf of their colonies; and if they failed, the colonies were juſtified in withdrawing from them their reſpect and obedience. The title of metropolis was leſs regarded among the Romans; for though they multiplied their colonies, they had but one metropolis, which was Rome; and as this was the firſt city of an immenſe empire, they conſidered the inhabitants of colonies merely as ſubjects. In general, however, they regarded as metropoles the cities which we call "capitals," and theſe were places, in which were held the general aſſemblies of the province, or where exiſted tribunals of the laſt reſort.

METROPROPTOSIS, from μήτρα, *the womb*, and προπίπτω, *to fall down*, in *Surgery*. See PROLAPSUS *Uteri*.

METROSIDEROS, in *Botany*, ſo named by Dr. Solander, from μήτρα, *the pith or heart of a tree*, and σίδηρος, *iron*, alluding to the hardneſs and colour of the wood.—Sm. Tr. of Linn. Soc. v. 3. 266. Willd. Sp. Pl. v. 2. 952. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 183. Gærtn. t. 34. f. 2. and f. 9. Lamarck Illuſtr. t. 421. f. 3. (Angophora; Cavan. Ic. v. 4. 21. Leptoſpermum; Forſt. Gen. t. 36. f. *a*—*e* and *m*—*t*.)—Claſs and order, *Icoſandria Monogynia*. Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Gen. Ch. *Cal.* Perianth half ſuperior, with five ſpreading teeth or ſegments. *Cor.* Petals five, roundiſh, concave, inſerted into the rim of the calyx, alternate with its ſegments; rude, and often rough, at the keel externally. *Stam.* Filaments numerous, inſerted into the calyx in ſeveral rows, thread-ſhaped, much longer than the corolla; anthers ſmall, roundiſh, two-lobed. *Piſt.* Germen in the bottom of the calyx, roundiſh; ſtyle ſimple, angular, erect, much ſhorter than the ſtamens; ſtigma quite ſimple. *Peric.* Capſule roundiſh or ovate, coated in the lower part, of three cells, and as many abrupt valves, burſting at the upper part, the partitions from the centre of the valves. *Seeds* ſeveral, imbricated, roundiſh or oblong, inſerted into the central column.

Eſſ. Ch. Calyx five-cleft, half ſuperior. Petals five. Stamens much longer than the corolla. Stigma ſimple. Capſule of three cells.

Sir Joſeph Banks and Dr. Solander firſt diſtinguiſhed this genus from LEPTOSPERMUM and MELALEUCA; ſee thoſe articles. To the latter it is moſt allied in habit, but differs in having diſtinct and ſimple ſtamens. The length of thoſe organs, but more eſpecially the ſimple, not capitate, ſtigma, diſtinguiſhes it from *Leptoſpermum*, and the habit is totally different. Moſt of the ſpecies are large handſome ſhrubs or trees, with long or broad, moſtly ſmooth and entire, leaves, and fine large, white or crimſon, flowers, conſpicuous for their long and copious ſtamens. Theſe plants are diſpoſed in two ſections, according to the ſituation of their leaves.

Section 1. *Leaves oppoſite.*

1. M. *hiſpida*. Rough Metroſideros. Sm. Tr. of L. Soc. v. 3. 267. n. 1. Exot. Bot. v. 1. 81. t. 42. Ait. n. 1. (M. anomala; Vent. Malm. t. 5. M. hirſuta; Andr. Repoſ. t. 281. Angophora cordifolia; Cavan. Ic. v. 4. 21. t. 338.)—Leaves oppoſite; heart-ſhaped and claſping the ſtem at their baſe. Young branches, flower-ſtalks and calyx briſtly.—Gathered near Port Jackſon, New South Wales, by Dr. J. White. It was raiſed from ſeeds in England by Meſſrs. Lee and Kennedy about the year 1789, and is now not very unfrequent in the more curious greenhouſes, flowering in July and Auguſt. The *ſtem* is uſually four or five feet high, probably much more in New Holland, rigid, branched, round, and leafy. *Leaves* evergreen, very rigid and coriaceous, harſh and ſomewhat hiſpid, nearly ſeſſile, oblong, obtuſe, waved, a little revolute and ſlightly crenate, with one rib and many croſs parallel veins; glaucous beneath: claſping the ſtem with their dilated heart-ſhaped baſe. The younger *branches* are downy and briſtly, terminating in copious, umbellate or cymoſe, large, white *flowers*, whoſe ſtalks and calyx are clothed with reddiſh-brown, prominent, briſtly hairs, like thoſe of the beautiful Roſe Acacia, *Robinia hiſpida*. This is one of the moſt ſtately plants, when in perfection, that have been procured from New Holland. Ventenat has figured ſo miſerable a ſpecimen, that it could ſcarcely be recognized.

2. M. *floribunda*. Many-flowered Metroſideros. Sm. n. 2. Ait. n. 2.—Leaves oppoſite, ſtalked, ovato-lanceolate. Panicle croſs-branched. Flower-ſtalks umbellate.—Native of New South Wales. Sent by ſir J. Banks, about 1788, to Kew, where it blooms in the greenhouſe about July and Auguſt. A more ſpreading, ſlender and ſmooth *ſhrub* than the preceding, with long, lanceolate, or ſlightly ovate, pointed, entire *leaves*, reſembling thoſe of an *Eucalyptus*. The *flowers* are copious, white, much ſmaller than the former, in numerous ſmall *umbels*, collected into large, lax, croſs-branched, occaſionally hiſpid, *panicles*. *Calyx* ſmooth, with ſharp prominent teeth.

3. M. *coſtata*. Angular-fruited Metroſideros. Gærtn. v. 1. 171. t. 34. f. 2. Sm. n. 3. (Angophora lanceolata; Cavan. Ic. v. 4. 22. t. 339.)—Leaves oppoſite, ſtalked, linear-lanceolate, pointed, oblique. Panicle repeatedly croſs-branched. Flower-ſtalks imperfectly umbellate.—Native of New South Wales. *Leaves* narrower, longer, more rigid and ſhining, than the laſt, as well as more oblique, or falcate. *Panicle* more irregularly and repeatedly branched, more ſtout, angular, and invariably ſmooth, but leſs decidedly umbellate in its ultimate diviſions. *Flowers* twice as large, yellowiſh-white, the ſtrong angles of the *calyx* permanent in the obovate woody *fruit*.

4. M. *diffuſa*. Spreading Metroſideros. Sm. n. 4. Willd. n. 4. (Melaleuca diffuſa; Forſt. Prod. 37. M. lucida; Linn. Suppl. 342.)—Leaves oppoſite, ovate, veiny; ſmooth on both ſides. Panicles axillary and terminal, with oppoſite flower-ſtalks.—Gathered by Forſter in New Zealand, and by Nelſon in Otaheite. We are indebted to ſir J. Banks for a fine ſpecimen from the laſt-named iſland. The *ſtem* is much branched, and by the name we preſume it ſpreads horizontally. *Leaves* ſmooth, numerous, on ſhortiſh thick ſtalks, ovate or obovate, one and a half inch long, with a ſtrong mid-rib, and a pair of very ſlight evaneſcent marginal ones; the croſs veins numerous, fine and reticulated. *Flowers* in denſe, level-topped panicles. *Calyx* ſmooth, ſhort, hemiſpherical, without angles; the teeth broad and blunt. The *petals*, and long *ſtamens* and *ſtyle*, appear to us crimſon; the younger Linnæus judged them, by his ill-dried ſpecimen, to be yellow. The valves of the ripe *capſule*, beſprinkled externally with large reſinous dots, riſe half their length above the *calyx*, and have not the obtuſe or abrupt termination obſervable in *M. coſtata*. Indeed the ſpecies before us, with the four or five following, ſhew many indications of a generical difference from the firſt three, which perhaps, if they were compared alive, might be more evident.

5. M. *villoſa*. Hoary Metroſideros. Sm. n. 5. Willd. n. 5. (Melaleuca villoſa; Linn. Suppl. 342, excluding the ſynonym. M. æſtuoſa; Forſt. Prod. 38. Leptoſpermum collinum; Forſt. Gen. 36. n. 2.)—Leaves oppoſite, ovate, veiny; downy beneath. Panicles denſe, axillary and terminal.

minal, oppoſite, downy. Flowers ſeſſile, crowded.—Gathered in Otaheite by the Forſters, as well as by Mr. Archibald Menzies. The ſize and habit are like the laſt, but the fine downy hoarineſs of the *flower-ſtalks*, *calyx*, tender *branches*, and backs of the younger *leaves*, characteriſe the preſent beautiful ſpecies. The back of each little *calyx-tooth* is ſmooth, though the *petals* are externally hoary. The latter, like the very long *ſtamens* and *ſtyle*, are crimſon. The *leaves* are broadiſh-ovate, or obovate, with a ſhort, blunt, channelled point. Mr. Menzies informs us this was called *Metroſideros ſpectabilis* by the late Dr. Solander; therefore it muſt be Gærtner's t. 34. f. 9.

6. M. *florida*. Flowery Metroſideros. Sm. n. 6. Willd. n. 6. (Melaleuca florida; Forſt. Prod. 37. Leptoſpermum ſcandens; Forſt. Gen. 36. n. 1. t. 36. f. *a* — *d*.)—Leaves oppoſite, elliptic-oblong or obovate, veiny, ſmooth. Panicle denſe, terminal. Calyx turbinate, ſmooth.—Native of New Zealand. A fine ſpecies, ſmooth in every part, with long, leafy, round *branches*. *Leaves* blunt, near two inches in length. *Flowers* large and handſome, crimſon, in denſe obtuſe terminal panicles, whoſe ſtalks are uſually three-flowered. The *calyx* is remarkably elongated, ſwelling gradually upward, with a wide mouth and ſhort blunt teeth. The *ſtyle* is remarkable for its great ſize, being, like the ſtamens, above an inch long, with a very ſlightly dilated *ſtigma*, permanent. We know nothing of the *fruit* but from Forſter, who repreſents the ſeeds as ſmall and ſlender, yet he appears not to have ſeen them ripe.

7. M. *umbellata*. Umbellate Metroſideros. Cavan. Ic. v. 4. 20. t. 337.—Leaves oppoſite, lanceolate, pointed, ſmooth. Flowers in terminal ſimple umbels. Calyx turbinate, ſilky, with naked teeth. Petals oblong.—Gathered in New Zealand by Mr. Menzies, who gave us a ſpecimen by the name of *M. lucida*, of which finding no traces in authors, we adopt that of Cavanilles, who ſays his ſpecimens were gathered by Lewis Née, near the town at Port Jackſon, New South Wales. We have however never heard of it from thence by any other means. The *ſtem* is ſaid to be eight or ten feet high. The *branches* are erect, repeatedly forked, ſmooth, leafy, round, or ſlightly angular. *Leaves* one and a half or two inches long, elliptic-lanceolate, tapering at each end, ſlightly revolute, on ſhort thick ſtalks; the under ſide paleſt, moſt opaque, dotted. *Flowers* large, red, in ſimple very cloſe umbels, the ſtalks being extremely ſhort and thick. *Calyx* turbinate, much dilated upwards, very ſilky, except the teeth, which are broad, obtuſe, and naked, glandular at the back. *Petals* elliptic-oblong, twice the length of the calyx-teeth. *Stamens* and *ſtyle* thrice as long as the petals.

8. M. *glomulifera*. Cluſter-flowered Metroſideros. Sm. n. 7. Ait. n. 3.—Leaves oppoſite, ovate, reticulated with veins; downy beneath. Heads of flowers lateral, ſtalked, downy as well as the bracteas.—Gathered near Port Jackſon by the late Mr. David Burton. Mr. Brown ſent it in 1805 to Kew garden, where it bloſſoms in May and June. This ſpecies ſeems arboreſcent. The *leaves* are ovate or oblong, greyiſh, with innumerable ſmall reticulated veins; rather downy beneath. *Flowers* whitiſh, in globoſe heads. *Footſtalks*, common *flower-ſtalk*, *calyx*, and *petals*, clothed with fine hoary down. *Stamens* and *ſtyle* reddiſh.

9. M. *anguſtifolia*. Narrow-leaved Metroſideros. Sm. n. 8. Ait. n. 4. (Myrtus anguſtifolia; Linn. Mant. 74, excluding the ſynonym of Burmann.)—Leaves oppoſite, linear-lanceolate, naked. Flower-ſtalks axillary, umbellate. Bracteas lanceolate, ſmooth, deciduous.—Native of the Cape of Good Hope, from whence it was ſent by Mr. Maſſon to Kew in 1787, but has not yet flowered there. A buſhy *ſhrub*, with ſmooth, narrow, lanceolate *leaves*, two inches long, one-third of an inch broad, finely dotted on both ſides. *Footſtalks* ſhort and thick. *Flowers* numerous, ſmall, white, in oppoſite, axillary, ſtalked, compound, downy, corymboſe cluſters. *Calyx* hemiſpherical, quite ſmooth, at length decaying, its ribs only remaining round the nearly globular capſule. It is ſingular that Thunberg, who ſent perfect ſpecimens, with ripe fruit, to Linnæus, ſhould ſtill retain this plant as a *Myrtus* in his *Prodromus*, p. 87.

Section 2. *Leaves alternate.*

10. M. *ciliata*. Fringed Metroſideros. Sm. n. 9. (Melaleuca ciliata; Forſt. Prod. 38. Leptoſpermum ciliatum; Forſt. Gen. 36. n. 3. t. 36. f. *r* — *t*.)—Leaves ſcattered, imperfectly oppoſite, elliptical, obtuſe, coriaceous, ſomewhat fringed at the baſe. Corymbs terminal, hairy.—Gathered by Forſter in the iſland of New Caledonia, not in New South Wales. A low buſhy *ſhrub*, with numerous, pale, thick and rigid, oval, concave *leaves*, like thoſe of a *Buxus* or *Celaſtrus*, an inch long, more or leſs; the young ones fringed at the baſe. The ſhort thick *footſtalks* are alſo hairy while young. *Flowers* deep red, large and handſome, moſt like thoſe of our fourth, fifth, and ſeventh ſpecies, a few together at the ends of the branches, on corymboſe, ſlightly hairy ſtalks. *Calyx* ſhort, broad and depreſſed, a little hairy, its teeth oblong, fringed. *Petals* obovate, fringed, rather longer than the calyx-teeth. *Stamens* and *ſtyle* very long. *Capſule* broad, tumid, dotted with numerous prominent reſinous glands, and riſing, in three rounded lobes, much above the rim of the calyx. It is greatly to be wiſhed that this ſpecies, and ſuch as moſt reſemble it, could be obtained for the gardens of Europe.

11. M. *linearis*. Linear-leaved Metroſideros. Sm. n. 10. Ait. n. 5. (Melaleuca linearis; Schrad. Sert. Hannov. 19. t. 11.)—Leaves ſcattered, linear, channelled, acute, roughiſh, rigid. Flowers lateral, crowded, ſeſſile.—Native of New South Wales. Communicated to the Kew garden by ſir J. Banks, about the year 1788. A ſtout and rigid *ſhrub*, or ſmall *tree*, with round ſmooth *branches*. *Leaves* not unlike thoſe of ſome kinds of Fir, in their general appearance, being very numerous, ſcattered, crowded, ſeſſile, three or four inches long, ſcarcely more than a line broad, ſingle-ribbed, thick-edged, entire, roughiſh to the touch, dark green, bluntiſh with a ſmall pungent point. *Flowers* ſeſſile, in conſiderable numbers round the young branches, for the ſpace of three inches or more, ſpreading every way, the branch being continued and leafy beyond them. *Calyx* bell-ſhaped, ſmooth and even, with broad, triangular, convex, deciduous teeth. *Petals* orbicular, convex, green, often ſlightly downy. *Stamens* and *ſtyle* an inch long, prominent, of a beautiful ſhining crimſon. *Capſules* globoſe, ſomewhat depreſſed, with a very thick ſmooth coat from the body of the calyx, often crowding each other into an angular ſhape. Their little convex valves ſcarcely riſe above the even rim of the calyx.

12. M. *lanceolata*. Lanceolate Metroſideros. Sm. n. 11. Ait. n. 6. (M. citrina; Curt. Mag. t. 260. M. lophantha; Venten. Jard. de Cels, t. 69. M. marginata; Cavan. Ic. v. 4. 18. t. 332.)—Leaves alternate, lanceolate, pointed, ſmooth. Flowers lateral, crowded, ſeſſile.—Native of New South Wales. Frequent in greenhouſes. This firſt flowered in the late Marchioneſs of Rockingham's collection about the year 1790. It differs from the laſt only in foliage, the *leaves* of the preſent being truly lanceolate, about two inches in length, and half an inch broad, with a ſlender marginal rib. They are ſmooth on both ſides, plentifully dotted. *Flowers* exactly like the laſt. The *calyx* is ſometimes

downy, but not ſo conſtantly as we originally thought. Every part when bruiſed is highly aromatic.—In the Tranſactions of the Linn. Soc. v. 9. 117, a ſuſpicion is mentioned that this and the foregoing, and even the following, may be merely varieties of one ſpecies. We have ſeen from the ſeeds of one ſingle capſule of the *lanceolata*, plants produced greatly differing in the breadth of their *leaves*, inſomuch that we are almoſt perſuaded of the former part of the poſition; but the following appears too different in other reſpects, to be confounded with either of thoſe plants. We have determined to keep them all ſeparate, for the preſent at leaſt, till Mr. Brown, who has ſeen them wild, ſhall give his opinion.

13. M. *ſaligna.* Willow-leaved Metroſideros. Sm. n. 12. Ait. n. 7. Venten. Jard. de Cels, t. 70.—Leaves alternate, lanceolate, tapering at each end, pointed. Flowers lateral, crowded, ſeſſile, ſmooth in every part.—Native of New South Wales. Sent to Kew by ſir J. Banks about the year 1788. It flowers in May and June, and differs from *M. lanceolata* in its leſs rigid *leaves,* tapering remarkably at each extremity; *flowers* not above half ſo large, with yellowiſh *ſtamens,* their *petals* not even fringed, but quite ſmooth in every part, as well as the *calyx.* To theſe marks the ingenious Ventenat added, that the ſcales of the *buds* are externally ſtriated, which is not the caſe in the *lanceolata.* Finally, the *ſaligna* has no aromatic flavour.

14. M. *viminalis.* Wand-like Metroſideros. Gærtn. v. 1. 171. t. 34. f. 4. Willd. n. 13—Leaves alternate, linear-lanceolate. Flowers lateral, crowded, ſeſſile, downy.—Native of New Holland. Very different from the laſt, its *leaves* being more linear, and not tapering towards the extremities. The *flowers* are downy, and rather ſmaller. We have ſeen it in ſir J. Banks's herbarium only.

15. M. *capitata.* Round-headed Purple Metroſideros. Sm. n. 13. Willd. n. 14.—Leaves ſcattered, rough-edged, obovate, with a minute point. Heads of flowers terminal. Calyx and young branches hairy.—Found near Port Jackſon, New South Wales, by Dr J. White. We have not heard of it in any garden. It ſeems rather a humble, much-branched *ſhrub;* the *branches* often cluſtered, hairy when young, round and rather ſlender; clothed with numerous, ſcattered, obovate, ſeſſile *leaves,* rough, or finely ſerrated, at the edges, from a quarter to half an inch long, with a little recurved point; their ribs three or five, very apparent; both ſides finely dotted, the edges ſometimes fringed. *Flowers* numerous, purple, in little, round, compact, terminal heads; the *calyx* clothed with long, ſoft, hoary hairs. *Bracteas* lanceolate, fringed, deciduous. The *leaves* are ſcarcely aromatic, but rather aſtringent, with a ſlight flavour like tea.

16. M. *ericifolia.* Heath-leaved Metroſideros.—Leaves imbricated, linear, pointed, hairy; channelled above; convex beneath. Heads of flowers terminal. Bracteas feathery. Calyx ſmooth.—This hitherto nondeſcript ſpecies was gathered by Mr. A. Menzies, near King George's ſound, on the weſt coaſt of New Holland. It has the habit of an *Erica, Dioſma,* or *Phylica.* The *ſtem* is leafy, erect, with copious, ſhort, leafy, lateral *branches.* *Leaves* very numerous, crowded, about a quarter of an inch long, nearly linear, blunt, with a ſmall point, dotted, hairy, dark green, entire; convex beneath; ſlightly concave, or channelled, above. Heads of *flowers* terminal, about the ſize of the laſt. *Bracteas* lanceolate, covered at the back with long ſoft hairs, deciduous. *Calyx* turbinate, dotted, naked. The *petals* appear to be purpliſh. The *leaves* have a ſlight aſtringency, with ſome flavour of turpentine, but by no means powerful. We have not ſeen the *capſule.*

We are well aware that the habit of the two laſt ſpecies, is ſo different from the three which immediately precede them, eſpecially their infloreſcence; and all theſe together are ſo unlike thoſe deſcribed in the former ſection, that it is highly probable ſome good generic difference is to be found in their fructification. On this ſubject, as on many ſimilar ones, we muſt wait for the information of Mr. Brown, who alone has compared them all in their native country.

METROVITZ, in *Geography,* a town of Dalmatia; 6 miles N. of Narenta.

METSAMAA, a town of Sweden, in the government of Abo; 38 miles N.N.E. of Biorneborg.

METSCHOVSK, a town of Ruſſia, in the government of Kaluga; 40 miles W.S.W of Kaluga. N. lat. 54° 12′. E. long. 34° 50′.

METTESHEP, or METTENSCHEP, in our *Old Writers,* an acknowledgment paid in a certain meaſure of corn; or a fine or penalty impoſed on tenants, for defaults in not doing their cuſtomary ſervice in cutting the lord's corn.

METTIJIAH, in *Geography.* See METITCHE.

METTINGEN, a town of Germany, in the county of Tecklenburg; 6 miles N. of Tecklenburgh.

METTINICK ISLAND, an iſland in the Atlantic, near the coaſt of Main. N. lat. 43° 51′. W. long. 68° 59′.

METTSECOUBE′, a ſmall iſland, or perforated rock, in the Mediterranean, on the coaſt of Algiers; where, it is ſaid, Raymond Lully, in his miſſion to Africa, frequently retired to meditate; ſix miles N. of Boujeiah.

METTYCONDA, a town of Hindooſtan, in Myſore; 25 miles N. of Bangalore.

METUALES, or MUTUALES, a people of Aſia, diſperſed in great numbers all over Syria; ſo called from Mutual, a celebrated captain, who deſtroyed the current religion of the Perſians, in order to ſubſtitute Mahometaniſm inſtead of it. The Mutuales are, therefore, ſchiſmatic Mahometans. They admit the Koran as a ſacred book, and Mahomet as the firſt of prophets; and they alſo venerate Jeſus Chriſt, after the manner of the Turks. The Mutuales renounce the ſucceſſion of Mahomet, except Ali, whom they acknowledge as diſtinguiſhed among all the diſciples of the prophet by his ſkill in war, and his knowledge in letters. All forms of religion are held by them in the ſame contempt. Extreme hunger alone can conſtrain them to eat with Chriſtians.

METULÆ, a town of Sardinia; 18 miles W.N.W. of Villa d'Igleſias.

METUPETTA, a town of Hindooſtan, in the Carnatic; 30 miles S.E. of Tanjore.

METWAY HARBOUR, a bay on the S. coaſt of Nova Scotia. N lat. 44° 10′. W. long. 64° 30′.

METYS, a word uſed by many of the ancient writers to expreſs a ſubſtance collected by bees, in order to the ſtopping up cracks and crevices in their hives.

The old authors mention three kinds of ſubſtances uſed by the bees on this occaſion, the *metys, piſſoceros,* and *propolis.* The moderns uſe only the latter term to expreſs every thing of this kind: the metys and piſſoceros ſeeming to have been only the ſame propolis, more or leſs mixed with wax. The ſubſtance is a reſin, of a middle conſiſtence between the hard and the fluid ones. It is uſually of a reddiſh-brown on the ſurface, and yellow within, and is collected from ſeveral trees, of which the poplar ſeems to be the principal, and the willow the next.

METZ, plur. *Metzen,* in *Commerce,* a corn meaſure in Germany. At Augſburg, 8 metzen = a ſchaf, and the metz = 4 vierlings, 16 viertels, or 64 maeſſals: 100 metzen = about 81 Wincheſter buſhels. At Vienna, 30 metzen = a muth; the metz is divided into 4 viertels = 8 achtels = 16 muhlmaſſels = 32 ſudarmaſſels = 128 bechers, and it contains 3100 French cubic inches = 3753 Engliſh ditto; hence 4 metzen = 7 Wincheſter buſhels; and a muth = 6½ Engliſh quarters nearly. See *Tab.* XXI. *of* Measures.

Metz, in *Geography*, a city of France, chief place of a diſtrict, and capital of the department of Moſelle, ſituated at the conflux of the Seille and Moſelle, and containing three cantons, correſponding to the three diviſions of the city: the firſt includes 6455, and its canton 147,81 inhabitants, in 24 communes; the ſecond contains 12,355, and its canton 14,9 8 inhabitants, in 11 communes; and the third part has 13,289, and its canton 15,000 inhabitants, in 4 communes. The whole extent of its territory comprehends 245 kiliometres. Metz is divided into the Old and New Town: the former is large, with narrow ſtreets; but the houſes, although built in the old ſtyle, are handſome. The New Town is alſo large, but more beautiful than the other. Beſides its fortifications, it has three citadels. Its biſhop, before the revolution, aſſumed the title of prince of the Roman empire; he was ſuffragan to the archbiſhop of Treves, and his dioceſe comprehended 613 pariſhes, and his revenue was 120,000 livres. Excluſively of the cathedral, it contained three chapters, ſixteen pariſh churches, ſix abbies, and a college. The Jews, who are numerous in this city, have a ſynagogue. The country round Metz, called the Meſzin, is tolerably fertile, and produces a little wheat. This was anciently a part of the kingdom of Auſtraſia; and Metz was its capital and the royal reſidence. When the children of Charles the Great and Louis the Pious divided the dominions of that crown, the kingdom of Lorrain aroſe out of the ruins of that of Auſtraſia; and about the termination of the ſecond royal line of France, Metz, Toul, and Verdun, ſhook off the yoke, and put themſelves, as free cities, under the protection of the emperor. In 1552, theſe cities placed themſelves under the protection of the French, till the peace of Weſtphalia in 1648, when the three biſhoprics were abſolutely transferred to France; 30 miles S. of Luxemburg. N. lat. 49° 7'. E. long. 6° 15'.

METZERWISE, a town of France, in the department of the Moſelle, and chief place of a canton, in the diſtrict of Thionville. The place contains 607, and the canton 13,439 inhabitants, on a territory of 295 kiliometres, in 45 communes.

METZONA, a town of European Turkey, in Epire; 25 miles E. of Arta.

METZU, Gabriel, in *Biography*, one of the moſt ingenious painters of the Flemiſh ſchool. He was born at Leyden in 1615. It is not exactly known with whom he learned the rudiments of the art, nor does it much concern us to be informed of it, as his ſtyle is entirely his own, having great completion in the finiſhing, with breadth and freedom quite unlike the tedious minute exactneſs of Gerard Dow, or ſtill more that of Mieris.

Metzu generally painted ſmall pictures of ſubjects taken from ordinary occurrences happening among the more poliſhed claſs of his countrymen. A morning viſit at a lady's toilette; a converſation or concert among people dreſſed in the beſt ſtyle of the time in Flanders; a gentleman ſtopping to drink at an inn, &c.; ſuch are the objects which generally compoſe his pictures, in the execution of which one is at a loſs to know whether moſt to admire the beauty of arrangement in the forms, the clearneſs and harmony of the tones, or the extreme delicacy, breadth, and truth in the execution. His works are by no means ſcarce in this country, and are eagerly bought at high prices.

He was ſeverely afflicted with the ſtone, the effect of, and which was probably increaſed by, his unremitting aſſiduity. Having, at the age of 43, conſented to undergo the operation of cutting for extraction, his conſtitution was found too weak to ſupport the trial, and he did not ſurvive it.

MEVA, or Gniev, in *Geography*, a town of Pruſſia, in Pomerelia, on the Viſtula; 22 miles S. of Dantzic.

MEVANGFANG, a town of Upper Siam; 115 miles N. of Porfelone.

MEVELEVITES, in *Modern Hiſtory*, a ſort of derviſes, or religious, among the Turks, ſo called from Meveleva, their founder. They affect to be very patient, humble, modeſt, and charitable; but in reality are very debauched and diſhoneſt.

MEVIUM, a name mentioned by Fallopius and others, as given by ſome medical writers to the venereal diſeaſe.

MEVIUS, David, in *Biography*, a learned juriſt, and privy-counſellor to the king of Sweden, was employed in various negociations by Charles XI., and drew up the regulations by which the German provinces, occupied by Sweden, were to be governed. He wrote "Commentaries on the Law of Lubeck;" "Counſels or Deliberations;" and "Univerſal Juriſprudence."

MEULAN, in *Geography*, a town of France, in the department of the Seine and Oiſe, and chief place of a canton, in the diſtrict of Verſailles. The place contains 2100, and the canton 12,584 inhabitants, on a territory of 130 kiliometres, in 20 communes.

MEULEBECHE, a town of France, in the department of the Lys, and chief place of a canton, in the diſtrict of Courtray. The place contains 6660, and the canton 12,506 inhabitants, on a territory of 90 kiliometres, in four communes.

MEULEN, Anthony Francis Vander, in *Biography*. This painter was born at Bruſſels in 1634. He was a diſciple of Peter Snayers, a battle painter of conſiderable note, and his early progreſs gave ſtrong promiſe of his future eminence.

His ingenious pictures attracted the attention of M. Colbert, the miniſter of Louis XIV., who induced V. Meulen to leave Bruſſels, and ſettle in Paris; and ſoon afterwards introduced him to the king, who appointed him to attend and paint the ſcenes of his military campaigns, gave him a penſion of 2000 livres, and paid him beſides for his performances. He made ſketches of almoſt all the moſt remarkable events that occurred in theſe expeditions of Louis; deſigning upon the ſpot the encampments, marches, ſieges, &c. of the armies; the huntings of the king; the aſſembling of the officers, &c.: from theſe he compoſed his pictures, which are ſkilfully arranged, with great buſtle, animation, and ſpirit, and executed with a very agreeable, though not always a natural tone of colour, and with a ſweet and delicate pencil. Some of his pictures exhibit uncommon ſkill and taſte in compoſition. Frequently the ſcene he had to paint was flat and inſipid, ſuch as a marſhy country before long extended walls; even theſe he contrived to render agreeable by his judicious management of the chiaro-ſcuro, and the pleaſing groups which he diſplayed with his figures, which, though dreſſed in the ſtiff uncouth frippery of the French court of that period, are handled with ſo much delicacy and correſponding taſte, that they never fail to pleaſe. He was particularly ſkilful in pourtraying the actions of the horſe, of which he has left behind him a number of excellent ſtudies, drawn with great care from nature. His pictures frequently include a great extent of country, and an immenſe number of objects. His perfect knowledge of perſpective enabled him to manage the objects and diſtances with the greateſt eaſe and effect, ſo that the eye accompanies the figures without confuſion, and aſſigns to each its due action and diſtance. He lived not beyond the age of 56, but left a great number of pictures, moſt of which are in France, but they are not very unfrequent in this country.

MEUM, in *Botany*, ſuppoſed to be the μηον of Dioſcorides, which is ſo far correct only as they are both of the umbelliferous order; for the plant deſcribed by that ancient author, is ſaid to be ſometimes two cubits high; our's is ſcarcely about a foot. See Ligusticum, ſpecies twelve; for *Oethuſa* read *Aethuſa*.

MEUN, or Meung, John de, in *Biography*, an old French poet, was born at Meun, on the river Loire, in the year 1280. He was well acquainted with the ſtudies of the age, but poetry was his favourite purſuit, and having a turn for ſatire and lampoon, he occaſionally offended thoſe who were diſpoſed to be friendly towards him. Some court ladies, ſmarting under his laſh, once ſeized him, with the reſolution of taking their revenge, but he eſcaped the threatened puniſhment, by deſiring the moſt unchaſte to inflict the firſt blow. He died about the year 1364. By his laſt will, he directed that his body ſhould be interred in the church of the Dominicans at Paris, bequeathing to them, in the way of recompence, a heavy cheſt, which was not to be opened till after the funeral. The contents proved to be of no value whatever, which ſo enraged the holy fathers, that they ordered the dead body to be diſinterred: this coming to the knowledge of the parliament, an order was iſſued to inſiſt upon their giving it an honourable burial in their cloiſter. The principal work of this author was the continuation of the "Roman de la Roſe," begun by William de Lorris. De Meun's addition conſtitutes more than three-fourths of the whole; it is leſs poetical than the firſt part, but has more of ſatire and real manners. An edition of this poem was publiſhed by Du Freſnoy, in three vols. 12mo. to which other pieces are added. Moreri.

Meun, in *Geography*, a town of France, in the department of the Loiret, and chief place of a canton, in the diſtrict of Orleans; 10 miles S.W. of Orleans. The place contains 4418, and the canton 9525 inhabitants, on a territory of $207\frac{1}{5}$ kiliometres, in 8 communes.

MEURJE', a town of Egypt, on the right bank of the Nile; 23 miles S. of Achmim.

MEURS, or Mors, late a principality of Germany, ſurrounded by the duchies of Juliers, Cleves, and Berg, the archbiſhopric of Cologne, and the duchy of Gueldres; about eight miles long, and as many broad. It abounds with corn, cattle, and deer. To the E. its limits are formed by the Rhine, and it is watered by ſeveral ſmaller rivers and brooks. This principality is now annexed to France, and included in the department of the Roer.

Meurs, a town of France, in the department of the Roer, and chief place of a canton, in the diſtrict of Creueldt; formerly capital of the above-mentioned principality. The town is ſmall but fortified. It has a Calviniſtic church and a Latin ſchool. The place contains 2111, and the canton 9144 inhabitants, in 15 communes; 13 miles S.E. of Gueldres. N. lat. 51° 13'. E. long. 6° 30'.

MEURSIUS, John, in *Biography*, was born at Loſdun, near the Hague, in the year 1579. He was an early proficient in claſſical literature, and compoſed Latin orations and Greek verſes with facility before he was thirteen years of age. He received his academical learning at Leyden, and engaged in the education of Barneveldt's ſons; whom he afterwards accompanied on their travels. He ſpent ſome time in the ſtudy of the law at Orleans, and in 1608 was made doctor of that faculty. He viſited ſeveral courts of Europe, formed an acquaintance with many learned foreigners, and examined the moſt celebrated libraries. On his return to Holland he was appointed to the profeſſorſhip of hiſtory at Leyden in 1610, and next of the Greek language; and in the following year the ſtates of Holland nominated him their hiſtoriographer. The wretched fate of Barneveldt involved the happineſs of his friend and adherent Meurſius, and though his attention to the duties of his office had given his enemies no pretext for depriving him of his ſituation; yet they found means to render his ſituation ſo uneaſy, that he only waited for an occaſion to quit it with honour. This at length arrived, when, in 1625, he received an invitation from Chriſtiern IV., king of Denmark, to occupy the profeſſorſhip of hiſtory and politics in his new univerſity of Sora, together with the poſt of royal hiſtoriographer. Theſe offices he readily accepted, and removed to Denmark, where he continued to ſupport his high reputation, and obtained the eſteem of his ſovereign and the court. He died at Sora in the year 1639, leaving behind him a high character for profound learning, to which his various works bear ample teſtimony. His chief publications related to the language and antiquities of Greece, *viz.* "De Populis Atticis;" "Atticarum Lectionum, lib. iv.;" "Archontes Athenienſes;" "Fortuna Attica;" "Athenæ Atticæ;" "De Feſtis Græcorum;" all which have been admitted into the collections of Grævius and Gronovius. The writings of Meurſius were publiſhed collectively in twelve volumes folio, 1741. Moreri.

This learned laborious critic and antiquary, was the firſt who publiſhed the Greek text of the three books of Ariſtoxenus upon muſic, followed by the Greek treatiſes of Nichomachus and Alypius, with notes by the editor; which Meibomius has cenſured, as he has thoſe of Gogavinus, Kircher, and all thoſe who preceded him in commenting, tranſlating, or even mentioning any of the ſeven Greek writers upon muſic that are come down to us, and which he has tranſlated into Latin, and been ſeemingly more ſucceſsful in tranſlating and explaining than any other critic or commentator who has had the courage to undertake ſo difficult a taſk.

Meurſius's edition of Ariſtoxenus, Nichomachus, and Alypius, was publiſhed at Leyden, 1616, 4to. See Fabricius Bibl. Græca.

MEURTE, in *Geography*, a river of France, which riſes near St. Diey, in the department of the Voſges, and joins the Moſelle, 5 miles below Nancy.

Meurte, or *Meurthe*, one of the ten departments of the N.E. region of France, formerly Toulois, and the S. part of Lorraine, bounded on the N. by the department of the Moſelle, on the E. by that of the Lower Rhine, on the S. by that of the Voſges, and on the W. by that of the Meuſe, in 48° 40' N. lat. Its length is 26 French leagues, and breadth 16, and its extent in kiliometres is 6430, or 310 ſquare leagues; and the number of its inhabitants is 342,107, or, according to Haſſenfratz, 351,161; it is divided into 5 circles, and 29 cantons, and 718 communes, or, according to Haſſenfratz, 9 circles, and 74 cantons: the five circles are as follow, *viz.* Toul, including 59,689 inhabitants; Nancy, 88,384; Chateau-Salins, 50,554; Sarrebourg, 56,091; and Luneville, 87,389: its capital is Nancy. The contributions of this department, in the 11th year of the French era, were 2,681,581 fr.; and its expences charged for adminiſtration, juſtice, and public inſtruction, 348,829 fr. 33 cents. The ſoil of the plains is fertile in grain, wine, fruits,

&c.; and that of the hills is covered with wood and paſtures. Here are iron mines, quarries of marble and ſtone, mineral ſprings, &c.

MEVSAK, a town of Arabia, in the province of Hedsjas; 60 miles N.E. of Vadilkova.

MEUSE, a river of France, which riſes at a village called Meuſe, in the department of the Upper Marne, and after being joined by various other rivers in its courſe, it divides into two ſtreams, the upper one towards the N. taking the name of Merwe, which it preſerves, as well as that of Meuſe, till it joins the German ocean, after paſſing the iſlands of Holland and Zealand.

Meuse, one of the ten departments of the N.E. region of France, compoſed of Verdunois and Barrois; bounded on the N. by the duchy of Luxemburg, on the E. by the departments of the Moſelle and the Meurte, on the S. by thoſe of the Marne and Voſges, and on the W. by thoſe of the Marne and the Ardennes, in N. lat. 49°; 33 Fr. leagues long, and 16 broad, in territorial extent 6275 kiliometres, or 318 ſquare leagues; the number of its inhabitants is 275,898, or, according to Haſſenfratz, 268,108; it is divided into 4 circles, 28 cantons, and 591 communes; or, according to Haſſenfratz, into 8 circles and 79 cantons; its four circles are Bar-ſur-Ornain, containing 74,168 inhabitants; Commercy, 73,103; Montmedy, 59,572; and Verdun, 69,055. Its capital is Bar-ſur-Ornain. Its contributions in the eleventh year of the French era were 2,424,922 fr., and its expences amounted to 231,113 fr. 66 cents. This department is diverſified with hills and plains, yielding fruits, grain, and paſtures. It has mines of iron and other metals.

Meuse, *Lower*, one of the thirteen departments of the region of France, called the Reunited country, formed of a part of Gueldres, and of the territories of Liege, Maeſtricht, and Venloo; bounded on the N. by Brabant, on the E. by the department of the Roer, on the S. by that of the Ourthe, and on the W. by that of the Dyle, and that of the Two Nethes, in N. lat. 50° 50′: its territory comprehends 3622½ kiliometres, or 190 ſquare leagues, and it contains 232,662 inhabitants; or, according to Haſſenfratz, 216,566. It is divided into three circles, 23 cantons, and 310 communes; or, according to Haſſenfratz, three circles and 30 cantons: the circles are Maeſtricht, including 107,410 inhabitants; Haſſelt, 60,399; and Ruremond, 64,853. Its capital is Maeſtricht. Its contributions in the year eleven were 1,600,995 fr., and its expences 205,543 fr. 33 cents. This department is partially fertile, and yields grain, fruits, and good paſtures.

MEUTANG, in *Botany*, the name of a flower much eſteemed by the Chineſe, which, on that account, they call the king of flowers. It is larger than our roſe, and imitates its figure, only its leaves are more expanded. As its ſmell comes ſhort of that of the roſe, ſo in beauty the roſe is outdone by it. It has no prickles, and its colour is a mixture of white with purple, but ſo as to incline moſt to white; yet ſometimes there are found reddiſh and yellow ones. The tree it grows on is not unlike our alder-tree, and is cultivated throughout that large empire with great care, being covered in the ſummer time with a ſhade to defend it from the ſcorching heat of the ſun.

MEW Island, in *Geography*, a ſmall iſland in the Eaſt India ſea, near the W. coaſt of Java; three miles N.E. of Java Head.

Mew *Iſlands*, a cluſter of ſmall iſlands on the coaſt of Honduras, S. of Cape Camaron.

Mew *Stone*, a ſmall iſland, or round elevated rock, in the Southern India ocean, near the coaſt of Van Diemen's land. S. lat. 43° 46′. E. long. 146° 24′.—Alſo, a large rock in the Engliſh channel, on the S. coaſt of Devonſhire, E. of the entrance into Plymouth ſound; four miles S. of Plymouth. N. lat. 50° 18′. W. long. 3° 59′.

MEWAT, a hilly and woody tract of Hindooſtan, lying on the S.W. of Delhi, and on the W. of Agra; confining the low country along the weſtern ſide of the Jumnah river, to a (comparatively) narrow ſlip, and extending weſtwards about 130 Britiſh miles. Its length from N. to S. is about 90 miles. This tract, although ſituated in the heart of the empire of Hindooſtan, that is, within twenty-five miles of its former capital, Delhi, is inhabited by people, who have ever been characteriſed as the moſt ſavage and brutal, and whoſe chief employment is robbery and plundering. In 1265, 100,000 of theſe wretches were put to the ſword; and a line of forts was conſtructed along the foot of their hills. At the preſent time, ſays major Rennell, Mewat is ſo notorious a nurſery for thieves and robbers, that parties of “Mewatti” are taken into pay by the chiefs of Upper Hindooſtan, for the purpoſe of diſtreſſing the countries which are made the ſeat of warfare. In Acbar's diviſion, this tract made a part of the ſoubahs of Delhi and Agra; but moſt of it was included in the latter. Mewat contains ſome ſtrong fortreſſes, on ſteep or inacceſſible hills; among which is Alwar, or Alvar, the citadel of Macherry Rajah. It has very often changed maſters, during the conteſts between its native rajahs (or kauzadeh), and the Jats, the rajah of Joinagur, Nudjuff Cawn, and Madajee Sindia; and between theſe powers ſucceſſively. Sindia has made a conſiderable progreſs in the reduction of it.

MEWING, a diſorder incident to all kinds of birds; being the caſting of their feathers.

MEXIA, Pedro, in *Biography*, chronicler to Charles V. is one of the few Spaniſh writers whoſe works have found their way into our language. He wrote a hiſtory of the Cæſars, which includes the German emperors, and is one of the tranſlators of Edward Grimeſton: he was author alſo of “Silva de varia Leccion,” with the additions of its Italian and French tranſlators in that “Treaſury of ancient and modern Times,” which is referred to by Groſe, and of which the two parts having been publiſhed ſeparately, are not eaſily to be met with together. Mexia was alſo the author of certain colloquies to the praiſe of the aſs, in imitation of Lucian and Apuleius, and a hiſtory of Charles V. which he left unfiniſhed, and which has never been edited. He was born at Seville, and died in or about the year 1552. Gen. Biog.

MEXICANO, or Adayes, a river of Louiſiana, which, after purſuing a S.E. courſe, diſcharges itſelf into the gulf of Mexico, at Cabo du Nord, W. by S. of Aſcenſion bay, and E. by N. of Trinity river. On its banks are rich ſilver mines.

MEXICO, one of the ſeven territories, or domains, into which the Spaniſh dominions in North America have been divided, ſometimes improperly called *New Spain*; which is bounded on the N.W. by New Mexico, on the E. by the gulf of Mexico, on the S.E. by the iſthmus of Darien, and on the S. and W. by the Pacific ocean. And though Mexico, called Old Mexico by way of diſtinction from New Mexico, is only a province or kingdom of New Spain, applied in its utmoſt extent, it is not reſtricted to the ancient kingdom, which extended from near the lake of Chapala in the north, to Chiapa on the river Tabaſco, in the ſouth, but includes many extenſive provinces to the north. The provinces which the domain of Mexico comprehends, are Tabaſco, Oaxaca or Guaxaca, Tlaſcala, Mexico Proper, Zacatula, Mechoacan, Panuco, New Gallicia or Xaliſco, and Nayarit ; ſee each reſpectively. Accordingly, the vice-royalty of New Spain comprehended ſeveral provinces, which were not ſubject to the dominion of the Mexicans. The countries of Cinaloa and Sonora, that ſtretch along the ſide of the Vermilion ſea, or gulf of California, as well as the immenſe kingdoms of New Navarre and New Mexico, which bends towards the W. and N., did not acknowledge the ſovereignty of Montezuma, or his predeceſſors. Theſe regions, not inferior in extent to the whole Mexican empire, have been reduced, ſome of them to a greater, others to a leſs degree of ſubjection, to the Spaniſh yoke. They extended through the moſt delightful parts of the temperate zone ; their ſoil is, in general, remarkably fertile ; and all their productions, whether animal or vegetable, are moſt perfect in their kind. They have all a communication, either with the Pacific ocean or with the gulf of Mexico, and are watered by rivers which not only enrich them, but may become ſubſervient to commerce. The peninſula of California, on the other ſide of the Vermilion ſea, diſcovered by Cortes in the year 1536, ſeems to have been leſs known to the ancient Mexicans than the provinces which we have juſt mentioned. On the E. of Mexico, Yucatan and Honduras are comprehended in the government of New Spain, though anciently they can hardly be ſaid to have formed a part of the Mexican empire. Still further E. than Honduras lie the two provinces of Coſta Rica and Veragua, which likewiſe belong to the vice-royalty of New Spain, but both have been ſo much neglected by the Spaniards, and are of ſo little value, that they merit no particular attention. Without attempting to aſcertain preciſely the limits of the ancient Mexican empire, which have been much controverted, we ſhall give a brief geographical, hiſtorical, and ſtatiſtical account of this empire, aided by the information which we derive from Clavigero, the abbé Raynal, Dr. Robertſon, Eſtalla, &c. The name of "Anahuac," ſignifying near the water, originally given to the vale of Mexico only, from the circumſtance of its principal cities being ſituated on ſmall iſlands, and on the borders of two lakes, was afterwards uſed to denominate the whole territory, now known under the appellation of New Spain. This extenſive country was then divided into the kingdoms of Mexico, Acolhuacan, Tlacopan, and Michuacan ; into the republics Tlaxcallan or Tlaſcala. Chollolan, and Huexotzinco, and ſeveral other diſtinct ſtates. Thoſe who wiſh to know the exact ſituation of theſe ſeveral countries may conſult the tedious detail of Clavigero. The kingdom of Mexico, although the moſt modern, was much more extenſive than all the other kingdoms and republics above-mentioned taken collectively. It extended towards the S.W. and S., as far as the Pacific ocean ; towards the S.E. as far as the vicinity of Quauhtemallan ; towards the E., excluſive of the diſtricts of the republics, and a ſmall part of the kingdom of Acolhuacan, as far as the gulf of Mexico ; towards the N., to the country of the Huaxtecas ; towards the N.W. it bordered on the barbarous Chichémicas, and the dominions of Tlacopan, on the weſtern border of the lake of Tezeuco, and Michuacan, the moſt weſterly kingdom of all, were its boundaries towards the weſt. The whole of the Mexican kingdom, ſays Clavigero, was comprehended between the fourteenth and twenty-firſt degrees of N. lat., and between 271 and 283 degrees of longitude taken from the meridian of the iſland of Ferro. The fineſt diſtrict of this country, with regard to ſituation, as well as population, was the vale of Mexico, crowned by beautiful and verdant mountains, whoſe circumference, meaſured at their baſe, exceeded 120 miles. A great part of the vale is occupied by two lakes, the upper one of ſweet water, the lower one brackiſh, communicating by a canal, and in circumference not leſs than 90 miles. Beſides Mexico, Acolhuacan, and Tlacopan, there were, ſays Clavigero, 40 eminent cities in this delightful vale, and innumerable villages and hamlets. The principal inland provinces to the N. were the Otomies ; to the S.W., the Matlatzincas and the Cuitlatecas ; to the S. the Tlahuicas, and the Colhuicas ; to the S.E. were the provinces of the Mixtecas, the Zapotecas, and the Chiaponecas. Towards the E. were the provinces of Tepeyacac, the Papolocas, and the Totonacas. The maritime provinces of the Mexican gulf were thoſe of Coatzacualco, and Cuatlachtlan, called by the Spaniards Cotaſta. The provinces on the Pacific ocean were thoſe of Coliman, Zacatollan, Tototepec, Tecuantepec, and Xoconochco. The whole country of Anahuac was, generally ſpeaking, well peopled. The land is, in great part, mountainous, covered with thick woods, and watered by large rivers, ſome of which run into the gulf of Mexico, and others into the Pacific ocean. Here are ſeveral lakes which not only embelliſh the country, but afford convenience to commerce. The climate of the countries of Anahuac varies according to their ſituation. The maritime countries are hot, and for the moſt part moiſt and unhealthy. The high lands, and eſpecially thoſe that are near to elevated mountains covered with ſnow, are cold. In the other inland countries, the temperature is ſuch, that the inhabitants feel neither the rigour of winter nor the heats of ſummer. However, the agreeableneſs of the climate is counterbalanced by thunder-ſtorms, which are frequent in ſummer, and alſo by earthquakes. Some of the mountains are volcanic, and occaſionally emit fire. The mountains of Anahuac abound in ores of every kind of metal, and a variety of other foſſils. Different parts of the country alſo furniſh precious ſtones ; and alſo ſeveral kinds of ſtone, valuable in architecture, ſculpture, and the arts. The vegetable kingdom is no leſs productive than the mineral. Hernandez, in his "Natural Hiſtory," deſcribes about 1200 plants, natives of this country ; ſome eſteemed for their flowers, ſome for their fruit, ſome for their leaves, ſome for their roots, ſome for their trunk or wood, and others for their gum, reſin, oil, or juice. The country yields, by culture, the cocoa-tree, the plantain, the citron, orange, and lemon : the fruits are numerous and various, but it is needleſs to recount them all : we ſhall content ourſelves with ſpecifying the cocoa-nuts, vanilla, Chili or great pepper, cotton, and achiote or rocou. The country alſo produces wheat, barley, rice, peas, beans, lentils, and other leguminous vegetables. Mexico is particularly diſtinguiſhed by the excellence, variety, and plenty of its timber. Hernandez deſcribes about one hundred ſpecies of trees. It alſo affords various ſorts of plants, that yield profitable reſins, gums, oils, and juices. The quadrupeds are horſes, aſſes, bulls, ſheep, goats, hogs, dogs, and cats, which have all ſucceſsfully multiplied, though, as ſome approved writers ſay, not without degenerating. The ancient quadrupeds common to Mexico and the old continent, are lions, tigers, wild cats, bears, wolves, foxes, ſtags both common and white, bucks, wild goats, badgers, polecats, weazels, martins, ſquirrels, rabbits, hares, otters, and rats. There are other quadrupeds common to Mexico and other regions of the new world, which we ſhall not enumerate. The quadrupeds peculiarly belonging to Anahuac are the cojotl, reſembling, in various reſpects, the adive or chacal ; the tlacojotl, about the ſize of a dog, and the largeſt quadruped of thoſe who live under the earth ; three ſpecies of quadrupeds ſimilar to dogs ; an animal belonging to the genus of wild cats, called ocotochtli ; the cajopollin, of the ſize of a common mouſe; the tozan, about the bulk of an European mole, but otherwiſe very different; the ahuitzotl, an amphibious animal; and the hedge-hog, or porcupine of Mexico. As for birds, their number, variety, and many valuable qualities have occaſioned ſome authors to obſerve, that as Africa is the country for beaſts, ſo Mexico is the country of birds. We cannot be detained in ſpecifying particulars. The reptiles of Mexico may be referred to the four claſſes of four-footed, and of apodes, or thoſe without feet. In the lake of Chalco there are three very numerous ſpecies of frogs, of three very different ſizes and colours, and very common at the tables in the capital. The ſerpents are very various both in ſize and colour, ſome poiſonous and others harmleſs. The rivers, lakes, and ſeas of Anahuac abound with an innumerable variety of fiſhes. The Mexican inſects, flying, terreſtrial, and aquatic, are very numerous. Scolopendras, ſcorpions, ſpiders, and ants are very common. The cochineal furniſhes a very conſiderable article of culture and of commerce.

As to the perſons and manners of the natives we may obſerve, that they are generally ſomewhat above the middle ſize, and well-proportioned in all their limbs: they have good complexions, narrow foreheads, black eyes, firm, regular, white teeth, thick, black, coarſe, gloſſy hair, thin beards, and generally no hair upon their legs, thighs, and arms: their ſkin is of an olive colour. Few deformed perſons are ſeen; and though they cannot be called beautiful, they do not verge to the other extreme. The young women are many of them fair and beautiful, and modeſt and engaging in their manners. The conſtitutions of theſe people are robuſt and their health ſound. Some of them attain to the age of one hundred years. Although in eating they are moderate, their paſſion for ſtrong liquors is indulged to exceſs. The ſtate of civilization among the Mexicans, when they were firſt known to the Spaniards, which was much ſuperior to that of the Spaniards themſelves when they were firſt known to the Phœnicians, that of the Gauls when firſt known to the Greeks, or that of the Germans and Britons when firſt known to the Romans, are ſpoken of in terms of high commendation by Clavigero. He ſays, we have known among the Mexicans ſome good mathematicians, excellent architects, and learned divines. Of their diſpoſition and general conduct he ſeems diſpoſed to judge very favourably. He concludes with obſerving, that the character of the Mexicans, like that of every other nation, is a mixture of good and bad: but the bad may be eaſily corrected by a proper education. The ancient Mexicans, he adds, manifeſted more fire, and were more ſenſible to the impreſſions of honour: they were more intrepid, more nimble, more active, more induſtrious than thoſe of modern times; but they were, at the ſame time, more ſuperſtitious and cruel. Authors, however, have differed much in their opinion with reſpect to the talents, cultivation, and character of the ancient Mexicans. Whilſt they have been extravagantly extolled by ſome, they have been unduly depretiated by others. Dr. Robertſon has endeavoured to ſteer a mean courſe in his deſcription of theſe people; neither extravagantly commending them with Clavigero, nor ſinking them below their proper level with De Paw and others. After their ſubjection to the Spaniſh crown, thoſe who firſt became acquainted with them were not competent judges of their talents and characters. The rapacious adventurers who formed the train of Cortes, their conqueror, were incapable of judging or pronouncing juſtly concerning either their mental or moral endowments. But before we form any eſtimate of the degree in which they had cultivated their minds, or made any attainments in the ſciences and arts, we muſt advert to their origin and the early hiſtory of their eſtabliſhment in Mexico. The perſons who firſt peopled this country, as Clavigero ſuppoſes, came from the more northern parts of America, where their anceſtors had been ſettled for many ages. The Toltecas, according to the account given us by Clavigero, are the oldeſt natives of whom we have any knowledge, and that is very imperfect. It has been an opinion adopted by ſeveral writers, among whom we particularize Siguenza, biſhop Huet, &c. that the Mexicans, and other nations of Anahuac, were the deſcendants of Naphtahim, ſon of Mizraim, and nephew of Ham. Theſe, it is ſaid, having left Egypt not long after the confuſion of tongues, travelled towards America. The reaſons on which this opinion is grounded, are the conformity of theſe American nations with the Egyptians in the conſtruction of pyramidal edifices, of the uſe of hieroglyphics in the mode of computing time, in their dreſs, and in ſome of their cuſtoms, and alſo the reſemblance of the word "Teul" of the Mexicans to the "Theuth" of the Egyptians. Clavigero has examined the validity of theſe arguments, and ſuggeſted ſeveral objections to which they are liable. He ſeems to be of opinion, that the anceſtors of the nations which peopled the country of Anahuac might paſs from the northern countries of Europe into the northern parts of America, or rather from the moſt eaſtern parts of Aſia to the moſt weſterly part of America. This opinion is ſupported by the general tradition of thoſe nations, which aſſerts that their anceſtors came into Anahuac from the countries of the N. and N.W.; by the remains of many ancient edifices built by theſe people in their migrations, as well as the common belief of the people in the north; and alſo, by ſome ancient paintings of the Toltecas, which repreſented the migration of their anceſtors through Aſia and the northern countries of America. This opinion, with regard to the firſt peopling of America, has derived confirmation from ſome modern diſcoveries, which have aſcertained the near approach of the moſt eaſterly coaſt of America to the moſt eaſterly part of Aſia; ſo that if they were not, in ſome remote age, contiguous, a paſſage from the one coaſt to the other might be eaſily effected. The quadrupeds and reptiles of the new world, it is ſaid, paſſed thither by land; and this opinion is founded on the preſumption that the two continents were formerly united, which is adopted by Acoſta, Grotius, Buffon, and other perſons of eſtabliſhed reputation. Clavigero conjectures, that there was formerly a great tract of land which united the now moſt eaſtern part of Brazil to the moſt weſtern part of Africa; and that this whole ſpace of land may have been ſunk by ſome violent earthquakes, leaving only ſome traces of it in the iſles of Cape de Verd, Fernando de Norona, Aſcenſion, St. Matthew, and others, as well as many ſand banks diſcovered by different navigators. However this be, the Toltecas being baniſhed, as they tell us, from their own country Huehuetapallan, ſuppoſed to be in the kingdom of Tollan, from which they derived their name, and ſituated to the N.W. of Mexico, they began their journey in the year 1 "Tecpatl," that is 596 of our era. In every place to which they came, they remained no longer than they liked it, or could be accommodated with proviſions; if they determined to make a longer ſtay, they erected houſes, and ſowed the land with corn, cotton, and other plants, the ſeeds of which they carried with them for the ſupply of their wants. In this migrating manner they travelled ſouthward for 104 years, till they arrived at a place which they called "Tollantzinco," about 50 miles E. of the ſpot, where, ſome centuries after, was founded the famous city of Mexico. In this country, however, they did not chooſe to ſettle, although the climate was mild and the ſoil fruitful; but in about twenty years after, they removed about 40 miles to the W. where, along the banks of a river, they founded the city of Tollan, or Tula, after the name of their native country. That city, ſuppoſed to be the oldeſt in Anahuac, and one of the moſt celebrated in the hiſtory of Mexico, was the capital of the Toltecan kingdom, and the court of their kings. This monarchy began, as it is ſaid, in the year 8, "Acatl," that is, 607 of the Chriſtian era, and laſted 384 years. The Toltecas were the moſt celebrated people of Anahuac for their ſuperior civilization, and ſkill in the arts; whence it has been common in after ages to diſtinguiſh the moſt remarkable artiſts in an honourable manner, by the appellation of Toltecas. They always lived in ſociety, collected into cities, under the government of kings and regular laws. They were not very warlike, and leſs turned to the exerciſe of arms than to the cultivation of the arts. The nations that have ſucceeded them have acknowledged themſelves indebted to the Toltecas for their knowledge of the culture of grain, cotton, pepper, and other moſt uſeful fruits. Beſides the arts which are dictated by neceſſity, they practiſed thoſe which adminiſter to luxury. They had the art of caſting gold and ſilver, and melting them to whatever form they pleaſed, and acquired great reputation for the cutting of all kinds of gems; but nothing raiſed their character ſo high as their having been the inventors, or at leaſt the reformers of that ſyſtem for the arrangement of time, which was adopted by all the civilized nations of Anahuac. It is ſaid, that obſerving in their own country, how the ſolar year exceeded the civil one by which they reckoned, about ſix hours, they regulated it by interpoſing the intercalary day once in four years, which they did more than 100 years before the Chriſtian era. Their religion, indeed, was idolatrous, and they appear, by their hiſtory, to have been the inventors of the greateſt part of the mythology of the Mexicans. During the four centuries of the monarchy of the Toltecas, they multiplied exceedingly, extending their population every way in numerous and large cities, but their circumſtances changed, when in the firſt year of the reign of Topiltzin, they ſuffered for want of rain and the productions of the ſoil, and a great part of the nation died by famine and ſickneſs. Topiltzin died in the ſecond year "Tecpatl," *i. e* 1052 of the vulgar era, and with him the Toltecan monarchy terminated. The wretched remains of the nation ſought new abodes; ſome removed to Yucatan, ſome to Guatemala, and ſome remained in the kingdom of Tula, and diſperſed themſelves in the vale where Mexico was afterwards founded. After the deſtruction of the Toltecas, for the ſpace of one century, the land of Anahuac remained ſolitary and almoſt entirely depopulated, until the arrival of the Chachemecas. Theſe came originally from the northern countries. Their native country was called, according to their account, "Amaquemecan," where, as they ſay, different monarchs ruled their nation for many years. In the character of theſe people a certain degree of civilization was blended with many traits of barbarity. They had diſtinctions between the nobility and commonalty, and the plebeians were accuſtomed to reverence thoſe whoſe birth, merit, or favour with the prince raiſed them above the other ranks. They dwelt together in communities in places compoſed, as it is probable, of poor huts; but they neither practiſed agriculture, nor thoſe arts which accompany civil life. They lived on game, and fruits, and roots, which the earth ſpontaneouſly produced. Their clothing was the ſkins of beaſts, and their arms, the bow and arrow. Their religion conſiſted of the ſimple worſhip of the ſun, to which pretended divinity they offered herbs and flowers which they found ſpringing in the fields. One of their princes was ſent by Xolotl, his father, to ſurvey the country: and at length Xolotl determined to eſtabliſh himſelf in Tenayuca, a place ſix miles diſtant from the ſcite of Mexico towards the N., and diſtributed his people among the neighbouring lands. In proceſs of time he became acquainted with ſeveral Toltecan families, encouraged intermarriages and alliances with them, and from them acquired the arts of agriculture, the manner of digging metals, the art of caſting them, and alſo of cutting ſtones, ſpinning and weaving cotton, and of other things, which contributed to improve their means of ſubſiſtence, their clothing, their habitations, and their manners. Xolotl obtained from time to time an acceſſion of new ſettlers; among whom were ſome of diſtinguiſhed rank and character; and particularly three princes, to two of whom he gave his two daughters in marriage. When this ceremony had taken place, he divided his kingdom into ſeveral diſtinct ſtates, and aſſigned the poſſeſſion of them to his ſons-in-law, and the other nobles of each nation. The population daily increaſed, and with it the civilization of the people; but ambition began to produce injurious effects, and Xolotl, who had hitherto governed with mildneſs, was obliged to recur to the puniſhment of ſome rebels with death. Upon the deceaſe of Xolotl, he was ſucceeded by his ſon Nopaltzin II.; and upon his death his ſon, Tlotzin III. aſcended the throne; and the ſucceſſion continued in his family; according to the following liſt of Chachemecan kings.

Xolotl began to reign in the	12th century.
Nopaltzin - -	13th
Tlotzin - - -	14th
Quinatzin - -	14th
Techotlalla - -	14th
Ixtlilochitl in the year	1406
Nezahualcoyotl - -	1426
Nezahualpolli - -	1470
Cacamatzin - -	1516
Cuicuitzcatzin - -	1520
Coanacotzin - -	1520

Such is the ſucceſſion of Chachemecan kings, till their monarchy terminated. The Otomies are ſaid to have been one of the moſt numerous nations which ſettled in the country of Anahuac: they were a rude and barbarous people, and in the time of the Mexican kings they were treated as ſlaves. Anciently they were renowned for their dexterity in the chace; at preſent they traffic in coarſe cloths for the dreſs of the other Indians. The Taraſcas, who occupied the extenſive, rich, and pleaſant country of Michuacan, ſettled many cities and villages; and their kings were rivals of the Mexicans, and had frequent wars with them. Theſe were idolatrous, but leſs cruel in their worſhip than the Mexicans. Their language is copious, ſweet, and ſonorous. Beſides other nations, which ſettled in and near the vale of Mexico, the moſt renowned and the moſt ſignalized in the hiſtory of Mexico, were thoſe vulgarly called the Nahuatlacas. They conſiſted of ſeven tribes, who ſettled in Anahuac after the Chachemecas. The Aztecas, or Mexicans, were the laſt people who ſettled in Anahuac. Till about the year 1160 of the vulgar era, they lived in Aztlan, a country ſituated to the N. of the gulf of California. They left their country, as it has been ſaid, at the inſtigation of a perſon of great authority among them, to whoſe opinion they all paid great deference. He was led to this reſolution by the fanciful interpretation of the chirping of a bird; but whatever was the motive of the migration of the Aztecas, they left their country at the time above-mentioned. After various delays in the courſe of their peregrination, they at length arrived to the borders of the lake of Tezeuco, and near the ſcite of Mexico. Here they ſuffered various perſecutions and diſtreſſes; they engaged in a conflict with ſome enemies, whom they vanquiſhed, and, returning to the place of their reſidence, they erected an altar to their tutelary god. When they fixed upon the ſpot, on which they determined to erect their city, they built a temple to their god, and conſecrated it by the effuſſion of human blood. Around the ſanctuary of their god they conſtructed wretched huts of reeds and ruſhes, being at that time deſtitute of other materials; and they called it Mexico, which denomination, being taken from the name of its tutelar god, ſignifies place of Mexitli, or Huitzilopochtli, as he had both theſe names. There are other etymologies of this name. (See Mexico.) The foundation of this city was laid in the year 2, Calli, correſponding with the year 1325 of the vulgar era. Until the year 1352, the Mexican government was ariſtocratical; the whole nation paying obedience to a certain body, compoſed of perſons the moſt reſpectable for their nobility and wiſdom; but at this time they imitated the example of their neighbours, and for greater ſecurity from their enemies, formed their little ſtate into a monarchy; and the election fell, by common conſent, on Acamapitzin, who was one of the moſt famous and prudent perſons then living amongſt them. This monarch governed the city, which comprehended at that time the whole of his kingdom, in peace for thirty-ſeven years. In his time the population increaſed, buildings of ſtone were conſtructed, and thoſe canals, which ſerved as well for the ornament of the city as for the convenience of its inhabitants, were begun. At his death the monarchy, which was elective, was transferred to his ſon, Huitzilihuitl. After a reign of twenty years, he was ſucceeded by his brother Chimalpopoca, whoſe premature death made way for the election of Itzcoatl, brother to the two preceding kings, and natural ſon of Acamapitzin by a ſlave. His government was conducted with prudence; he ſubdued many neighbouring provinces; and he erected two temples, one to the goddeſs Cihuacoatl, and ſome time afterwards another to Huitzilopochtli, the chief Mexican divinity. After a proſperous reign of thirteen years, he was ſucceeded by one of his grandſons, Montezuma, who was elected with general applauſe, not leſs on account of his perſonal virtues, than the important ſervices which he had performed for his country. As ſoon as he was fixed on the throne, he erected a famous temple in that part of the city which was called Huitznabuac; and in rearing this magnificent ſtructure, he was aſſiſted with materials and workmen by the neighbouring kings, with whom he was in alliance. He then proſecuted the conqueſts which he had commenced in the time of his predeceſſor, and added to the Mexican empire ſeveral diſtricts and villages. In the tenth year of his reign, correſponding to the year 1446 of the vulgar era, the city of Mexico was much damaged by an inundation from the adjacent lake; and, in order to prevent a ſimilar calamity, he cauſed to be conſtructed a large dyke, nine miles in length, and eleven cubits in breadth, compoſed of two parallel paliſades, the ſpace between which was entirely filled up with ſtone and mud. The inundation was ſoon followed by a famine, which was owing to a failure of the harveſt of maize. When the city had recovered itſelf from the effects of this calamity, Montezuma renewed his conqueſts, and, after a diſtinguiſhed reign of twenty-nine years, the throne was vacated by his death in 1464, and Axayacatl was choſen to ſucceed him. This king, having obtained a ſignal victory over the inhabitants of a neighbouring province, in 1468, undertook the building of a temple, which he called Coatlan. The progreſs of his conqueſts was interrupted by his death, in the 13th year of his reign, A.D. 1477. Tizoc, his elder brother and general of the army, was elected for his ſucceſſor; but his reign was ſhort and undiſtinguiſhed by any conſiderable military exploits. In the 5th year of his ſovereignty he was poiſoned by ſome of his feudatory ſubjects, A. D. 1482. During his time, the power and wealth of the crown had arrived to ſuch a height, that he undertook to conſtruct a temple to the tutelary god of the nation, which was to have ſurpaſſed in magnificence all the temples of that country; he had prepared a vaſt quantity of materials for this purpoſe, and had actually begun the ſtructure, when death interrupted his projects. Ahuitzotl, the brother of the two preceding kings, a general of the army, was choſen to ſucceed him. The firſt object to which his attention was directed was the completion of the temple, which had been deſigned and begun by his predeceſſor. This work was diligently proſecuted for four years; and on occaſion of his conſecration he is ſaid to have ſacrificed, as ſome ſay, 72,344, and, according to others, 64,060 priſoners. This event happened in 1486. In the year 1498, this king projected to ſupply the lake with water from a fountain at ſome diſtance; and in ſpite of remonſtrances from thoſe who dreaded an inundation, he perſiſted in the execution of his plan. The apprehended event occurred, and the city was deluged with the overflowing water. This deluge was ſucceeded by a famine. The laſt years of Ahuitzotl were paſſed in conſtant wars; till at length, in the year 1502, after a reign of about twenty years, he died. At the time of his death, the Mexicans were in poſſeſſion of all which they had at the arrival of the Spaniards. He was celebrated among his countrymen for magnificence and liberality. Having diſcovered in the vale of Mexico a quarry of ſtones, called tetzoutli, he embelliſhed the city with ſo many new and magnificent buildings, that it was already become the firſt city of the new world. Upon the death of Ahuitzotl, Montezuma was elected as the 9th ſovereign of Mexico. Beſides the valour which he had diſplayed in ſeveral battles, as general, he was likewiſe a prieſt, and much venerated for his gravity, circumſpection, and religion. In order to obtain victims to be ſacrificed at his coronation, he entered into a war with ſome neighbouring revolters; and the ceremonies exhibited on this occaſion were ſingularly ſplendid and magnificent. Notwithſtanding a ſolemn agreement concerted between the nobility and plebeians in a former reign for chuſing the offices of ſtate, Montezuma diſplaced the latter, and required that all the ſervants of his palace ſhould be perſons of rank. Theſe were very numerous, and very ſervile and obſequious. The women who attended him were alſo perſons of rank, and they lived immured in a kind of ſeraglio, where their conduct was vigilantly regarded; but of theſe the king retained thoſe who pleaſed him, and diſpoſed of the others as a recompence for the ſervice of his vaſſals. The forms and ceremonials introduced at court were additional indications of the deſpotiſm of Montezuma. The grandeur and magnificence of his palaces, houſes of pleaſure, woods, and gardens, correſponded to every other circumſtance that ſerved to diſplay the ſplendour of his royal dignity. In Mexico, beſides the ſeraglio for his wives, there was lodging for all his miniſters and counſellors, and all the officers of his houſhold and court, and accommodation for all foreign lords and kings who arrived hither for buſineſs or pleaſure. He had two houſes in the city appropriated to animals, one for birds that did not live by prey, and another for thoſe of prey, quadrupeds, and reptiles. The care of the birds was committed to 300 men, beſides their

their phyſicians, who adminiſtered remedies to their diſtempers. For the ſupport of the birds of prey 500 turkies were killed daily; and the wild beaſts were fed upon deer, rabbits, hares, &c. and the inteſtines of human ſacrifices. Montezuma alſo collected for his amuſement all irregularly formed men. All his palaces were ſurrounded with pleaſant gardens, in which was every kind of beautiful flower, odoriferous herb, and medicinal plant. It had likewiſe woods encloſed with walls, and furniſhed with variety of game, in which he frequently ſported. In one of the royal buildings was an armoury, filled with all kinds of offenſive and defenſive arms: and he employed a number of artificers in manufacturing theſe, and alſo artiſts, ſuch as goldſmiths, moſaic-workmen, ſculptors, painters, and others. One whole diſtrict conſiſted ſolely of dancing-maſters, who were trained up to entertain him. His zeal for religion was no leſs conſpicuous than his munificence. He built ſeverel temples to his gods, and made frequent ſacrifices to them, obſerving with punctuality the eſtabliſhed rites and ceremonies. However, his mind was totally debaſed, by the vain fear of the auguries and pretended oracles of the falſe divinities to whom he dedicated temples. He was inexorable in puniſhing thoſe who reſiſted his orders, or tranſgreſſed the laws of the kingdom; and he often put the integrity of his magiſtrates to the teſt by ſecret preſents, and if he found them guilty, he inflicted ſevere penalties. He was an implacable enemy to idleneſs, every ſpecies of which he reſtrained or corrected. With many good qualities which he poſſeſſed, he blended a diſpoſition to oppreſs his people by the impoſition of heavy burdens, in order to ſupport his own folly and extravagance, which diſguſted them; notwithſtanding the liberal donations which he beſtowed on individuals, and particularly on his generals and miniſters.

With the exception of the war againſt the republic of Tlaſcala, in which he was unſucceſsful, he ſubdued ſeveral provinces, and extended the kingdom, as it is ſaid, to the boundaries of Nicaragua. Montezuma, whoſe fate was decided after Cortes took poſſeſſion of Mexico, reigned almoſt eighteen years, and died in June, 1520. He was ſucceeded by his brother, Cuitlahuatzin, or Guatimozin, as he is uſually called, who aſcended the throne in the beginning of July, 1520, and reigned about three months, when he was taken priſoner and ſtrangled by order of Cortes, becauſe he had planned a revolt after having ſworn homage to the emperor Charles V., then king of Spain. His ſucceſſor was Quauhtemotzin, who finiſhed his reign on the 13th of Auguſt, 1521, having been made priſoner by the Spaniards juſt as Mexico was taken. His reign could not have laſted more than nine or ten months.

Although Juan de Grijalva, who was appointed by Velaſquez to the command of a ſmall expedition for diſcovery, conſiſting of four ſhips, and 240 volunteers, firſt landed in the territory of New Spain, on the iſland of Cozumel, E. of Yucatan, on the 3d of May, 1518, and gave the country this appellation, he returned to Cuba without making any conſiderable progreſs towards the reduction of it. Velaſquez, however, haſtened his preparations for a new expedition, and he appointed Fernando Cortes for the commander of it. Of this expedition, and the ſucceſsful iſſue of it, in the capture of Mexico, and the ſubjugation of the Mexican empire, we have given an ample account under the article Cortes. We ſhall now avail ourſelves of the information collected by Dr. Robertſon, relating to the Mexicans and their empire, and at the ſame time introduce the occaſional reflections of Clavigero, Eſtalla, and other writers. Little dependance can be placed on the accounts given of the policy and order eſtabliſhed in the Mexican monarchy by Cortes and his adherents. The genius and manners of the people muſt be inferred from incidents, which they occaſionally mention, rather than from their own deductions and remarks. The obſcurity in which the ignorance of its conquerors involved the annals of Mexico, was augmented by the ſuperſtition of thoſe who ſucceeded them. As the memory of paſt events was preſerved among the Mexicans by figures painted on ſkins, or cotton cloth, or on the bark of trees, the early miſſionaries conceiving them to be monuments of idolatry, which ought to be deſtroyed, in order to facilitate the converſion of the Indians, committed them to the flames by order of Juan de Zummaraga, the firſt biſhop of Mexico. Thus the knowledge of remote events, which ſuch rude monuments might furniſh, was almoſt entirely loſt, and no information remained concerning the ancient revolutions and policy of the empire, but ſuch as was derived from tradition, or from ſome fragments of their hiſtorical paintings, that eſcaped the barbarous reſearches of Zummaraga. Tradition, it is well known, is a very unſatisfactory ſource of information with regard to events long ſince paſt; and the Mexican paintings, which are ſuppoſed to have ſerved as annals of their empire, are few in number, and of ambiguous meaning; and are not worthy of that confidence, which ſome hiſtorians of Mexico, and particularly Clavigero, have repoſed in them.

According to the report of the Mexicans themſelves, their empire was not of long duration. Their country, as they relate, and as is evident from the details which we have already given, was originally poſſeſſed, rather than peopled, by ſmall independent tribes, whoſe mode of life and manners reſembled thoſe of rude ſavages. However, at a period correſponding to the tenth century in the Chriſtian era, ſeveral tribes moved in ſucceſſive migrations from unknown regions towards the N. and N.W., and ſettled in different provinces of Anahuac, the ancient name of New Spain. Some of theſe, more civilized than the original inhabitants, began to form them to the arts of ſocial life. At length, towards the commencement of the 13th century, the Mexicans, a people more poliſhed than any of the former, advanced, as we have already ſtated, from the border of the Californian gulf, and took poſſeſſion of the plains adjacent to a great lake near the centre of the country. After reſiding there about 50 years, they founded a town, ſince known by the name of Mexico, which afterwards became very conſiderable. The Mexicans, long after they were eſtabliſhed in their new poſſeſſions, continued, like other martial tribes in America, unacquainted with regal dominion, and were governed in peace, and conducted in war, by ſuch as were entitled to pre-eminence on account of their wiſdom or valour. Among them, as in other ſtates whoſe power and territories become extenſive, the ſupreme authority at laſt centered in a ſingle perſon; and when the Spaniards, under Cortes, invaded the country, Montezuma was the ninth monarch who had ſwayed the Mexican ſceptre, not by hereditary right, but by election. Such is the traditional account given by the Mexicans themſelves, of the origin and progreſs of their empire; and its duration appears to have been ſhort. From the firſt migration of their parent tribe, they can reckon little more than 300 years: and from the eſtabliſhment of monarchical government not above 130 years, as ſome ſay, or, according to others, 197 years, had elapſed. Allowing it a duration correſponding to the Spaniſh accounts of its civilization, it is difficult to conceive how, among a people who poſſeſſed the art of recording events by pictures; and who conſidered it as an eſſential part of their national education, to teach their children to repeat the hiſtorical ſongs which celebrated the exploits of their anceſtors,

ceſtors, the knowledge of paſt tranſactions ſhould be ſo limited. But adopting their own ſyſtem with regard to the antiquity of their nation, it is no leſs difficult to account either for that improved ſtate of ſociety, or for the extenſive dominion to which their empire had attained when it was firſt viſited by the Spaniards. The recent origin of the Mexicans ſeems to be a ſtrong preſumption of ſome exaggeration in the ſplendid deſcriptions which have been given of their government and manners. In the hiſtory of the Mexicans ſome facts occur, ſays Dr. Robertſon, that ſuggeſt an idea of conſiderable progreſs in civilization in the Mexican empire, and others which ſeem to indicate that it had advanced but little beyond the ſavage tribes around it. Our hiſtorian of America has ſtated theſe facts. The right of private property was perfectly underſtood, and eſtabliſhed in its full extent. Real and moveable poſſeſſions, property in land and in goods, were accurately diſtinguiſhed; and both might be transferred from one perſon to another by ſale or barter; or both might deſcend by inheritance. Every perſon, who could be denominated a freeman, had property in land; which was held by various tenures. Some poſſeſſed it in full right, and it deſcended to their heirs; the title of others was attached to the office or dignity which they retained. Theſe two modes of occupying land were deemed noble, and belonged to citizens of the higheſt claſs. But the tenure by which the great body of the people held was of a very different kind. In every diſtrict a certain quantity of land was meaſured out, in proportion to the number of families. This was cultivated by the joint labours of the whole; its produce was depoſited in a common warehouſe, and divided among them according to their reſpective exigencies. The members of the "Calpullee," or aſſociations, could not alienate their ſhare of the common eſtate; it was an indiviſible permanent property, deſtined for the ſupport of their families. Whilſt the territory of the ſtate was thus diſtributed, every man had an intereſt in its welfare, and the happineſs of the individual was connected with the public ſecurity.

Another circumſtance that deſerves to be mentioned was the magnitude and number of their cities. In a rude ſtate of ſociety, men have no very operative inducements to crowd together. From choice, and alſo from neceſſity, they live diſperſed. But when the Spaniards entered New Spain, they were aſtoniſhed to find the natives aſſembled in towns which reſembled in their extent thoſe of Europe. Zempoalla, though a town of the ſecond or third ſize, excited their admiration, and they compared it to cities of the greateſt note in their own country. But when they afterwards became acquainted with Tlaſcala, Cholula, Tacuba, Tezeuco, and Mexico itſelf, their aſtoniſhment increaſed, and they were led to entertain ideas of their magnitude and populouſneſs bordering on what is incredible. Cortes and his companions, little accuſtomed to eſtimate and compute the number of people in ſuch cities, and ſtrongly tempted to magnify, in order to exalt the merit of their own diſcoveries and conqueſts, might have been betrayed into error, and might have raiſed their deſcriptions conſiderably above the truth. Dr. Robertſon therefore conceives, that abatements ought to be made in their calculations of the number of inhabitants in the Mexican cities, ſo that the ſtandard of their population ſhould be fixed much lower than they have done; nevertheleſs our author acknowledges that they are cities of ſuch conſequence as are not to be found but among people who have made ſome conſiderable progreſs in the arts of ſocial life.

Another circumſtance that ought to be regarded is the ſeparation of profeſſions, which is a ſymptom of improvement. The ſavage can form his bow, point his arrow, rear his hut, and hollow his canoe, without the aſſiſtance of any perſon more ſkilful than himſelf: but in proportion as refinement ſpreads, the diſtinction of profeſſions increaſes, and they branch out into more numerous and minute ſubdiviſions. Among the Mexicans, this ſeparation of the arts had taken place to a very conſiderable degree. The functions of the maſon, the weaver, the goldſmith, the painter, and of ſeveral other crafts, were carried on by different perſons.

The diſtinction of ranks eſtabliſhed in the Mexican empire is another circumſtance that merits attention. The great body of the people was in a moſt humiliating ſtate. Some, denominated "Mayeques," were attached, as it were, to the ſoil, and conveyed with the lands on which they were ſettled; others felt the utmoſt rigour of domeſtic ſervitude; and they were held in ſuch low eſtimation, that a perſon who killed one of theſe ſlaves was not ſubjected to any puniſhment. Even thoſe conſidered as freemen were treated by their haughty lords as beings of an inferior ſpecies. The nobles, poſſeſſed of ample territories, were divided into various claſſes, to which peculiar titles of honour belonged. Some of theſe titles deſcended with the lands from father to ſon in perpetual ſucceſſion. Others were annexed to particular offices, or conferred, during life, as marks of perſonal diſtinction. The monarch, exalted above all, enjoyed extenſive power, and ſupreme dignity. The reſpect attached to theſe different ranks correſponded to their gradation of dignity; and this reſpect, due from inferiors to ſuperiors, was ſo eſtabliſhed, that it incorporated with the language, and influenced its genius and idiom. The Mexican tongue abounded in terms of reverence and courteſy. It is only in ſocieties, which time and the inſtitution of regular government have moulded into form, that we find ſuch an orderly arrangement of men into different ranks, and ſuch nice attention paid to their various rights.

The political conſtitution of the Mexicans is an object deſerving of conſideration; more eſpecially as it has been miſunderſtood and miſrepreſented by the Spaniards. The aſpiring ambition of Montezuma introduced innovations upon the Mexican policy; and introduced a pure deſpotiſm. He diſregarded the ancient laws, violated the privileges held moſt ſacred, and reduced his ſubjects of every order to the condition of ſlaves. The chiefs or nobles of the firſt rank wiſhed to ſhake off the yoke which he had impoſed, and in hopes of recovering their rights, many of them courted the protection of Cortes, and joined a foreign power againſt their domeſtic oppreſſor. We muſt therefore look back beyond the reign of Montezuma in order to diſcover the form and genius of Mexican policy. The body of citizens, called nobility, formed the moſt reſpectable order in the ſtate. They were of various ranks, and conſiderable with regard to number. Of this order there were 30 in the Mexican empire, each of whom had in his territories about 100,000 people; and ſubordinate to theſe, there were about 3000 nobles of a lower claſs. The territories belonging to the chiefs of Tezeuco and Tacuba were hardly inferior in extent to thoſe of the Mexican monarch. Each of theſe poſſeſſed complete territorial juriſdiction, and levied taxes from their own vaſſals. But all followed the ſtandard of Mexico in war, ſerving with a number of men in proportion to their domain, and moſt of them paid tribute to its monarch as their ſuperior lord.

Traces of feudal policy, in its moſt rigid form, are diſcernible in the Mexican conſtitution, exhibiting its diſtinguiſhing characteriſtics, a nobility poſſeſſing almoſt independent authority, a people depreſſed into the loweſt ſtate of ſubjection, and a king entruſted with the executive power of the ſtate. But the juriſdiction of its crown was very limited, and all real and effective authority was retained by the Mexican nobles in their own hands. Without their conſent the king could undertake no meaſure of importance. At firſt they elected the king, and afterwards the choice was committed to ſix electors, of whom the chiefs of Tezcuco and Tacuba were two. Their choice was guided by a view to the activity and valour of their prince more than to the order of birth; ſo that collaterals of mature age or diſtinguiſhed merit were often preferred to thoſe who were nearer the throne in direct deſcent. Thus the Mexicans ſecured a ſucceſſion of able and warlike princes, who raiſed their empire in a ſhort period to that extraordinary height of power, which it had attained when Cortes landed in New Spain. The monarchs, reſtrained at firſt, gradually advanced in power and in the ſplendour of their government, a ſtriking inſtance of which was preſented to the view of the Spaniards in Montezuma's court; but it was not merely in a parade of royalty that the Mexican monarchs exhibited their power; they manifeſted it more beneficially in the order and regularity with which they conducted the internal adminiſtration and police of their dominions. Their attention in providing for the ſupport of government was no leſs ſagacious than the actual adminiſtration of it. Taxes were laid upon land, upon the acquiſition of induſtry, and upon commodities of every kind expoſed to ſale in the public markets; theſe taxes were equally laid, and, as the uſe of money was unknown, they were paid in kind. The internal police of the Mexican empire extended to the appointment of couriers for conveying intelligence, to the ſtructure and government of the capital, to its accommodation with water by means of aqueducts, and to a variety of other circumſtances reſpecting the convenience and comfort of its inhabitants. The attention that was manifeſted in regulations of this kind was ſuch as poliſhed nations have been late in acquiring and exerciſing.

The progreſs of the Mexicans in various arts is alleged as a farther deciſive proof of their ſuperior refinement; but on this ſubject ſome Spaniſh authors have been charged with exaggeration. The Mexican paintings which ſome have extravagantly extolled are repreſented by others as uncouth delineations of common objects, or very coarſe images of the human and other forms, devoid of grace and propriety. In the armoury of the royal palace of Madrid, are ſhewn ſuits of armour, which are called Montezuma's; they are compoſed of thin lacquered copper-plates. Dr. Robertſon ſays, that, in the opinion of intelligent judges, theſe are evidently eaſtern. Clavigero, with great ardour, and not without ſome rudeneſs of attack on the learned hiſtorian, maintains that theſe are really Mexican; becauſe we are certain, from the teſtimony of all the writers of Mexico, that thoſe nations uſed ſuch plates of copper in war, and that they covered their breaſts, their arms and thighs with them, to defend themſelves from arrows; whereas we do not know that ſuch were ever in uſe among the inhabitants of the Philippine iſles, to which Dr. R. refers them, or among any other people who had commerce with them. The Mexicans, ſays Clavigero, could boaſt of many inventions worthy of immortalizing their name, ſuch as, beſides thoſe of caſting metals and moſaic works of feathers and ſhells, the art of making paper, thoſe of dyeing with indelible colours, ſpinning and weaving the fineſt hair of the rabbits and hares, making razors of a ſtone called "itztli," which they manufactured with ſuch expedition, that in an hour an artiſt could finiſh more than 100, making beautiful looking-glaſſes of this ſtone ſet with gold, the cutting and poliſhing of gems, breeding of the cochineal, and making uſe of its colour, preparing of cement for the pavements of their houſes, &c. &c. Their potters were famous; and their carpenters wrought ſeveral kinds of wood with inſtruments made of copper. They had alſo various manufactures of cloth, uſing cotton for wool, feathers for ſilk, with the hair of the rabbit and hare, for lint and hemp, icxotl, or mountain-palm, &c.

In the wooden prints or copper-plates of their paintings, that have been publiſhed by various authors, every figure of men, quadrupeds, or birds, as well as every repreſentation of inanimate nature, is extremely rude and awkward. But though the Mexican paintings may be ranked low, as works of art, they may be regarded in a higher point of view, when conſidered as the records of their country, as hiſtorical monuments of its policy and tranſactions; and they become intereſting objects of attention. Of their picture writing ſome ſingular ſpecimens have been preſerved. The moſt valuable of theſe have been publiſhed by Purchas in 66 plates, and divided into three parts. The firſt contains the hiſtory of the Mexican empire under its ten monarchs. The ſecond is a tribute-roll, repreſenting what each conquered town paid into the royal treaſury. The third is a code of their inſtitutions, domeſtic, political, and military. Another ſpecimen of Mexican painting has been publiſhed in 32 plates by the archbiſhop of Toledo. The ſtyle of painting is the ſame in all; they repreſent *things* not *words*; exhibiting images to the eye, not ideas to the underſtanding; and they may, therefore, be conſidered as the earlieſt and moſt imperfect eſſay of men in their progreſs towards diſcovering the art of writing. The plates already mentioned indicate ſome approach to the plain and ſimple hieroglyphic, where ſome principal part or circumſtance in the ſubject is made to ſtand for the whole; and the Mexicans ſeem alſo to have advanced farther towards the uſe of the more figurative and fanciful hieroglyphics. In order to deſcribe a monarch, who had enlarged his dominions by force of arms, they painted a target ornamented with darts, and placed it between him and thoſe towns which he ſubdued. For the notation of numbers the Mexican painters had invented artificial marks, or "ſigns of convention;" by means of which they computed the years of the reigns of their kings, as well as the amount of tribute to be paid into the royal treaſury. The figure of a circle repreſented unit, and in ſmall numbers the computation was made by repeating it. Larger numbers were expreſſed by a peculiar mark, and they had ſuch as denoted all integral numbers, from 20 to 80,000. Though they had proceeded far, they had a long courſe farther to purſue from the delineation of real objects to the ſimplicity and eaſe of alphabetical writing.

Their mode of computing time may be conſidered as a more deciſive evidence of their progreſs in improvement. They divided their year into 18 months, each conſiſting of 20 days, amounting in all to 360. But as they obſerved that the courſe of the ſun was not completed in that time, they added five days to the year. Theſe were termed "ſupernumerary" or "waſte" days; and as they did not belong to any month, no work was done, nor ſacred rite performed on them, but they were devoted wholly to feſtivity and paſtime. It appears, ſays Clavigero, from the chronology of the Mexicans, that they not only counted 365 days to the year, but that they alſo knew the exceſs of about ſix hours in the ſolar above the civil year, and remedied the difference between them by means of 13 intercalary days, which they added to their century of 52 years. The names of their 18 months were taken both from the employments and feſtivals which occurred in them, and alſo from the accidents of the ſeaſon which attended them. The Mexicans, in order to repreſent a month, painted a circle or wheel, divided into 20 figures, ſignifying 20 days. To repreſent a year they painted another, which they divided into 18 figures of the 18 months, and frequently painted within the wheel the image of the moon. The century was repreſented by a wheel divided into 52 figures, or rather by four figures which were 13 times deſigned. They uſed to paint a ſerpent twiſted about the wheel, which pointed out, by four twiſts of its body, the four principal winds, and the beginnings of the four periods of 13 years. See figures of theſe wheels in Clavigero's Hiſt. of Mexico.

Such are the principal facts that indicate the progreſs of the Mexicans towards civilization. On the other hand, there are ſeveral circumſtances which ſerve to ſhew that their character, and many of their inſtitutions did not differ greatly from thoſe of the other inhabitants of America. Their wars, like thoſe of the rude tribes around them, were continual and ferocious; and even in their civil inſtitutions we diſcover traces of that barbarous diſpoſition which their ſyſtem of war inſpired. Their funeral rites were not leſs ſanguinary than thoſe of the moſt ſavage tribes; ſo that upon the death of any diſtinguiſhed perſonage, eſpecially the emperor, a number of his attendants were choſen to accompany him into the other world; and theſe unfortunate victims were put to death without mercy, and buried in the ſame tomb. Their agriculture was in a very imperfect ſtate, ſo that they were often conſtrained to live on the ſpontaneous productions of the earth. The difficulty of rearing a numerous family, induced the Mexican women to keep the children at the breaſt for ſeveral years, during which time they did not cohabit with their huſbands. Clavigero, however, aſſerts, that the Mexicans not only cultivated moſt diligently all the lands of their empire, but by wonderful exertions of induſtry, created to themſelves new territory for cultivation, by forming thoſe floating fields and gardens on the water, which have been highly celebrated by Spaniards, and other foreigners, and are ſtill the admiration of all who ſail upon their lakes. They had not only, ſays this writer, all the plants which were neceſſary for food, for clothing, and medicine, but likewiſe the flowers and other vegetables which contributed ſolely to luxury and pleaſure, were plenteouſly cultivated by them. Cortes, in a letter to Charles V., dated Oct. 1520, ſays, "the multitude of inhabitants in theſe countries is ſo great, that there is not a foot of land left uncultivated."

Although the Mexican empire was extenſive, the Spaniſh hiſtorians have enlarged it far beyond its true boundaries, and they have repreſented the dominion of Montezuma as ſtretching over all the provinces of New Spain, from the N. to the ſouthern ocean. But we have already ſtated that many of the countries ſaid to have been included in the empire of the Mexicans did not belong to it. The Otomies were an uncivilized people, occupying a mountainous country. The Chechemecas, who occupied the provinces N. and W. of Mexico, were a mere nation of hunters. None of theſe recognized the Mexican monarch as their ſuperior. Tlaſcala, at the diſtance of 21 leagues from the capital of the empire, was an independent and hoſtile republic. Cholula, though ſtill nearer, had been ſubjected but a ſhort time before the arrival of the Spaniards. Tepeaca, diſtant 30 leagues from Mexico, was a ſeparate ſtate, governed by its own laws. Mechoacan, the frontier of which extended within 40 leagues of Mexico, was a powerful kingdom, remarkable for its implacable enmity to the Mexican name. Thus limited in its extent, its various provinces had no conſiderable mutual intercourſe. They had no roads for facilitating the communications of one diſtrict with another; inſomuch that when the Spaniards firſt attempted to penetrate the country, they were under a neceſſity of opening their way through foreſts and marſhes. As a farther proof of the imperfection of their commercial intercourſe, it has been alleged that they had no money, or univerſal ſtandard by which they might eſtimate the value of commodities. Their trade was carried on by barter, and this affords an evidence of the infant ſtate of their police. If by money be underſtood a ſign repreſenting the value of all merchandize, as Monteſquieu defines it, it is certain, ſays Clavigero, that the Mexicans, and all other nations of Anahuac, except the barbarous Chechemecas and Otomies, employed money in their commerce. The cacao had its fixed value, and was reckoned by numbers; but to ſave the trouble of counting it, when the merchandize was of great value, and worth many thouſands of the nuts, they knew that every bag of a certain ſize contained three xiquipilli, or 24,000 nuts. There were ſeveral ſpecies of cacao, ſome of which were uſed in their diet and beverages, but others were in conſtant circulation as money, and uſed in no other way than in commerce. In the capital itſelf of Mexico, where from 18 to 20,000 crowns (peſos fuertes) are annually coined in gold and ſilver, the poor people ſtill make uſe of the cacao to purchaſe ſmall articles in the market.

It has been further argued, that their cities, though extenſive and populous, ſeemed to have been better adapted for the habitations of men juſt emerging from barbarity, than the reſidence of a poliſhed people. The ſtructure of the houſes, even in Mexico, was for the moſt part mean; nor does the fabric of their temples and other public edifices appear to have been ſuch as entitled them to the high praiſes beſtowed upon them by many Spaniſh authors. Their edifices in general appear to have been meanly built with turf and ſtone, and thatched with reeds; nor have we any ſatisfactory evidence, notwithſtanding the aſſertion and pretended evidence of Clavigero, that they uſed lime. The great temple of Mexico was a ſquare mound of earth, 90 feet wide, partly faced with ſtone, with a quadrangle of 30 feet at the baſe, on which was a ſhrine of the deity, probably of wood. The ſtairs were made of large ſtones, and conſiſted of 114 ſteps, each a foot high; and at the eaſtern extremity were raiſed two towers to the height of 56 feet. Cortes affirms, that within the encloſure of the wall which encompaſſed the temple, a town of 500 houſes might have ſtood. Although their architecture, ſays Clavigero, is not to be compared with that of the Europeans, it was certainly greatly ſuperior to that of moſt of the people of Aſia or Africa. Who would form a compariſon between the houſes, palaces, temples, baſtions, aqueducts, and roads of the ancient Mexicans, and the miſerable huts of the Tartars, Siberians, Arabs, and other wretched nations which live between the Cape de Verd, and the Cape of Good Hope; or the buildings of Ethiopia, of a great part of India, and the Aſiatic and African iſles, except thoſe of Japan? The houſes of the emperor and thoſe of the principal nobilty, it has been ſaid, exhibited ſome elegance of deſign, and a commodious arrangement of the apartments into which they were diſtributed. But on the other hand it is obſerved, that no remains of them are viſible, nor are there any ruins, which can juſtly be conſidered as monuments of their ancient magnificence. Eſtalla, cited by Pinkerton, obſerves, that thoſe great palaces, gardens, and temples, thoſe immenſe and populous cities ſubject to Mexico, and whoſe kings were tributary to Montezuma; that high and vaſt wall which divided the Mexican empire from the republic of Tlaſcala, and the other wonders related by hiſtorians, ſhould at leaſt have left ſome few ruins in teſtimony of their exiſtence, even granting that the Spaniards entertained the extravagant wiſh of deſtroying all, in order that they might be obliged to conſtruct, with great labour and expence, other edifices far inferior.

The chief remaining antiquities of the Mexicans appear to be earthen ware, in which the Indians of Guadalaxara and Mechoacan excel to this day; as the Taraſcas of the Peribanes, in that of japanning, the black colour laſting as long as the wood itſelf, while the figures equal thoſe of the Chineſe artiſts, and the gilding in gold and ſilver is of great luſtre and permanency. Dr. Robertſon concludes upon the whole, that though the ſtate of ſociety in Mexico was conſiderably advanced beyond that of ſavage tribes, yet with reſpect to many particulars, the Spaniſh accounts of their progreſs in civilization and refinement appear to be highly embelliſhed. At the ſame time it is allowed, that the accounts given by the Spaniſh writers of the Mexican power, policy, and law ought not to be rejected, or cenſured, as the fictions of men who wiſhed to deceive, or who delighted in the marvellous.

With regard to religion, the Mexicans have probably been repreſented as more barbarous than they really were. Their religious tenets, and the rites of their worſhip, have been deſcribed as wild and cruel in an extreme degree. Religion, among the Mexicans, was formed into a regular ſyſtem, with its complete train of prieſts, temples, victims, and feſtivals. From the genius of the Mexican religion we may form a juſt concluſion with reſpect to its influence upon the character of the people. The aſpect of ſuperſtition in Mexico was gloomy and atrocious. The divinities were clothed with terror, and delighted in vengeance. The figures of ſerpents, tygers, and other deſtructive animals, decorated their temples. Fear was the only principle that inſpired their votaries. Faſts, mortifications, and penance, all rigid, and many of them excruciating to an extreme degree, were the means employed to appeaſe the wrath of their gods, and the Mexicans never approached their altars without ſprinkling them with blood drawn from their own bodies. But of all offerings, human ſacrifices were deemed the moſt acceptable. As their religious belief was blended with the implacable ſpirit of vengeance, and added new force to it, every captive taken in war was brought to the temple, devoted as a victim to the deity, and ſacrificed with rites no leſs ſolemn than cruel. The heart and head were the portion of the gods; while the body was reſigned to the captor, who, with his friends, feaſted upon it. Under the impreſſion, thus produced, the ſpirit of the Mexicans was unfeeling, and the genius of their religion counterbalancing the influence of policy and arts, their manners, inſtead of being ſoftened, became more fierce. Although the Mexicans had ſome confuſed idea of a ſupreme, independent being, to whom fear and adoration were due, they repreſented him under no external form, becauſe they believed him to be inviſible, and they named him by the common appellation of God, in their language denominated "Teotl;" and they applied to him certain epithets expreſſive of grandeur and power. They called him "Ipalnemoani," *i. e.* he by whom we live, and "Tloque Nahuàque," *i. e.* he who has all in himſelf. But their principal worſhip ſeems to have been directed to an evil ſpirit, the enemy of all mankind, called "Tlacatecolototl," or, rational Owl, and they ſaid that he often appears to men for the purpoſe of terrifying them or doing them an injury. They conſidered the human ſoul as immortal, allowing immortality alſo to the ſouls of brutes. They believed in a kind of tranſmigration, and thought that the ſouls of ſoldiers who died in battle or in captivity among their enemies, and thoſe of women who died in labour, went to the houſe of the ſun, to lead a life of delight; but they ſuppoſed that after four years of this glorious life, they animated birds of beautiful feathers and of ſweet ſong, with liberty to riſe again to heaven, or to deſcend upon the earth. The ſouls of inferior perſons were ſuppoſed to paſs into weazels, beetles, and ſuch other meaner animals. The ſouls of thoſe that were drowned, or ſtruck by lightning, of thoſe who died by dropſy or other diſeaſes, went, along with the ſouls of children, to a cool and delightful place, the reſidence of "Tlalocan," where they enjoyed the moſt delicious repaſts. The abode of thoſe who ſuffered any other kind of death was the "Mictlan," or hell, which they conceived to be a place of utter darkneſs. The Mexicans are ſaid to have had a clear tradition, ſomewhat corrupted by fable, of the creation of the world, of the univerſal deluge, of the confuſion of tongues, and of the diſperſion of the people; and theſe events were actually repreſented in their pictures.

Among all the deities worſhipped by the Mexicans, which were very numerous, there were 13 principal or greater gods, in honour of whom they conſecrated that number. The greateſt god, after the inviſible god or ſupreme being, was "Tezcatlipoca," the god of providence, the god of the world, the creator of heaven and earth, and the maker of all things. He was always young, ſo that no length of years diminiſhed his power, and to him it belonged to confer benefits on the juſt, and to puniſh the wicked with diſeaſes and other afflictions. Among their greater gods were alſo the ſun and moon, the god of the air, "Tlaloc," the god of water, to whom they aſcribed the fertility of the earth and the protection of their temporal goods; to him they conſecrated a temple, and in honour of him celebrated feſtivals every year; the god of fire, who was greatly revered in the Mexican empire; "Centeotl," or goddeſs of the earth and of corn, who had five temples in Mexico and three annual feſtivals; the god of hell, and his female companion, much honoured by the Mexicans; the god of night, to whom they recommended their children, that they might ſleep; and "Mexitli," the god of war, moſt honoured by the Mexicans and regarded as their chief protector. There were other gods of commerce, fiſhing, hunting, &c. They had alſo 260 gods, to whom they conſecrated as many days. The number of images by which the gods were repreſented and worſhipped in the temples, the houſes, the ſtreets, and the woods, were almoſt infinite. Theſe images were generally made of clay, and certain kinds of wood and ſtone; but ſometimes of gold and other metals, and ſome of gems. The moſt extraordinary idol of the Mexicans was that of "Huitzilopochtli," which was formed of certain ſeeds paſted together by human blood. The divinity of theſe falſe gods was acknowledged by prayers, kneeling, and proſtrations, with vows, faſts, ſacrifices, and various rites. In their prayers they turned their faces towards the eaſt, and their ſanctuaries were conſtructed with their doors to the weſt. Annexed to the great temple, which we have already mentioned, were various other buildings; and the temples in the whole city of Mexico have been reckoned to amount to 2000, and that of the towns to 360. Each temple had its own lands and poſſeſſions, appropriated to its ſupport. The number of the prieſts correſponded with that of the gods and temples; among theſe there were ſeveral orders and degrees, the chief of whom were two high prieſts, who were conſulted in all affairs of moment, to whom it belonged to anoint the king after his election, and to open the breaſts and take out the hearts of the human victims, at the moſt ſolemn ſacrifices. The high prieſts of Mexico were diſtinguiſhed by a tuft of cotton, hanging from their breaſts, and at the principal feaſts they were dreſſed in ſplendid habits, on which were repreſented the inſignia of the god whoſe feaſt they celebrated. All the offices of religion were divided among the prieſts; four times a day they offered incenſe to the idols. The dreſs of the Mexican prieſts conſiſted of a black cotton mantle, which they wore in form of a veil over their heads. They never ſhaved themſelves, ſo that the hair of many of them reached to their legs, and it was twiſted with thick cotton cords, and bedaubed with ink. The auſterities and voluntary wounds of the prieſts, their filthy and poiſonous ointments, and their other abominable rites, as they are related by Clavigero, form a ſyſtem of religion, if we may thus profane the name of religion, the moſt execrable that ever appeared, no leſs diſhonourable to God than pernicious to man; and it unqueſtionably does not warrant our entertaining any very exalted notions of their refinement and civilization. The human victims ſacrificed at the conſecration of two temples were 12,310!

This ſyſtem is, as Pinkerton very juſtly obſerves, ſo totally unlike any that was ever practiſed in any part of Aſia, that it affords a kind of preſumption, either that the people were indigenal, or proceeded from Africa, in which alone (as among the Giagas) ſuch cruelties may be traced. The Aſiatic religions ſeem to be univerſally mild, and even gay, as natural in the worſhip of a being who is benevolence itſelf; while in Africa the preponderance of the evil ſpirit ſeems to have been acknowledged by many nations. It ſhould be recollected, however, that the Manichean ſyſtem was not reſtricted to Africa; and that the devil, or wicked demon, has had his votaries and worſhippers in Aſia, as well as Africa; and that the emigrants from thence might have brought the worſt part of their ſyſtem of worſhip along with them. We merely ſuggeſt, that this circumſtance affords no convincing evidence with regard to the original peopling of this part of the world, or the remote origin of their anceſtors. We muſt allow, that the Spaniards never ſacrificed more victims than the Mexicans themſelves devoted; and "the clamours of pretended philoſophy will often be found in oppoſition to the real cauſe of humanity, which it aſpires to defend. Could a change of manners have been effected without the uſe of the ſword, it would have been highly deſirable; but the deſign might have been as fruitleſs as a ſermon to a tiger or a rattleſnake. The cruelties of the Spaniards muſt, by candour, be partly imputed to the profuſion of torture and human blood, which every where met their eyes in this unhappy country; as ſuch ſcenes change the very nature of man, and inflame him like the carnage of a battle." Pinkerton. It ſhould be recollected, however, that the Spaniards had known a religion, and ought to have imbibed its ſpirit, which was moſt juſtly characteriſed by its divine founder, as "peace on earth and good will towards men."

The Mexicans performed various ſuperſtitious rites upon the birth of children, at their marriages, and at their funerals. The child was bathed, and then the diviners were conſulted as to its future fortune. He was then named; the name of boys being taken from the ſign of the day on which they were born, or from ſome circumſtances attending the birth. Men had often the names of animals, and women thoſe of flowers. The ſurname was acquired from their future actions. The religious ceremony of bathing was followed by a feaſt, when drinking was often indulged to exceſs. Superſtition had a great ſhare in the Mexican marriages; but nothing occurred that was inconſiſtent with decency or honour. Marriage between perſons in the firſt degree of conſanguinity was forbidden, unleſs it was between couſins. The parents were the perſons who ſettled all marriages, and none were ever executed without their conſent. The male was thought fit to form the marriage contract at the age of 20 to 22, and the female from 16 to 18 years; and before the union was concluded, the diviners were conſulted, who decided on the happineſs or infelicity of the propoſed match. If their ſentence was unpropitious, the young female was abandoned, and another ſought. If the ſentence was favourable, the young woman was demanded of her parents by certain women, who were held in reſpect and eſteem. Theſe women went at midnight to the houſe of the parents with a preſent, and demanded the damſel in a humble and reſpectful ſtyle. After a few days, theſe women repeated their viſit, ſtating the rank and fortune of the youth, and gaining information what was her fortune. The parents then ſounded the inclinations of their daughter; and in due time a deciſive anſwer was returned. On the day appointed for the nuptials, the parents, after exhorting their daughter to a ſuitable conduct, led her, with a numerous company and muſic, to the houſe of her father-in-law; if noble, ſhe was carried on a litter. The bridegroom, and her parents, received her at the gates of the houſe, with four torches borne by four women. At meeting, the bride and bridegroom offered incenſe to each other; and the bride was led by him to the hall or chamber prepared for the nuptials. They were then ſeated on a mat, and a prieſt tied a point of the gown of the bride to the mantle of the bridegroom, and in this ceremony the matrimonial contract chiefly conſiſted. They then offered copal to their gods, and exchanged preſents with each other. This ceremony was followed with a repaſt, at which the bride and bridegroom gave ſome food to each other, and to their gueſts; and after the exhilaration occaſioned by drinking, a dance took place; and the married pair remained in the chamber, and continued there four days; which were paſſed in prayer and faſting, being dreſſed in new habits, and adorned with certain enſigns of the gods of their nation. The marriage bed was adjuſted by the prieſt, and the conſummation of the marriage did not take place till the fourth night. On the enſuing morning they bathed and put on new dreſſes, and thoſe who had been invited adorned their heads with white, and their hands and feet with red feathers. The ceremony was concluded with making preſents of dreſſes to the gueſts; and on that day the mats, canes, &c. were carried to the temple. In the Mexican empire, polygamy was allowed.

The funeral rites were more ſuperſtitious than any others, and certain perſons of advanced years were appointed for the conducting of them. Having clothed the body of the deceaſed in a habit appropriate to his former profeſſion or buſineſs, they gave him a jug of water, and pieces of paper with inſtructions, adapted to his journey into the other world. They alſo killed a domeſtic quadruped, which was to be his companion. This they buried or burned together with the body of his maſter. The aſhes were collected and depoſited in a pot, together with a valuable gem: the earthen pot was depoſited in a ditch, and at the interval of fourſcore days, they made oblations of bread and wine over it. At the death of kings, lords, or perſons of high rank, other ceremonies were practiſed, for the detail of which we muſt refer to Clavigero; merely obſerving, that the bodies of the deceaſed were generally burned, and that the aſhes of kings and lords were uſually depoſited in the towers of the temples.

To the education of their youth, the Mexicans paid particular attention; they are habituated from their earlieſt age to induſtry, virtue, and the forms of religion; truth was inculcated by expreſs precepts, and the violation of it ſeverely puniſhed, and reverence for their parents and aged perſons was ſedulouſly inculcated. Beſides their domeſtic education, children were ſent to public ſchools, ſituated near the temples, and there they were inſtructed for three years in religion and good cuſtoms. Adultery among the Mexicans was always puniſhed with death, nor was any divorce allowed without the permiſſion of the judges. Thoſe who were guilty of inceſt or unnatural crimes were hanged; and incontinence was ſeverely puniſhed; but for ſimple fornication no puniſhment was preſcribed. The penalty annexed to theft in ſlighter caſes was mere reſtitution, but in concerns of greater value, ſlavery. A perſon who robbed in the market place was there baſtinadoed to death. Hanging was the puniſhment of tutors and guardians who did not give a good account of the eſtates of their pupils, and alſo of thoſe who ſquandered away their patrimony in vices. Drunkenneſs in youth was a capital crime, and in advanced years it was puniſhed with ſeverity; and in caſe of a nobleman, it incurred forfeiture of office and rank, and entailed infamy. The priſoners of war were generally ſacrificed to their gods; and ſlaves were allowed to poſſeſs ſome property, nor was ſlavery entailed upon their deſcendants. Neceſſitous parents might procure relief by the ſale of their children, and any freeman might ſell himſelf for the ſame purpoſe.

The higheſt military dignity among the Mexicans, was that of a general of the army; and in order to encourage a military ſpirit, they rewarded the ſervices of warriors with one of the three orders, called by names which denoted princes, eagles, and tigers. When they went to war, different perſons from the king to thoſe of inferior rank were diſtinguiſhed by peculiar badges. The defenſive arms were ſhields of different forms; breaſt-plates of cotton, arrow-proof, and other armour for the defence of other parts of their bodies; the officers and nobles had a beautiful plume of feathers on their heads; but the common ſoldiers were entirely naked, except a girdle round the middle. The offenſive arms of the Mexicans, were arrows, ſlings, clubs, ſpears, pikes, ſwords and darts. They had alſo ſtandards and muſical inſtruments proper for war. Previouſly to a declaration of war, the alleged cauſe of it was ſubmitted to the judgment of the ſupreme council, and before it commenced, the enemy was apprized of it. The king, or the general, gave the ſignal for action by the beat of a drum; and the firſt onſet was furious; but their great aim was not to kill, but to make priſoners for ſacrifices when the battle was terminated. The victors celebrated their conqueſt with great rejoicings, and rewarded the officers and ſoldiers who had taken priſoners. Before any ſiege was begun, the citizens removed their children, women, and ſick perſons to a place of ſecurity in the mountains. For the defence of their cities, they uſed various kinds of fortification, ſuch as walls and ramparts, breaſt-works, paliſadoes, ditches, and entrenchments; but the moſt ſingular fortifications of Mexico in particular were its temples, and eſpecially the greater temple, which reſembled a citadel. The Mexicans, though fond of war, are ſaid to have addicted themſelves to the arts of peace, and particularly to the cultivation of the earth. Although they had no ploughs nor oxen, nor any other animals proper to be employed in agriculture, they ſupplied the want of them by labour and induſtry. In the operations of the field, the men were aſſiſted by the women; the former being employed in occupations that required the greateſt exertion, and the latter in the lighter and more eaſy employments. In their farm-yards they had threſhing floors and granaries; and of the latter ſome were ſo large as to contain 5 or 6000, or ſometimes more, fanegas of maize. The Mexicans were alſo well ſkilled in the cultivation of gardens, both for uſe and for pleaſure. They were likewiſe attentive to the preſervation of their woods, which ſerved for fuel, for building, and for the diverſion of their king, in the purſuit of game. They alſo paid particular attention to the breeding of animals. Fiſhing, hunting, agriculture, and the arts, furniſhed the Mexicans with ſeveral branches of commerce. Merchandizes were ſold in their fairs and markets by number and meaſure; but they are ſaid not to have uſed weights. Their markets were ſubject to various regulations for the prevention of frauds, and for ſecuring to the king his revenue. For the convenience of merchants, Clavigero ſays, that they had public roads, bridges for croſſing their rivers, and houſes of accommodation in the mountains and uninhabited places. Their ſailing veſſels were guided merely by oars, and were of various ſizes; and many of them were made of a ſingle trunk of a tree. Some ancient hiſtorians, probably inclined to exaggerate, ſay, that the number of thoſe which continually traverſed the Mexican lake exceeded 50,000. They had alſo for the convenience of navigating their lakes and rivers, platforms or floats of ſolid canes, which were tied firmly on large, hard, and empty gourds. The maritime commerce of the Mexicans was very inconſiderable. The commerce of the Mexicans, it is ſaid, was little embarraſſed or impeded by the variety of languages which were ſpoken in thoſe countries; for the Mexican tongue was the moſt prevalent, and was every where underſtood. This language, ſays Clavigero, is entirely deſtitute of the conſonants B, D, F, G, R, and S, and abounds with L, X, T, Z, T *l*, and T *z*; but although the letter L is ſo familiar to this language, there is not a ſingle word that begins with this conſonant; nor is there a word of an acute termination, except ſome vocatives. Almoſt all the words have the penult ſyllable long. Its aſpirates are moderate and ſoft, and no occaſion occurs for making the leaſt naſal ſound in pronunciation. This language, notwithſtanding its want of the above-mentioned conſonants, is ſaid to be very copious, tolerably poliſhed, and remarkably expreſſive. The Mexican language, like the Hebrew and French, wants the ſuperlative term, and like the Hebrew, and ſome other living languages of Europe, the comparative term, which are ſupplied by certain particles equivalent to thoſe which are uſed in other ſuch languages. It abounds in diminutives and augmentatives; and alſo in verbal and abſtract terms; for there is hardly a verb from which there are not many verbals formed, and ſcarcely a ſubſtantive or adjective from which there are not ſome abſtracts formed. It is not leſs copious in verbs than in nouns; as from every ſingle verb others are derived of different ſignifications. The Mexicans, like the Greeks, have the advantage of making compounds of two, three, or four ſimple words. The arts of poetry and oratory were much exerciſed by the Mexicans. Dramatic, as well as Lyric, poetry was held in high eſtimation among theſe people, and they had theatres in which theſe kinds of compoſitions were rehearſed. Their muſic was more imperfect than their poetry; and it is ſaid, that they had no ſtringed inſtruments. But imperfect as was their muſic, their dances, to which they were much addicted from their youth, were eminently graceful. Their dances, which were of various kinds, were almoſt always accompanied with ſinging, which, like their dances, was always adjuſted by pulſatile inſtruments. The amuſements of the Mexicans were not confined to the theatre and dancing; they had various games, not only for public occaſions, but for the relaxation and diverſion of private individuals. The Mexican paintings have been already mentioned; and they were very numerous, and applied to various purpoſes. Their colours were brilliant, though their deſigns were coarſe and uncouth: We ſhall here add to what has been already ſaid, that the Mexicans were ſkilled in ſculpture; and the uſual materials of their ſtatues were ſtone and wood. They alſo valued themſelves on the works which they executed by the caſting of metals, and on thoſe Moſaic works which were made of the moſt delicate and beautiful feathers of birds. The ſtate of medicine among the Mexicans, Clavigero has deſcribed much in detail; as he has alſo their ſurgery and their baths. Their food and drink conſiſted of preparations of maize, cacao, chia, and the French bean. Of animal food they partook more ſparingly. They had different ſorts of wine made of the magnai or Mexican aloe, the palm, and maize. Their dreſs was ſimple, conſiſting of a girdle about the loins, a ſquare mantle, and a piece of ſquare cloth with which the women wrapped themſelves from their waiſts down to the middle of the leg. Beſides this they had a little under veſt, or waiſtcoat, without ſleeves. Perſons of ſuperior ſtation added to their dreſs a variety of ornaments. Beſides feathers and jewels, with which they adorned their clothes, they wore ear-rings, pendants at the under lip, and many at their noſes, necklaces, bracelets, and rings like collars round their legs. The ear-rings and pendants of the poor were ſhells, pieces of cryſtal, amber, or ſome other ſhining little ſtone; but the rich wore pearls, emeralds, amethyſts, and other gems ſet in gold. Their houſhold furniture was mean and coarſe. Their beds conſiſted of two coarſe mats of ruſhes, to which the rich added fine palm mats and ſhirts of cotton; and the lords, linen woven with feathers. The pillow of the poor was a ſtone or piece of wood; that of the rich was probably of cotton. Their drinking veſſels were made of a fruit ſimilar to gourds. They made no uſe of candleſticks, or wax, or tallow candles, or of oil to give light. They kindled fire by the friction of two pieces of wood; and generally made uſe of the achiote, or rocou of the French. It is added, that they alſo ſtruck fire from flint. After dinner, the lords uſed to compoſe themſelves to ſleep with the ſmoke of tobacco; the leaves of which they put with the gum of liquid amber, or ſome other warm odorous herbs, into a little pipe of wood, or reed, or other more valuable ſubſtance; they then received the ſmoke by ſucking the pipe and ſtopping the noſtrils with the fingers, ſo that it might paſs more eaſily to the lungs. The deficiency of ſoap they ſupplied by a fruit and a root. As to the population of the whole Mexican empire, Eſtalla ſays that it could not have ſurpaſſed three or four millions, even including the people of Tlaſcala, and other towns, not ſubject to Montezuma.

Having given an extended account of ancient Mexico, we ſhall now cloſe the article with a brief deſcription of Mexico in its more modern ſtate. The viceroyalty of Mexico may be regarded as the chief in Spaniſh America, and is extended over a territory equal to an European empire. But there are ſeveral inferior governors, named by the Spaniſh ſovereign. A conſiderable part of his power conſiſts in the patronage of all the churches. His ſalary was formerly 40,000 ducats, afterwards 60,000, and laſtly 84,000, excluſively of the diſpoſal of lucrative offices, monopolies, connivances, preſents, &c. which ſometimes riſe to an enormous amount. His court is formed on the regal model, with horſe and foot guards, a grand houſhold, and numerous attendants. In their vice-royalty there are three grand tribunals, called Royal Audiences, *viz.* that at Guatemala, that of Mexico, and that of Guadalaxara. There are alſo ſeveral inferior tribunals. The population of all the Spaniſh provinces in North America has been eſtimated at little more than ſeven millions; of whom the natives, called Indians, are ſuppoſed to amount to four millions; and the Spaniards and inhabitants of mixed races, are computed at three millions, of which the Spaniards may conſtitute one-third. It is probable, however, that the whole population of Spaniſh North America does not exceed ſix millions. They have ſuffered much from the ſmall-pox, and a diſeaſe called the black vomit, which occaſionally ravages like a peſtilence. And beſides, the number of prieſts, monks, and nuns is injurious to population. Eſtalla obſerves, that though he has not been able to acquire exact information concerning the population of New Spain, yet by the moſt intelligent computations, there are in the Intendancy of Mexico 1,200,000 ſouls, including 140,000 for the city: and by the proportion between this province and the others, as well as by the beſt founded calculations, it may be ſuppoſed there are in all the kingdom, three millions and a half of inhabitants. The troops in New Spain are eſtimated at 43,191, including 5982 regulars, 31,523 militia, &c. and 5686 for garriſons, &c.; ſo that it may well be doubted whether the whole grand vice-royalty of New Spain could ſend into the field 15,000 effective men. The revenue which Mexico yields to the Spaniſh crown has been ſhewn by Dr. Robertſon to amount to above a million ſterling, but it is ſubject to great expences. Dr. Robertſon ſhews, from Campomanes, that the whole produce of the American mines is 7,425,000*l.* of which the king's fifth, if regularly paid, would be 1,485,000*l.*; and it is probable that the mines of New Spain or Mexico, prior to the opulent diſcoveries in the N.W. provinces, did not yield above one-half of the whole amount. From Eſtalla we learn, that a very great augmentation has taken place in all the branches of the royal treaſury in this vice-royalty; ſo that the ſums paid into the royal treaſury have been tripled, and amount annually to 19 millions of dollars, and even more. Allowing the expences of adminiſtration, ſalaries, &c. to amount to 4,800,000 dollars, there will be an overplus of 14,200,000 dollars; that is, more than 1,800,000*l.* ſterling. Theſe revenues increaſe according to the progreſs of agriculture, the mines, commerce, induſtry, and population. There are ſome branches of the revenue which are conſiderable in their amount; ſuch are the tributes, the products of the coinage, of quickſilver, gunpowder, cards, duties on goods ſold, the drink called "pulque," bulls of indulgence, tobacco, lotteries, letters, all which are under the management of the miniſter of ſtate. Other branches are adminiſtered in the royal coffers by their reſpective ſuperintendants; ſuch as the duties on gold, ſilver-plate, the aſſays, tythes, ninths, various eccleſiaſtic conceſſions, titles of Caſtille, vendible offices, compoſitions and confirmations of land, cock-fighting, ſnow and ice, ſtamps, fines, &c. the product of the mines, copper, lead, tin, alum, and others. From this ſtatement there will appear to reſult a clear ſum of 7,800,000 peſos, or about 1,170,000*l.* ſterling; and if the peſo fuerte be uſed, one-third muſt be added.

The eccleſiaſtical revenue is alſo very conſiderable. The archbiſhopric of Mexico is extremely opulent; and yet deemed inferior to the biſhopric of Puebla de los Angelos. The eccleſiaſtical courts are numerous; and the holy tribunal of the faith, or the Inquiſition, is very vigilant and ſevere. The chapter of the cathedral comprehends 26 eccleſiaſtics. While the revenue of the archbiſhop is computed at 100,000 dollars, the dean has more than 10,000; the canons from 7 to 9000, the leſſer canons from 2 to 4000; ſome curacies are worth many thouſand ducats; and one in the archbiſhopric of Mexico is valued at 14,000 ducats a year; while many of the curates, in their career of ambition, become prebendaries and biſhops. There are two archbiſhoprics, thoſe of Mexico and Guatemala, with eight biſhops, Puebla de los Angelos, Oaxaca, Durango, Mechoacan, Antequera, Guadalaxara, Yucatan, and Chiapa. The curacies are computed at 235.

The chief city of New Spain is *Mexico*, which ſee; and there are many other flouriſhing cities in this wide empire.

The moſt intereſting in a commercial view are the two chief ports, Acapulco on the Pacific ocean, and Vera Cruz on the Atlantic: to theſe we may add, Puebla de los Angelos, Cordova, Xalapa, Queretaro, Guadalaxara, and Guatemala, &c. &c. which ſee reſpectively.

The manufactures of New Spain are not of any great importance. Coarſe cottons form the univerſal dreſs of the Indians. There are many tanneries, but the leather is far from being equal to the Spaniſh; and the ſame obſervation is applicable to the glaſs and earthen ware, though the materials be excellent. The commerce of New Spain is extenſive and important, and has recently undergone material improvements; ſo that ſince the year 1778, when greater freedom began to be introduced, the commerce has greatly increaſed. Two advantages have ariſen from the liberty of commerce; induſtrious individuals and the general maſs of the people have been enriched; while the great capitals of the former monopoliſts returned to ſupport agriculture and the mines. The number of ſhops has been greatly augmented. The imports alſo have been increaſed, ſo that at Vera Cruz alone they amounted, in 1792, to 14,23,000,889 dollars. See Vera Cruz.

The climate of this country is ſingularly diverſified, between the tropical ſeaſons and rains, and the temperature of the ſouthern and even middle countries of Europe. The maritime diſtricts of Mexico are hot and unhealthy, ſo as to occaſion much perſpiration even in January; the inland mountains, on the other hand, preſent ſnow and ice in the dog-days. In other inland provinces, however, the climate is mild and benign, with ſome ſnow of ſhort duration in winter; but no artificial warmth is neceſſary, and animals ſleep all the year under the open ſky. From April to September there are plentiful rains, generally after noon; hail-ſtorms are not unknown: thunder is frequent; and earthquakes and volcanoes occaſionally occur. The climate of the capital, in lat. 19° 25′, differs much from that of the parts of Aſia and Africa under the ſame parallel; which difference ſeems to ariſe chiefly from the ſuperior height of the ground. Humboldt found, that the vale of Mexico is about 6960 feet above the level of the ſea, and that even the inland plains are generally as high as mount Veſuvius, or about 3600 feet. This ſuperior elevation tempers the climate with a greater degree of cold. Upon the whole, the climate cannot be regarded as unhealthy, as the aborigines ſometimes attain a great age; and the appearances of decay are not perceived till a late period of life. But though they are exempted from paying tribute after the age of ſixty, yet they can rarely count the years of their exiſtence, and they cannot always be traced in the pariſh regiſters. It appears from ſuch facts, that the prejudices of ſome philoſophers againſt the climate and productions of America are unfounded. If there be any where a marked difference in every reſpect, of climate, men, animals, and vegetables, it is in Africa, a moſt ancient part of the ancient world, that it muſt be ſought. (See on this ſubject Clavigero, *ubi ſupra*.) The face of this intereſting country is diverſified by grand ridges of mountains, numerous volcanoes, ſome of which are covered with perpetual ſnow, cataracts worthy of the pencil of Roſa, delicious vales, fertile plains, pictureſque lakes and rivers, romantic cities and villages, an union of the trees and vegetables of Europe and America. The ſoil is often a deep clay, ſurpriſingly fertile and requiring no manure except irrigation. The progreſs of agriculture in this country may be partly inferred from the ſtate of the tythes, which, in the archbiſhopric of Mexico, for ten years, from 1769 to 1779, amounted to 4,132,630 peſos; while, for the ten years from 1779 to 1789, they advanced to 7,820,879 peſos. A ſimilar difference appears in the biſhoprics of Puebla, Oaxaca, Guadalaxara, and Durango, which, with Valladolid, comprehend the whole vice-royalty of Mexico; Guatemala being conſidered as a diſtinct kingdom. The product of cotton might be increaſed: of indigo there are annually exported 1500 arobas, and 8000 quintals of pimento: the cultivation of ſugar is increaſed: tobacco has become an important branch; vineyards afford a favourable proſpect; and the annual exports of cochineal are computed by Eſtalla at 23,600 arobas; but by another computation, the quantity of cochineal exported to Spain is 460,000 pounds, coſting in New Spain about 12*s.* *per* pound, and yielding at Cadiz about 13 or 14*s.* The people employed in this culture are eſtimated at between 25 and 30,000. It has been obſerved, by the author often cited in this article, that the produce of many articles has been tripled within theſe few years, ſuch as indigo, cotton, pimento of Talaſco, and, above all, the precious cochineal; while tillage, and the rearing of herds and flocks, have been far more univerſally diffuſed.

The principal rivers of this country are Rio Bravo, the Medina, Magdalena, or river of Guadalupe, that of Flores, the Arighitas, Chicowanſh, Mexicano, Colorado, Gila, Hiaqui, Naſus, Barneja or Eſquitlan, Panuco, Zacatula, Yopez, Alvarado, Grijalva, Balleze, Yare, St. Juan, and Chagre. The chief chain of mountains in Spaniſh North America is Topia or Sierra Madre, to which we may add the grand ridge of Tamalipa, the great chain of Apanaca, Canatagna, and Urraca. The compoſition of the mountains of New Spain is not accurately aſcertained, but it is ſuppoſed by Humboldt and Pinkerton to be moſtly of argillaceous ſchiſtus, which is a ſubſtance generally prolific of metals. The volcanoes in New Spain have been reckoned 21 from that of Soconuſco in the north to that of Varu in the ſouth. Theſe are all on the ſouth-weſtern coaſt, and after a conſiderable interval they again emerge towards the eaſtern coaſt, in the vicinity of Mexico. The volcano of Orizava is conſidered as the moſt majeſtic in the viceroyalty. The richeſt ſilver mines of New Spain were formerly ſuppoſed to be thoſe of Zacatecas, about 200 miles N.W. of Mexico; but at preſent the grand mines are at Guanajuato, between 21° 30′ and 22° 30′ N. lat. and 103° and 105 W. long., extending from N. to S. 75 miles, from E. to W. 85 miles. Humboldt eſtimates the population of the adminiſtration at 517,300, and of the capital, in N. lat. 21°. W. long. 103°, about 41,000. See Guanajuato.

During 11 years from 1766 to 1778, Mr. Pinkerton ſtates, that there were coined at Mexico 203,882,948 peſos, ſeven reals; but, during another 11 years, from 1779 to 1791, there were coined 252,042,419 peſos, and half a real; the difference being more than 48,000,000. Before the freedom of commerce, the coinage never exceeded 20,000,000 of peſos; and in 1792, 1793, it annually ſurpaſſed 24.000,000. In the viceroyalty are found many other metals beſides gold and ſilver. Not far from the capital are mines of tin; this metal is alſo found in New Mexico. Clavigero ſays, that the Mexicans uſed thin pieces of tin and bits of copper for money. Copper is obtained from the rich mines of Guanajuato and alſo in mines W. of Paſquaro, the capital of Mechoacan. Lead is among the products of New Leon. New Spain alſo furniſhes amber and aſphalt, and a few diamonds; the mountains alſo produce jaſper, marble, alabaſter, magnet, ſteatite, jade and talc. The "Tetzontli," red and porous, was uſed in building, being perhaps, as Pinkerton ſuggeſts, a kind of tufa; and the "Itzli," mentioned in a preceding part of this article, as uſed for mirrors and razors, is called "pietra del Galinazzo" in South America, and is the obſidian or volcanic glaſs of modern mineralogy. In this country have been found, among the foſſils, the bones of elephants; bones of this kind were found in digging the foundations of the convent of Guadalupe near Mexico; and they have been found in other places. They are the ſame with thoſe of the mammoth of Siberia and North America, and belonged to an animal now extinct. Pinkerton's Geography, vol. iii.

Mexico *Proper*, a diſtrict or territory of the domain or viceroyalty of Mexico, forming part of the ancient Mexican empire, already amply deſcribed in the preceding article.

Mexico, ſignifying according to Clavigero the place of *Mexitli*, or Huitzilopochtli, *i. e.* the Mars of the Mexicans, on account of the ſanctuary there erected to him, the chief city not only of Mexico or New Spain, but of old Spaniſh America. It is ſituated, in a beautiful vale, on fenny ground near the banks of the lake of Tezcuco, and croſſed by numerous canals, the houſes being all founded on piles. Hence it would ſeem that the waters of the lake have diminiſhed, ſo as to leave a fenny moraſs on the weſt; and it is not improbable that this might happen after the inundation of 1629, when a wide canal was led through a mountain to drain the lake. The ſcite of the modern Mexico is the ſame with that of the ancient city; the viceroy reſiding on the ſpot of Montezuma's palace, in a large manſion built by Cortes, and ſtill rented at 4000 ducats from the marquiſes de Valle, his deſcendants. The ancient city is ſaid to have been ſituated upon a ſmall iſland in the forementioned lake; and N. of its junction with that of Chalco, and on the W. ſide of the lake of Tezcuco, acceſſible on the W. ſide by three large cauſeways of earth and ſtone, but on the E. ſide there was no communication otherwiſe than with canoes or boats. The circumference of the city, excluſive of the ſuburbs, meaſured more than 10 miles, and the number of houſes was at leaſt 60,000. The city was divided into four quarters, and each quarter into ſeveral diſtricts, bearing Indian canoes. The four quarters were divided by four broad roads, which led from the four gates of the area of the greater temple. To the four parts into which the city was divided from the firſt foundation A.D. 1325, the city of Tlatalolco was added as a fifth, ſituated towards the N.W. having been united after the conqueſt of king Axajacatl to Tenochtitlan, and both together formed Mexico. Around the city there were many dykes and reſervoirs for collecting water, and within it many canals, ſo that there was hardly a diſtrict that could not be approached by boats. Among the various buildings of the city, beſides temples and magnificent royal palaces, there were other palaces in which the feudatory lords reſided when they attended the buſineſs of the court. All the houſes, it is ſaid, thoſe of the poor excepted, had balconies and parapets, and ſome of them battlements and towers, much ſmaller than thoſe of the temples; and ſerving for the defence of the inhabitants in their ſtreets and houſes as well as their temples. Beſides the large and famous ſquare of Tlateloco, where the principal market was held, there were other ſmaller markets diſtributed through the city, where ordinary proviſions were ſold; and in different places there were fountains and fiſh-ponds, particularly near the temples, and many gardens, ſome of which were laid out on the natural level of the earth, and others raiſed on high terraces. Of the modern city, Chappe d'Auteroche, cited by Pinkerton, gives the following account. The ſtreets are wide and ſtraight, but very dirty: and the houſes, reſembling thoſe of Spain, are tolerably built. The chief edifice is the viceroy's palace, which ſtands near the cathedral in a central ſquare, and it is rather ſolid than elegant. Behind the palace is the mint, in which more than 100 workmen are employed, as the owners of the mines here exchange their bullion for coin. The other chief buildings are the churches, chapels, and convents, which are very numerous and richly ornamented. The outſide of the cathedral is unfiniſhed, as they doubt the foundations; but the rail round the high altar is of ſolid ſilver, and there is a ſilver lamp ſo capacious that three men may go into it to clean it; and it is alſo enriched with lions' heads, and other ornaments, in pure gold. The images of the Virgin, and other ſaints, are either ſolid ſilver, or covered with gold and precious ſtones. Beſides the great central ſquare, there are two others, each of which has a fountain in the middle. To the N. of the town, near the ſuburbs, is the public walk, or "Alameda." A rivulet runs round it, and forms a pretty large ſquare, with a baſon and jet d'eau in the middle. Eight walks, each of which has two rows of trees, terminate at this baſon like a ſtar. There are alſo ſome other promenades; although the country about Mexico is ſwampy ground, and full of canals. Facing the "Alameda" is the "Quemadero," where they burn the Jews, and the unhappy victims of the Inquiſition. It is an incloſure between four walls, and filled with ovens, into which are thrown, over the walls, the wretches that are condemned to be burnt alive; condemned, as the author ſays, by judges profeſſing a religion whoſe firſt precept is charity. The Spaniſh inhabitants are commonly clothed in ſilk, their hats being adorned with belts of gold and roſes of diamonds; for even the ſlaves have bracelets and necklaces of gold, ſilver, pearls, and gems. The ladies are of diſtinguiſhed gallantry.

Mexico, though inland, is a place of immenſe commerce between Vera Cruz on the E., and Acapulco on the S.; and the ſhops diſplay a profuſion of gold, ſilver, and jewels. In magnificent regularity it yields to few cities on the ancient continent. Gage ſays, that, in his time, A.D. 1640, there were ſuppoſed to be 15,000 coaches, ſome of them adorned with gold and gems; the people being ſo rich, that it was imagined one-half of the families kept carriages. From the work of Eſtalla, publiſhed in 1799, and quoted by Pinkerton, we derive ſome further information concerning this famous city.

The lake, it is ſaid, has retired a Spaniſh league from the city, which circumſtance is ſuppoſed to render the air leſs ſalubrious. The winter froſt is gentle, and is thought ſevere when the ice exceeds the thickneſs of paper. The ſummer heats are tempered by the regular ſhowers which fall in the evenings. Water-ſpouts often occur, but they always fall in the lake; however, they have ſometimes ruined mining ſtations. The yearly cold at Mexico, though juſt within the tropic of Cancer, appears by obſervations on the thermometer to exceed the heat. The rainy ſeaſon extends from the middle of May to the middle of September.

The plain of Mexico is, as we have already ſaid, ſurrounded with mountains, covered with cedars, rare ſhrubs, and medicinal plants, and containing minerals and precious ſtones. On theſe mountains are romantic cottages and farms, watered by clear rivulets. In the middle of this delicious plain are the lakes Tezcuco and Chalco. The city has received no augmentation ſince the year 1712. The ſtreets are well opened, running in right lines from E. to W. and from N. to S. Great improvements have lately taken place by the cleanlineſs and good police of the place: the city is lighted, and the ſtreets paved, and ſewers and water-courſes have been opened, ſo that Mexico has become the largeſt, moſt beautiful, and moſt ſumptuous of the whole Spaniſh monarchy. The cathedral is a magnificent edifice, the work of 94 years; it has two images of the Virgin, one of gold, which weighs 6984 caſtellanos, the caſtellano being the 50th part of a mark, and a mark being ⅔ds of a pound or eight ounces. For 14 pariſhes, there are more than 100 other churches, moſt of which are neat and richly decorated. The religious houſes are very numerous, and the nunneries amount to 20. Among the numerous courts and offices of juſtice, eſtabliſhed in this city, are the royal audience and chancery of New Spain; the court for ſtrangers, and thoſe who die inteſtate; the royal tribunal of regiſters; the royal coffers; the royal mint; the tribunal of the inquiſition; the houſe of the miſſions of California; the mount of piety, erected by the charity of the count de Regla, who gave no leſs than 315,000 peſos; the royal tribunal of mines; that of the deſcendants of Cortes; the illuſtrious chapter, juſtice and government of the noble and imperial city itſelf, to which the ancient arms were confirmed by Charles V., being a caſtle with three towers, an eagle on a tree with a ſnake in its beak, at the foot of the tree is the lake; the whole ſurmounted with an imperial crown, and ſupported by two lions. Philip V. granted to Mexico, in 1728, all the privileges and diſtinctions of a grandee of Spain; and Charles III., in 1773, indulged the chapter, or magiſtrates, with the uſe of uniforms laced with gold, declaring their precedence over all tribunals and bodies, except the royal audience and tribunal of accompts. The patroneſs of the city is St. Mary of Guadalupe, ſolemnly choſen in 1737, and whoſe worſhip has extended over all Spaniſh America. The general character of the natives, who have a conſiderable diſpoſition for the arts and boaſt of their eminent painters, is that of a liberal, courteous, affable, and charitable people. The city has thirteen hoſpitals, and other charitable eſtabliſhments. The viceroy is commander in chief, and preſident of the economical and political government. He reſides in the royal palace. He is alſo preſident of the tribunal of accompts, which inſpects all thoſe of the royal revenue. The city council conſiſts of a corregidor or mayor, twelve regidores, or aldermen, and other officers. The common alcalds judge criminal and civil caſes in the firſt inſtance ſubject to an appeal to the royal audience.

The city of Mexico is amply ſupplied with grain, fruit, and vegetables, from the environs, which are very fertile; thoſe on the eaſt ſide of the lake of Tezcuco excepted, where vegetation is impeded by the ſaline exhalations of the lake. The more populous parts of the city extend from north to ſouth four Engliſh miles, and from eaſt to weſt three Engliſh miles. The city is ſurrounded merely by a trench or ditch, without walls or other defence. There are ſix principal gates; and by the gate of Guadalupe all the pulque enters, which, being the general drink of the inhabitants, yields a revenue of about a million of dollars to the king. The ſtreets are well paved. The manufactory of cigars, employing more than 5000 perſons, is a modern and magnificent edifice. The conſumption of cigars is very great; for all the Mexican ladies ſmoke tobacco; and they take their paper cigars from a caſe of gold or ſilver, hanging by a chain or ribbon, while on the other ſide they wear little pincers of the ſame metal. As ſoon as one cigar is exhauſted, another is lighted: they ſmoke even at the theatre, and only ceaſe to ſmoke when they eat or ſleep. The tribunal of “La Acordada” was one of the moſt terrible in the viceroyalty; the judge, who is called captain of the holy brotherhood, being alſo inſpector of prohibited liquors: but Charles III. ordered that the viceroy, with two or three judges, ſhould reviſe the ſentences. The judge of the “Acordada” has from eight to ten thouſand men, diſperſed through the viceroyalty, under the names of lieutenants, corporals, &c. This holy brotherhood maintains, by its vigilant police, the public tranquillity of the city and viceroyalty, performing their rounds day and night, and ſpeedily puniſhing every exceſs. Capital criminals are hanged in a field, called “Exido de Concha,” from the name of a captain of this brotherhood; and the tribunal has become more uſeful, ſince the viceroy has obtained the privilege of reviewing ſentences of death. The market for trifling and ſecond-hand commodities is a ſquare of ſhops, and the theatre is ſmall but handſome.

Mexico is ſupplied with water by two aqueducts. The moſt ſplendid feſtivals of the Mexicans are the proceſſion of Corpus Chriſti, and the entrance of a new viceroy. There are other feſtivals, ſuch as the anniverſary of the conqueſt, and the publication of the bulls of indulgence.

Although the climate of Mexico is in general ſalubrious, yet there are ſome prevalent, and even epidemic diſeaſes. The ravages of the ſmall-pox, however, are likely to be reſtrained by the Jennerian antidote, which is not unknown even in Mexico; and the black vomit, or yellow fever, is ſcarcely known in this city. Agues are frequent; pulmonary conſumptions, apoplexies and epileptic diſeaſes, ſpotted fevers and pleuriſies, are not uncommon: but the moſt univerſal diſeaſe of men and women is that called “flado,” or the wind, which preſents ſingular and almoſt incredible ſymptoms; the patients appearing as if they were demoniac or frantic, ſometimes exceſſively hot and cold by very ſudden changes, laughing and weeping, and agitated by convulſions, as if they were poſſeſſed. This diſeaſe ſeems to proceed from the hot and unhealthy regimen, and from the abuſe of tobacco, deſtructive alike of the nerves and ſtomach.

Some individual artizans are very rich, but of late property is more generally diffuſed: there are, however, many entailed eſtates, founded by the conquerors, from ten to ſixty thouſand dollars a-year; but the chief that remain are the products of commerce and of the mines. Within the laſt twenty or thirty years, the number of houſes that ſell “pulque” is greatly increaſed: they are open, by regulation of the police, only from ten in the morning till four in the afternoon, and during this interval they occaſion quarrels, and ſometimes murders. Eſtalla computes the population of Mexico at 140,000 ſouls; but it is probably more conſiderable. As there is no money of bullion at Mexico, the ſhop-keepers iſſue tokens of copper, iron, or wood, which paſs in the neighbourhood; and even grains of cacao paſs as ſmall coin. The city has ſeveral uſeful regulations for guarding againſt fires, and any conſequent tumults. The water-pipes have been enlarged, and ten public fountains have been conſtructed, with cocks inſtead of ciſterns, which are found more convenient. The price of bread is regulated every four months, according to the price of grain. The foot-paths are guarded with little pillars; the pavement is kept in good repair, and there is a covered ſewer in the middle of the ſtreets, and the city is well lighted by large lamps of the reflecting kind. Watchmen clean and ſupply the lamps, and guard the houſes and paſſengers; and the municipal troops perform their nightly rounds. In this celebrated capital great quantities of rum are diſtilled from the refuſe of the numerous ſugar-mills.

The univerſity of Mexico, founded in 1551, is ſtyled royal and pontifical; and the cloiſter is compoſed of two hundred and fifty-one doctors, of all faculties. It is governed by a rector, annually elected by the leſſer cloiſter, compoſed of the former rector and eight counſellors, choſen by lot from the doctors and bachelors. The office of chancellor is annexed to the dignity of ſchoolmaſter of the metropolis; his office being to preſide at conferring ſome degrees, while on other occaſions he holds the ſecond rank. The profeſſors of this univerſity are named by a junta, conſiſting of the archbiſhop, the regent of the royal audience, the dean of the cathedral, the oldeſt inquiſitor, the rector of the univerſity, the maſter of the metropolitan ſchools, the profeſſor of the firſt claſs of theology, and the dean of the faculty. The public library of the univerſity was founded about forty years ago, and is well furniſhed with old books of divinity, but is miſerably deficient in new editions of the claſſics, or new works of ſcience and philoſophy. This library is open to the public at certain hours, except on Sundays and holidays. The college of St. Mary-of-all-Saints is the only one of the firſt rank in the Spaniſh American poſſeſſions: it has a public library. The ſeminary was founded by an archbiſhop of Mexico in 1682; and at preſent it has thirteen profeſſors. The ſtudents amount to four hundred, and a new building was erected in 1750. The Jeſuits had formerly five colleges, two of which only remain: they are directed by the viceroy, or a junta, of which he is preſident. The buildings are magnificent; the chapel and grand hall being the moſt beautiful in the viceroyalty. The college of St. John of Lateran is the moſt ancient of any in New Spain, having been founded in the reign of Charles V., for the inſtruction of thoſe deſcended from Spaniſh and Indian parents. It has been improved in 1764, and again in 1789. The college of St. Jago is without the walls of Mexico, in a houſe of the Franciſcans; but it is now merely a boarding-ſchool for children. Other religious orders have alſo public ſchools. A college of mines has lately been erected, in which young perſons are not only inſtructed in that ſcience, but in other important parts of education. The royal academy of the three noble arts is a valuable inſtitution: it is provided with good profeſſors in architecture, painting, ſculpture, and engraving; and there is alſo a profeſſor of mathematics. There are alſo particular houſes in Mexico where Latin grammar is taught by preceptors approved by the government and univerſity.

The environs of Mexico are richly cultivated with flax, hemp, cotton, tobacco, indigo, ſugar, and magneys; and furniſh the city with ample ſupplies of meat, poultry, vegetables, and fruits. The moſt celebrated ſanctuary in the vicinity of the city is that of our lady of Guadalupe, which has a college, a church, &c. Another ſanctuary, or houſe of pilgrimage, is that of our lady de los Remedios, erected on the ſpot whither Cortes retired when he was repulſed from Mexico. Without the barrier of Santiago is the ſanctuary of our lady of the Angels, formerly the reſidence of a hermit. At the diſtance of five leagues from Mexico is the deſert of the Carmelites, in an encloſure about a league in circuit; the retreat of the moſt auſtere monks there being in ſolitary cells. The aqueduct of Chapultepec adorns the immediate environs; and on the hill ſo called was a palace of Montezuma. Traſpana is another place of reſort, where are ſeveral good houſes; and many ſettle there, as the air is eſteemed very healthy. On the ſide of San Lazaro, about half a league from Mexico, is the rock of the baths, which are warm, but the quality is not aſcertained. N. lat. 19° 54′. W. long. 99° 51′. Pinkerton's Geog. vol. iii.

MEXICO, *New*, a large territory of the Spaniſh dominions in North America, ſometimes called a kingdom, but properly a ſingle province, lying eaſtward of California, and divided by the gulf from that peninſula. Northwards it is bounded by high mountains and an unknown country, on the eaſt by Louiſiana, on the weſt by the Californian lake and Rio Colorado, and on the ſouth by ſome of the provinces of New Spain, or Mexico proper. This province was diſcovered by a miſſionary in 1581, but ſcarcely ſubdued till 1644; nor were many miſſions eſtabliſhed till after the year 1660; and the capital, Santa Fé, was founded in 1682. It is a fertile and delightful province, producing maize, wheat, and excellent fruits. The mines are ſaid to be all of tin; and the animals and plants are of ſingular variety. In the map of Alzate, the northern limit is marked at 38°, and the ſouthern at 30° 30′; the medial breadth, on both ſides of the Rio Bravo, being only 2°, or 120 geographical miles. Pinkerton.

MEXICO, a town of America, in Oneida county, New York, at midway between Oneida lake and Oſwego, 20 miles from each. The townſhip is extenſive, comprehending a number of houſes.

MEXICO, *Gulf of*, a large bay or gulf of the Atlantic, extending north to ſouth, from the coaſt of Florida to the coaſt of Tabaſco and Yucatan, about 600 miles, and eaſt to weſt, from Cuba to the coaſt of Mexico, about 700. This gulf lies in a favourable climate, and preſents at its entrance the grand archipelago of North American iſlands, called the Weſt Indies. See GULF *Stream*.

MEXIMIEUX, a town of France, in the department of the Ain, and chief place of a canton, in the diſtrict of Trevoux; 17 miles N.E. of Lyons. The place contains 1691, and the canton 8372 inhabitants, on a territory of 230 kiliometres, in 14 communes.

MEYAPONTE, a river of Braſil, which runs into the Parana.

MEYENBERG, a town of Switzerland, in the Free Bailiwicks, once an independent lordſhip; 10 miles N. of Lucerne.

MEYENBURG, a town of Brandenburgh, in the mark of Pregnitz; 60 miles N.N.W. of Berlin. N. lat. 53° 18′. E. long. 12° 15′.

MEYENFELD, a town of the Griſons, and principal place of a juriſdiction. It is ſaid to have been the firſt place in which the reformation was encouraged. This town was a kind of ſtaple for goods that paſſed to and from Germany and Italy; 52 miles E. of Lucerne. N. lat. 46° 57′. E. long. 9° 38′.

MEYER, JAMES, in *Biography*, an hiſtorian, was born in Flanders in the year 1491. He ſtudied in the univerſity of Paris, and entered into holy orders. For ſeveral years he taught ſchool at Ypres and Bruges, and in the latter city had a benefice, in the church of St. Donatian. He died at Blankenberg, in the year 1552. He was on terms of intimacy with Eraſmus, and other learned men; and wrote ſeveral works, of which the principal are, 1. "Flandricarum Rerum Decus," being an account of the origin, antiquity, nobility, and genealogy, of the counts of Flanders; and, 2. "Annales Rerum Flandricarum," which begin with the year 445, and come down to 1477. They are written in a pure and eaſy ſtyle, and have been reprinted in the collection of Belgic hiſtorians. Moreri.

MEYERA, in *Botany*, a genus of Schreber's, named, we preſume, in honour of Dr. Frederic Albert Anthony Meyer, a phyſician at Göttingen who died in 1795, and who was the author of various tracts on Natural Hiſtory. Willdenow has not adopted the genus, nor do we find any notice of it under *Sclerocarpus*, although its author ſays they are nearly allied, but belonging to different orders of the claſs *Syngeneſia*. It muſt however be recollected that theſe orders are not always permanently diſtinct in nature. *Meyera* reſts ſolely on the authority of Schreber, not having been taken up by any other author, ſo that we can only tranſlate his own generic character. If its habitat had been publiſhed, poſſibly a more clear and ſatisfactory reference might have been made of the plant in queſtion. Schreb. 570.—Claſs and order, *Syngeneſia Polygamia Superflua*. Nat. Ord. *Diſcoideæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* of four, large, broad, heart-ſhaped, concave, veined leaves, ſpreading at the top, rather acute, ſhorter than the diſk, the two inner ones oppoſite. *Cor.* compound, tubular, convex; florets in the diſk numerous, perfect, funnel-ſhaped, five-cleft, ſomewhat erect; thoſe of the radius ſeveral, ligulate, lanceolate, entire. *Stam.* (in the perfect florets) Filaments five, capillary; anthers cylindrical, tubular, five-toothed. *Piſt.* (in the ſame) Germen oblong; ſtyle thread-ſhaped, longer than the ſtamens; ſtigmas two, revolute. In the female ones the ſtyle is longer than the florets. *Peric.* none, except the permanent calyx. *Seed* in both kinds of florets ſolitary, oblong, tranſverſely compreſſed, creſcent-ſhaped, ſtriated, ſcaly; down none. *Recept.* convex, ſmall; ſcales cartilaginous, imbricated, triangular, incurved, furrowed at the back, downy towards the top externally, oblique at the extremity, each enveloping a ſingle ſeed, the outer ones a little broader.

MEYNIAC, in *Geography*, a town of France, in the department of the Correze, and chief place of a canton, in the diſtrict of Uſſel. The place contains 2978, and the canton 7726 inhabitants, on a territory of 322½ kiliometres, in 11 communes.

MEYNTHAL, or VAL DI MAGGIA. See MAGGIA.

MEYO, in *Commerce,* a meaſure for corn, ſalt, and other dry commodities, in Portugal; it contains 15 fanegas; each fanega being = 4 alquieres = 8 meyos = 16 quartos = 32 outavas = 64 mequias. The alquiere is = 675 French = 817 Engliſh cubic inches; ſo that 21 alquieres = 1 Engliſh quarter, nearly, or, more exactly, 50 alquieres = 19 Engliſh buſhels. In the common courſe of buſineſs 4 alquieres of Oporto are reckoned equal to 5 alquieres of Liſbon, and 2 alquieres of Oporto, or 2½ of Liſbon, are computed to be equal to an Engliſh buſhel.

MEYRINGEN, in *Geography*, a large and neat village of Switzerland, the capital burgh of Haſliland, a diſtrict in the canton of Berne, which enjoys peculiar privileges. The people are governed by their own magiſtrates, and only take oaths of fidelity to the ſovereign council. The authority, which the bailiffs in the other cantons enjoy, is poſſeſſed in a great meaſure by the landamman, who reſides at Meyringen. The place is ſituated near the Aar, in a romantic vale, ſurrounded by meadows of a luxuriant verdure, and ſprinkled with cottages, which are occaſionally ſeparated by huge ſtones and deep channels, the veſtiges of ſtorms and floods; 28 miles S.E. of Thun.

MEYRUEIS, a town of France, in the department of the Lozere, and chief place of a canton, in the diſtrict of Florac; 22 miles S. of Mende. The place contains 2890, and the canton 5235 inhabitants, on a territory of 345 kiliometres, in ſeven communes. N. lat. 44° 11′. E. long. 3° 31′.

MEYSSAC, a town of France, in the department of the Correze, and chief place of a canton, in the diſtrict of Brives. The place contains 2072, and the canton 10,466 inhabitants, on a territory of 160 kiliometres, in 14 communes.

MEYWAR. See OUDIPOUR.

MEYZIEU, a town of France, in the department of the Iſere, and chief place of a canton, in the diſtrict of Vienne. The place contains 1045, and the canton 9547 inhabitants, on a territory of 212½ kiliometres, in 16 communes.

MEZA, a river of Ruſſia, in the government of Polotſk, which runs into the Dwina; 16 miles N.E. of Veliz.

MEZAIR. See MES-AIR.

MEZALANA, in *Geography*, a town of Italy, in the department of the Mincio; four miles S. of Mantua.

MEZANA, a town of Liamone, in the iſland of Corſica, and chief place of a canton, in the diſtrict of Ajaccio: the canton contains 1751 inhabitants.—Alſo, a town of Italy; five miles S. of Padua.

MEZANA, *La*, a town of Naples, in Baſilicata; 17 miles S.S.W. of Turſi.

MEZANINE, or MEZZANINE, a term uſed by ſome architects, to ſignify an attic, or little ſtory, contrived occaſionally over the firſt ſtory, for the conveniency of a wardrobe, or the like.

The word is borrowed from the Italians, who call *mezzanini* thoſe little windows, leſs in height than breadth, which ſerve to illuminate an attic, or entreſole.

MEZDA, in *Geography*, a town of Africa; 60 miles S. of Tripoli.

MEZDAGA, a town of Fez, in the province of Chaus, at the foot of mount Atlas.

MEZE, a town of France, in the department of the Herault, and chief place of a canton, in the diſtrict of Montpellier; 15 miles S.W. of Montpellier. The place contains 2800, and the canton 8729 inhabitants, on a territory of 135 kiliometres, in ſeven communes. N. lat. 43° 25′. E. long. 3° 42′.

MEZELIEMEINA, a town of Africa, in Tunis, on the lake Bizerta; 28 miles N. of Tunis.

MEZEMNA, a ſea-port of Algiers, in the kingdom of Fez, on the coaſt of the Mediterranean; 80 miles E. of Tetuan. N. lat. 35° 22′. W. long. 4° 5′.

MEZEN, a ſea-port town of Ruſſia, in the government of Archangel, near the White ſea, at the mouth of a river of the ſame name; 128 miles N.N.E. of Archangel. N. lat. 66° 30′. E. long. 43° 34′. The river riſes in the government of Archangel, N. lat. 64° 15′. E. long. 49° 14′, and runs in a S.W. direction to the town of Poſlanſkoi, when, changing its courſe, it runs N. weſterly to N. lat. 66° 30′. E. long. 48° 34′, where it flows into the Frozen ocean.

MEZEN, a mountain of France, which gives name to a diſtrict, in the department of the Ardéche; 27 miles W. of Valence.

MEZERAI, FRANCIS EUDES DE, in *Biography*, a celebrated French hiſtorian, was born in 1610, at Ry, in Lower Normandy. After ſtudying at Caen he came to Paris, and obtained the poſt of an officer of the artillery, in which capacity he ſerved two campaigns. He then quitted the army, and retired to the college of St. Barbe, where he applied with great ardour to ſtudy, having projected a hiſtory of France, of which, under the patronage of cardinal Richelieu, he publiſhed the firſt volume, folio, in the year 1643. The two others appeared in 1646 and 1651. On account of this, the court recompenſed his labours by a penſion of 4000 livres, with the title of hiſtoriographer. This ſucceſs engaged him to compoſe an abridgment of it under the title of "Abregè Chronologique de l'Hiſtoire de France," in three vols. 4to.; it was reprinted in Holland, in 6 vols. 12mo. In this work he publiſhed an account of the origin of all the public impoſts, with ſome very free reflections, which gave ſo much offence to the miniſter Colbert, that he remonſtrated with the author, who promiſed to make the requiſite corrections in the ſecond edition. This he performed, but, at the ſame time, informed the readers that he was compelled to do ſo; and his corrections, moreover, were only palliations, he was therefore puniſhed by withdrawing half his penſion. On his making a complaint, the other half was alſo ſuppreſſed, upon which he declared, that he would not continue his hiſtory. On the death of Conrart, in 1675, he was elected to the vacant place of perpetual ſecretary to the French academy; in this ſituation he prepared a ſketch of the projected dictionary of the academy. Mezerai died in 1683. Beſides the works already mentioned, he wrote "Traité de l'Origine des François;" "L'Hiſtoire des Turcs, depuis 1612 juſqu'en 1649." A tranſlation of John of Saliſbury, "De Nugis Curialium," and of Grotius, "De veritate Relig. Chriſt." Mezerai was a man of great ſingularities in his temper and habits. He was fond of low company, and ſo ſqualid in his dreſs, that he was once taken up by the police for a beggar. He never wrote but by candle-light, even in the day-time, and in the midſt of the ſummer, and he had always a bottle on the table. He affected to be a ſceptic in his religion, but in his laſt illneſs his early impreſſions recurred, and he entreated his friends to forget his impieties, and to recollect "that Mezerai dying was more to be believed than Mezerai in health." Moreri.

MEZEREON, in *Botany*, ſeems by Bauhin's *Pinax* 462, and Lobel's *Adverſaria* 157, to be a word of Arabian origin. In the book laſt mentioned it is ſaid to belong properly to the *Cneorum tricoccum* of Linnæus, which however is not known to grow in Arabia, but in Spain and the ſouth of France. The name is now transferred to the *Daphne Mezereon*, or *Laureola Mezereon Germanica* of the older writers, and is become the familiar Engliſh appellation of that charming ſhrub. See CNEORUM and DAPHNE.

MEZIDON, in *Geography*, a town of France, in the department of the Calvados, and chief place of a canton, in the diſtrict of Liſieux; 11 miles W.S.W. of Liſieux. The place contains 528, and the canton 9089 inhabitants, on a territory of 160 kiliometres, in 34 communes.

MEZIERES, a town of France, and principal place of a diſtrict, in the department of the Ardennes, ſituated on an iſland formed by the Meuſe, over which it has two bridges, with a citadel; two miles S. of Charleville. The place contains 7400, and the canton 11,567 inhabitants, on a territory of 137½ kiliometres, in 12 communes. N. lat. 49° 46′. E. long. 4° 47′.—Alſo, a town of France, in the department of the Indre, and chief place of a canton, in the diſtrict of Le Blanc. The place contains 1338, and the canton 7084 inhabitants, on a territory of 390 kiliometres, in nine communes.—Alſo, a town of France, in the department of the Upper Vienne, and chief place of a canton, in the diſtrict of Bellac. The place contains 1313, and the canton 9107 inhabitants, on a territory of 307½ kiliometres, in eight communes.

MEZIN, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diſtrict of Nerac; ſix miles S.S.W. of Nerac. The place contains 2860, and the canton 10,136 inhabitants, on a territory of 280 kiliometres, in 16 communes. N. lat. 44° 3′. E. long. 0° 20′.

MEZIRIAC, CLAUDE-GASPARD BACHET, in *Biography*, was born in 1581, of a noble family at Bourg-en-Breſſe. He entered among the Jeſuits, and at the age of twenty was profeſſor of rhetoric at their houſe in Milan. A bad ſtate of health induced him to quit the ſociety, and he paſſed much of his time at Paris and Rome in literary purſuits. His reputation was ſo great, that he was mentioned as a fit perſon to be preceptor to Lewis XIII., but the dread of ſuch an office induced him to quit Paris and retire to his native place. He died in 1638, leaving behind him many works that bore witneſs to his great erudition. He wrote verſes in French, Latin, and Italian, and was a profound Greek ſcholar, an excellent grammarian and critic, a philoſopher, theologian, and mathematician. His principal works are as follow: "Problemes plaiſans et delectables que ſe font par les Nombres:" "Diophanti Alexandrini Arithmeticorum Lib. vi. et de Numeris multangulis Lib. i." tranſlated from the Greek with commentaries: "La Vie d'Eſope:" "Epiſtolæ et Poemata varia."

MEZOUR, in *Geography*, a town of Aſia, in Candahar; 63 miles N.E. of Candahar.

MEZTITLAN, a town of Mexico; 25 miles N. of Mexico.

MEZUZOTH, in the *Jewiſh Cuſtoms*, certain pieces of parchment, which the Jews fix to the door-poſts of their houſes, taking that literally which Moſes commands them, ſaying, "Thou ſhalt never forget the laws of thy God, but thou ſhalt write them upon the poſts of thy houſe, and on thy gates." This expreſſion means nothing elſe, but that thou ſhalt always remember them, whether thou comeſt into thy houſe, or goeſt out. But the Hebrew doctors imagined, that the law-giver meant ſomething more than this. They pretended that, to avoid making themſelves ridiculous, by writing the commandments of God without their doors, or rather to avoid expoſing themſelves to the profanation of the wicked, they ought, at leaſt, to write them on a parchment, and to encloſe it in ſomething. Therefore they wrote theſe words upon a ſquare piece of parchment, prepared on purpoſe with a particular ink, and a ſquare kind of character. (Deut. vi. 4, 5, 6, 7, 8, 9.) "Hear O Iſrael the Lord our God is one Lord, &c." Then they left a little ſpace, and afterwards went on, (Deut. xi. 13.) "And it ſhall come to paſs, if thou ſhalt hearken diligently to my commandments, &c.," as far as, "Thou ſhalt write them upon the door-poſts of thy houſe, &c." After this they rolled up the parchment, and put it into a caſe of reeds, or other matter; they wrote on the end of the caſe the word "Shadai," which is one of the names of God; and they put it at the doors of their houſes, chambers, and all places moſt frequented; they fixed it to the knockers of the door, on the right ſide; and as often as they entered in, or went out, they touched it in this place with the end of their finger, which they afterwards kiſſed out of devotion. The Hebrew word *mezuza* properly ſignifies the door-poſts of a houſe; but it is alſo given to this roll of parchment now mentioned. Leo of Modena may be here conſulted.

MEZZA PAUSA, in the *Italian Muſic*, *half a pauſe*, intimates that the part wherein it is found muſt be ſtill the time of a ſemibreve in common time. See PAUSE.

MEZZA *Tirata*. See TIRATA.

MEZZAROLA, in *Commerce*, a liquid meaſure of Genoa, containing for wine two barrili, or 100 pinte, and reckoned at 18 rubbi, or 450lbs. peſo ſottile; the mezzarola is = about 39 Engliſh gallons.

MEZZEREB, in *Geography*, an iſland in the Red ſea. N. lat. 27° 43′.

MEZZO, an Italian adjective, which means half; as *mezzo forte*, *mezzo piano*, *mezza voce*, which imply nearly the ſame thing, *i. e.* a middle degree of piano or ſoft. *Mezzo ſoprano*, a pitch of voice between the *ſoprano* or treble, and counter-tenor. See CLEFS, and COMPASS *of Voices*.

MEZZO-TINTO, in *Sculpture*, a particular manner of engraving figures on copper.

Mezzo-tinto is ſaid to have been firſt invented by prince Rupert, about the year 1649; and Mr. Evelyn, in his Hiſtory of Chalcography, gives us a head, performed by that prince, in his way: though Mr. Le Blon is ſaid to have introduced it into practice with the greateſt ſucceſs.

The prince laid his grounds on the plate with a channelled roller; but one Sherwin, about the ſame time, laid his ground with a half-round file, which was preſſed down with a heavy piece of lead. Both theſe grounding tools have been laid aſide for many years; and a hand-tool, reſembling a ſhoemaker's cutting-board-knife, with a fine crenelling on the edge, was introduced by one Edial, a ſmith by trade, who afterwards became a mezzo-tinto painter.

It is very different from the common way of engraving. To perform it, they rake, hatch, or punch the ſurface of the plate all over with a knife, or inſtrument made for the purpoſe, firſt one way, then the other, acroſs, &c., till the face of the plate be thus entirely furrowed with lines or furrows, cloſe and as it were contiguous to each other; ſo that if an impreſſion was thus taken from it, it would be one uniform blot, or ſmut.

This done, the deſign is drawn, or marked on the ſame face; after which, they proceed with burniſhers, ſcrapers, &c. to expunge or take out the dents or furrows, in all the parts where the lights of the piece are to be; and that more or leſs, as the lights are to be ſtronger or fainter: leaving thoſe parts black, which are to repreſent the ſhadows, or deepenings of the draught.

As it is much eaſier to ſcrape or burniſh away parts of a dark ground, correſponding with the outline of any deſign ſketched upon it, than to form ſhades upon a light ground, by an infinite number of hatches, ſtrokes, and points, which muſt all terminate with exactneſs on the outline, as well as differ in their force and manner, the method of ſcraping, as it is called in mezzo-tinto, conſequently becomes much more eaſy and expeditious, than any other method of engraving. The inſtruments uſed in this kind of engravings are cradles, ſcrapers, and burniſhers.

In this engraving, the plate muſt be prepared and poliſhed in the ſame manner as for other engraving (ſee COPPER-*plates*); and afterwards divided equally by lines, parallel to each other, and traced out with very ſoft chalk. The diſtance of theſe lines ſhould be about one-third of the length of the face of the cradle which is to be uſed, and theſe lines ſhould be marked with capital letters, or ſtrokes of the chalk. The cradle is then to be placed exactly betwixt the two firſt lines, and paſſed forwards in the ſame direction; being kept as ſteady as poſſible, and preſſed upon with a moderate force. The ſame operation muſt be repeated with reſpect to all the other lines; till the inſtrument has thus paſſed over the whole ſurface of the plate. Other lines muſt be drawn then from the extremities of the other two ſides, in the ſame manner; which interſecting the firſt at right angles, will with them form ſquares; and the ſame operation muſt be repeated with the cradle, as in the caſe of the firſt. New lines muſt then be drawn diagonally, and the cradle paſſed betwixt them as before; and when the firſt diagonal operation is performed, the lines muſt be croſſed at right angles as the former, and the cradles paſſed betwixt them in the ſame manner. The plate having undergone the action of the cradle, according to the diſpoſition of the firſt order of lines, a ſecond ſet muſt be formed, having the ſame diſtances from each other as the firſt. But they muſt be ſo placed as to divide thoſe already made into ſpaces one-third leſs than the whole extent; *i. e.* every one after the firſt on each ſide will take in one-third of that before it, *e. g.* beginning at A, of which the firſt third muſt be left out; the third of B will conſequently be taken in; and ſo of the reſt. Theſe lines of the ſecond order muſt be marked with ſmall letters, or leſſer ſtrokes, to diſtinguiſh them from the firſt; and the ſame treatment of the plate muſt be purſued, with reſpect to them, as was practiſed from the others. When this ſecond operation is finiſhed, a third order of lines muſt be made, the firſt of which, *e. g.* in A, muſt omit two-thirds of it, and conſequently take in two-thirds of B, &c. By theſe means the original ſpaces will be exactly divided into equal thirds; and the cradle muſt be again employed betwixt theſe lines as before. When the whole of this operation is finiſhed, it is called *one turn;* but in order to produce a very dark and uniform ground, the plate muſt undergo the repetition of all theſe ſeveral operations, for above twenty times; beginning to paſs the cradle again betwixt the firſt lines, and proceeding in the ſame manner through all the reſt. When the plate is prepared with a proper ground, the ſketch muſt be calked on it, by rubbing the paper on the backſide with chalk. It is alſo proper to overtrace it afterwards with black-lead or Indian ink. The ſcraping is then performed, by parting or cutting away the grain of the ground in various degrees; ſo that none of it is left in the original ſtate, except in the touches of the ſtrongeſt ſhade. The general manner of proceeding is the ſame as drawing with white upon black paper. The maſſes of light are firſt begun with; and thoſe parts, which go off into light in their upper part, but are brown below: the reflections are then entered upon; after which the plate is blackened with a printer's blacking-ball made of felt, in order to diſcover the effect; and then the work is proceeded with; obſerving always to begin every part in the places where the ſtrongeſt lights are to be.

But the preſent mode of this engraving is rendered ſtill more expeditious and eaſy to the artiſt, not only in laying the ground, but in ſcraping the plate. Inſtead of uſing the cradle or grounding tool three times, it is now found to produce a better grain by only repeating it twice, or *double ways*, as it is called by artiſts. In laying the ground, the copper is ruled as formerly, and inſtead of taking up a third of the way already executed, it now only takes up one-half, by which means the grain of the ground, or texture, is more dotty, and has a more ſolid look. and conſequently is leſs liable to the appearance of cuts or lines, which was too much the character of the former proceſs. Fifteen ways in this manner worked cloſe, will be ſufficient to fill the ground, and give it a velvet-like tint. The former mode of making an outline from the painting, is now found to be wholly unneceſſary, and the moſt ready and maſterly method is to ſquare the painting in any number of given ſquares, and the ſame number on the plate, agreeable to the ſize of it, and with a black-lead pencil draw backwards the picture (which with a little practice becomes familiar) on the ground, and the ſcraping is then performed by the original method. The art of mezzo-tinto-engraving was conſidered formerly as only adapted to broad ſubjects, and where high minute finiſhing was required, it was thought vain to attempt it; but the great advances made in that art ſince the time of prince Rupert, have convinced every amateur to the contrary, and the ſucceſsful works of Eadom, eſpecially his maſterly flower-pieces, are admirable ſpecimens of its power, as alſo the ever grateful productions of Hodges, Dixon, and many riſing artiſts of the preſent time. In engraving portraits, it is decidedly moſt appropriate for reſembling both the touch and effect. This is the moſt uſual way of performing this operation.

The art of ſcraping mezzo-tintos has been applied to the printing with a variety of colours, in order to produce the reſemblance of paintings. The inventor of the method of doing this was J. C. Le Blon, a native of Francfort, and pupil of Carlo Marata, between the years 1720 and 1730. It was eſtabliſhed by the inventor on this principle, that there are three primitive colours, of which all the reſt may be compoſed, by mixing them in various proportions: that any two of theſe colours being mixed together, preſerve their original power, and only produce a third colour, ſuch as their compound muſt neceſſarily give; but if tranſparent colours be mixed, and three primitive kinds compounded together, they deſtroy each other, and produce black, or a tendency to it, in proportion to the equality or inequality of the mixture; and that, if, therefore, theſe three colours be laid, either ſeparately, or upon each other, by three plates, engraved correſpondently, on theſe principles, to the colouring of the deſign, the whole variety of teints neceſſary may be produced. The requiſites, therefore, to the execution of any deſign in this method of printing, are as follow. 1. To ſettle a plan of the colouring to be imitated; ſhewing where the preſence of each of the three ſimple colours is neceſſary, either in its pure ſtate, or combined with ſome other, to produce the effect required; and to reduce this plan to a painted ſketch of each, in which not only the proper outlines, but the degree of ſtrength ſhould be expreſſed. 2. To engrave three plates according to this plan, which may print each of the colours exactly, in the places where, and proportion in which, they are wanted. 3. To find three tranſparent ſubſtances, proper for printing with theſe three primitive colours. The manner in which Mr. Le Blon prepared the plates was as follows: the three plates of copper were firſt well fitted with reſpect to ſize and figure to each other, and grounded in the ſame manner as thoſe deſigned for mezzo-tinto prints: and the exact place and boundary of each of the three primitive colours, conformably to the deſign, were ſketched out on three papers, anſwering in dimenſions to the plate. Theſe ſketches were then calked on the plates; and all the parts of each plate, that were not to convey the colour, to which it was appropriated, to the print, were entirely ſcraped away, as in forming the light of mezzo-tinto prints. The parts that were to convey the colour were then worked upon; and where the moſt light or diluted teints of the colour were to be, the grain in the ground was proportionably taken off; but where the full colour was required, it was left entire. In this regard was had, not only to the effects of the colour in its ſimple ſtate, but to its combined operation, either in producing orange-colour, green, or purple, by its admixture with one alone; and likewiſe to its forming brown grey, and ſhade of different degree; by its co-operation with both the others. But though the greateſt part of the engraving was performed in the mezzo-tinto manner, yet the graver was employed occaſionally for ſtrengthening the ſhades; and for correcting the outline, where it required great accuracy and ſteadineſs. It was found neceſſary ſometimes to have two ſeparate plates for printing the ſame colour, in order to produce a ſtronger effect: but the ſecond plate, which was uſed to print upon the firſt, was intended only to glaze and ſoften the colours in particular parts that might require it. With reſpect to the black and brown teints, which could not be ſo conveniently produced in a due degree, by the mixture of the colours, umber and black were likewiſe uſed.

With reſpect to the order in which the plates are to be applied, it may be proper to obſerve, that the colour which is leaſt apparent in the picture ſhould be laid on firſt; that which is betwixt the moſt and leaſt apparent, next; and that which predominates, laſt; except where there may be occaſion for two plates, for the ſame colour, as was before mentioned; or where there is any required for adding browns and ſhades.

Mr. Le Blon applied this art to portraits, and ſhewed, by the ſpecimens he produced, the poſſibility of its being brought, by farther improvements, to afford imitations of painting, which might have ſome value. It is nevertheleſs much better adapted to the ſimpler ſubjects, where there are fewer intermixtures of colours; and where the accuracy of the reflections, and demi-teints are not ſo eſſentially neceſſary to the truth of the deſign, from the greater latitude of form, and diſpoſition of the colour, as in plants, anatomical figures, and ſome ſubjects of architecture. But perhaps plates engraved, or rather finiſhed, with the tool, particularly with reſpect to the outline, would be better accommodated in ſome of theſe caſes, than thoſe prepared only by ſcraping.

Mr. Cochin remarks, at the end of an account he has given of Mr. Le Blon's manner, that though this ingenious artiſt confined this method principally to the uſe of three colours; yet ſhould this invention be again taken up and cultivated, there would be more probability of ſucceſs in uſing a greater variety: and that ſeveral different kinds might be printed by one plate; provided they were laid on in their reſpectively proper places, by printing balls, which ſhould be uſed for that colour only. His hint might, however, be very greatly improved, by the further aſſiſtance of pencils, accommodated to the plates, for laying on the colours in the proper parts.—Handmaid to the Arts, vol. ii. p. 182, &c. Encyclopedie, Art. GRAVEUR *en Couleurs*, &c.

For the method of taking off mezzo-tinto prints in glaſs, ſee BACK-*painting*.

MEZZOVO, in *Geography*, a ridge of mountains in European Turkey, which divides Theſſaly from Albania.

MGLIN, a town of Ruſſia, in the government of Novgorod Sieverſkoi, on the Iput. N. lat. 53° 12′. E. long. 32° 34′.

MHARAS, a mountain of Arabia, in the province of Yemen; 16 miles W. of Kataba.

MI, a river of China, which riſes in the province of Chantong, and runs into the Chineſe ſea, N. lat. 37° 12′. E. long. 129° 14′.

MI, in *Muſic*, the third ſound in the aſcending ſcale of Guido's hexachords. See SOLMISATION, and HEXACHORD.

MIA, in *Geography*, a town of Japan, in the iſland of Niphon; 85 miles E of Meaco.

MIACO. See MEACO.

MIADWZNA, a town of Poland, in the palatinate of Kiev; 36 miles S.S.E. of Bialacerkiev.

MIALNANAEN, a mountain of Scotland, in the county of Perth; 10 miles E.N.E. of George's Town.

MIAM, in *Commerce*, a weight for gold at Malacca, 320 miams being = 20 buncalls = a catty = 29oz. 17dwt. 16gr. Engliſh troy; and a money of account at Siam, 16 miams being = 4 ticals = a tale, and 20 tales = a catty; and as 10 miams are accounted = 1 Chineſe tale, 5 tales of Siam = 8 Chineſe tales.

MIAMAJA, in *Geography*, a town of Japan, on the N. coaſt of Niphon. N. lat. 41 10′. E. long. 141°.

MIAMI, or MAWMEE, *Great*, a river of America, in the ſtate of Ohio, forming the weſtern boundary of the ſtate, and dividing it from Indiana territory. It enters the Ohio, 333 miles below Marietta, according to the winding of the river. At its mouth it is 300 yards wide; but at the Pickawee towns, above 70 miles higher, it is not above 30 yards wide, though it is paſſable for loaded boats 50 miles higher. Its ſtream is rapid, without cataracts. This river has ſeveral boatable branches, one of which extends towards the Sanduſky, with an intermediate portage of ſix or eight miles, and another opens a communication with Au Glaze by a ſhort portage. The channel of the river is ſtony; hence it is ſometimes called Aſſereniet, or Rocky river. Its waters are very clear and tranſparent. One of the principal branches of the Miami river is called "Mad river," or "Pickawee fork." This is a pleaſant ſtream, and paſſes through an agreeable level country of the greateſt fertility.

Miami, *Little*, diſcharges itſelf, after a ſouth-weſtern courſe, into the Ohio, about 300 miles below Marietta. It is 70 miles in length, and at its mouth 70 miles wide. Its depth of water does not allow the paſſage of loaded boats. On its borders the land is good, and its banks are ſo high that it is ſeldom overflowed.

Miami *of the Lake*, ſometimes called "Omee" and "Manmick," is a conſiderable ſtream, navigable with canoes to the portages which lead to the head of the Wabaſh, and through Au Glaze, one of its branches towards the head of Loromie's creek, a head water of the Great Miami. Its portage is three miles. This river falls into lake Erie, at the S.W. corner of the lake. On this river there is a village called Miami, near Miami fort.

MIAMIS, an Indian nation, which inhabit the vicinity of the Miami river, and the ſouthern ſide of lake Michigan. Theſe people can raiſe about 300 warriors. In conſequence of lands ceded to the United States by the treaty of Greenville, Aug. 3d, 1795, government paid them a ſum in hand, and engaged to pay them annually, for ever, to the value of 1000 dollars in goods.

MIANA, a town of Perſia, in the province of Adirbeitzan, where M. Thevenot the traveller died on his return from Iſpahan; 45 miles S. of Ardebil. N. lat. 37° 12′. E. long. 47° 22′.—Alſo, a town of Italy, in the Belluneſe; 24 miles W.N.W. of Belluno.

MIAO-TSE' Mountaineers, a general name under which are comprehended ſeveral tribes, who differ from one another only by ſome particular cuſtoms. This half-barbarous people are diſperſed throughout the Chineſe provinces of Se-tchuen, Koei-tcheou, Hou-quang, Quang-ſi, and on the frontiers of the province of Quang-tong. They often come down from their mountains, and make incurſions into the flat, open country, although the Chineſe, in order to reſtrain them, have built caſtles and fortreſſes in ſeveral places, in which numerous garriſons are maintained. The Miao-tſé are under the government of princes, who have no leſs authority over their ſubjects than thoſe of the "Lo-los" have over theirs; they maintain houſhold officers and a regular militia; they have under them ſeveral petty feudatory lords, who, although ſovereigns, are obliged to levy troops for them whenever they receive orders. The uſual arms of the Miao-tſé are bows and half-pikes. Their horſes are much eſteemed by the Chineſe, on account of the agility with which they climb the mountains. The Miao-tſé, who inhabit the province of Koei-tcheou towards Liping-fou, have houſes built of brick, containing only one ſtory; in the lower part of which they keep their horſes, oxen, cows, ſheep, and hogs, which render their habitations very filthy and diſguſting; and therefore the Tartar princes prefer lodging in the wretched barracks of the ſoldiers than in theſe houſes. Theſe Miao-tſé are collected in villages, and live in great harmony with one another. They cultivate the earth, make cloth, and manufacture a kind of carpets, which ſerve to cover them during the night. Their cloth is only a coarſe ſort of muſlin of little value; but their carpets are good, and well woven. The timber of their foreſts is purchaſed by the Chineſe, and floated down the river that traverſes their country; and the price conſiſts of a certain number of cows, oxen, and buffaloes. The ſkins of theſe animals are uſed by the Miao-tſé for breaſt plates, which they cover with thin lamina of ſteel or copper. The ordinary dreſs of theſe Miao-tſé conſiſts of a pair of drawers, and a kind of jacket which laps over their breaſt. Thoſe of the Miao-tſé tribe, who are diſperſed in that part of Hou-quang which is neareſt to the provinces of Quang-tong and Quang-ſi, are equally independent, though they ſeem to acknowledge the juriſdiction of the Chineſe mandarins. They climb their rocks and run among their mountains barefooted, with great ſpeed. The head-dreſs of their women is ſingular, as they place tranſverſely upon their heads a board about a foot long, and five or ſix inches broad, over which they ſpread their hair, fixing it to the wood by means of wax. The greater part of the Miao-tſé is compoſed of independent people; but ſome of them are ſubject to the Chineſe government. Such are thoſe who live towards the middle, and ſouthern part of the province of Koei-tcheou, and who are under two diſtinct governments. Some of theſe are ſubject to the mandarins of the province, and form a part of the Chineſe people, whoſe cuſtoms they have adopted. The reſt are ſubject to hereditary mandarins, who are conſidered as naturalized, although Chineſe by extraction. Theſe petty princes judge, in the firſt inſtance, the cauſes of their vaſſals, and have a right of puniſhing them, but not capitally. The Chineſe entertain a ſovereign contempt for the whole Miao-tſé nation. Their account of them is very unfavourable; but the miſſionaries aſſure us, that they found them an active, laborious, and obliging people, and remarkably honeſt and punctual in reſtoring the baggage, and other effects which they had entruſted to their care. Theſe mountaineers, on their part, no leſs deteſt the Chineſe, whom they conſider as harſh and ſevere maſters, who, unable to ſubdue them, and reduce them to a ſtate of ſlavery, keep them blocked up in their country, and cut off from all communication with their neighbours. In the year 1776 theſe mountaineers were driven into their inmoſt retreats, and totally ſubdued by Akoui, a Chineſe general. Groſier's China, vol. i.

MIASMA (from μιαίνω, the moſt direct interpretation of which is *to daub*) may be applied to any kind of impurity. Among medical writers, however, to whom the word is now chiefly confined, it relates principally to impurities in the air, and is ſometimes uſed indiſcriminately with *Contagion* or *Infection*; which ſee. Under the former article we felt diſpoſed to adopt Dr. Wilſon's diſtinction between contagion and infection, *viz.* that the firſt ſhould expreſs a morbid poiſon, the application of which *may* excite diſeaſe, and the latter the condition of the ſubject after the morbid poiſon *has* induced ſuch an effect.

This definition has the advantage of being conſiſtent with the etymology of the two words, particularly of the latter, the alluſion of which is to dyeing or ſtaining: for as a colouring ſubſtance may come into contact with another, under ſuch circumſtances as to leave no ſtain, ſo a ſubject may be ſometimes expoſed to a contagion without being infected.

The variety of effects induced by different impurities of the air, renders it abſolutely neceſſary to diſcriminate them with as much accuracy as poſſible. We ſhall, therefore, confine the term *miaſma* to its original meaning, as uſed by Hippocrates, and, as all the reſt have appropriate terms, we ſhall defer them to the articles in their order, namely, Morbid *Poiſons*, Plague, Quarantine, and Typhus.

The father of phyſic remarks, that there are three great cauſes of diſeaſe, food, drink, and air. The latter, he continues, is by far the moſt important, becauſe we eat and drink only at certain times, and can even ſubſiſt for a few days

without

without either, but are perpetually breathing, and cannot exiſt without air but for a few ſeconds. His diſſertation on this ſubject relates principally to the temperature of the atmoſphere, the aſpect of places, according to the neighbouring mountains and ſeas, the various ſeaſons of the year, climates, and manners of the inhabitants. Conſequently but little information can be derived from him, concerning thoſe moſt deleterious properties in ſome particular diſtricts, which never could be viſited but through the enterpriſing ſpirit of modern navigators. As this ſubject is now become particularly intereſting, not only on account of our commercial connections, but from the importance of preſerving the lives of our army and fleet, we ſhall not ſcruple to dwell upon it with ſome minuteneſs.

Though miaſmata may be of different kinds, yet as they are only known by their effects on the human body, and the ſources from which they are derived, we cannot venture to offer any other diſtinction. This diſtinction will be principally in degree, for, as Dr. Cullen remarks, the ſource ſeems to be univerſally from marſhes, or moiſt ground acted on by heat. The properties of marſhy ſoils in England is pretty generally underſtood, and their effects on the human body. We ſhall, therefore, only in general remark, that the ague induced by them is for the moſt part milder in ſpring than in autumn, and that for ſome time before and after the ſolſtices, theſe places may be viſited even by ſtrangers with impunity. That all new comers are more certainly, and for the moſt part with more violence, affected than the conſtant reſidents; and that, from cauſes hitherto unknown, the diſeaſe is more general, more ſevere, and more fatal in ſome years than in others.

All theſe, however, like other pathological facts, muſt be admitted with certain limitations. The vernal agues, though ſo generally mild as to be formerly conſidered wholeſome viſitations to the conſtitution at that ſeaſon, are ſometimes ſevere; and the autumnal have in ſome ſeaſons been found mild. There are conſtitutions which can never be inured to this kind of air, but are conſtantly and ſeverely affected on each returning autumn; and there are new comers who remain with impunity till a ſevere ſeaſon affects *them*, and probably many of the natives. At theſe times the ſeaſon has been known to be protracted from the vernal almoſt to the autumnal period, and not to ceaſe till winter has ſet in.

In England the intermittent fever is no longer an object of terror, ſince the introduction of the bark, and the ſafe uſe of ſome moſt powerful remedies; but moſt of all in proportion as the ſources of the miaſma have been diminiſhed by the draining and improved cultivation of the ſoil. In Sydenham's time ague was among the epidemics of the metropolis, and the bills of mortality of thoſe days ſhew how frequently it proved fatal. When London is now viſited by ague, it is for the moſt part only ſporadic, and in many inſtances, where it is leaſt ſuſpected, will be found to have been contracted by a reſidence in the country; for we ſhall preſently have occaſion to ſhew that miaſma, received into the conſtitution, ſhews its effects at very uncertain, and ſometimes very diſtant periods. There are, however, ſeaſons when ague attacks thoſe who have never left the town, probably by the air wafted from the marſhes, in which caſes the miaſma is ſo diluted as to affect thoſe only who are particularly ſuſceptible. The years 1765, 1766, as well as 1782, are particularly marked as ague years in London, and even in 1808, the diſeaſe very often ſhewed itſelf. During each of theſe ſeaſons a long prevalence of eaſterly winds was remarked. This, however, is too common an event during the ſummer and autumn to be conſidered a ſufficient cauſe of itſelf. The truth is, the ſeaſon was particularly ſickly to the inhabitants of the low lands on the eaſtern ſide of the metropolis: and ſo powerful was the effect of the miaſma at its ſource, that inſtead of the uſual mild and regular intermittent, remittent and even continued fevers were very frequent and very fatal.

In the Netherlands the dreadful effects of this miaſma have been too recently experienced to require, at this time, any conſiderable commentary. One might ſuppoſe ſuch events would never be entirely forgotten, were it not that ſo many records are preſerved, which appear to have been overlooked before the laſt unfortunate expedition to Walcheren. Not to mention the account given by ſir John Pringle, whoſe medical character and long practice in the army have rendered him an oracle in theſe enquiries, we ſhall tranſcribe part of Dr. Wind's obſervations, who with his father had practiſed at Middleburgh for nearly 30 years.

"Towards the end of Auguſt, or beginning of September," ſays he, "is a continual burning fever, attended with a vomiting of bile, which is called the gall-ſickneſs.—Foreigners in indigent circumſtances, who are garriſoned in the adjacent places, are apt, after theſe fevers, to become dropſical, and many die." Dr. Lind, to whom we are indebted for the above extracts, further remarks, "the Scotch regiment in the Dutch ſervice at Sluys has been known to bury their whole number in three years." Lind on Climates.

The inſalubrity of the lower parts of Hungary, and ſtill more of the Campania of Rome, are too well known to require our particular notice. We cannot, however, omit the hiſtory preſerved by Lanciſius, phyſician to pope Clement XI. "Thirty Romans of diſtinction of both ſexes, having made an excurſion upon a party of pleaſure towards the mouth of the Tyber, the wind ſuddenly ſhifted and blew from the ſouth over the putrid marſhes, when twenty-nine were ſeized with tertian fever, only one eſcaping."

Though Africa has ſomething terrific in its ſound, yet it ſeems probable, that the northern coaſt, and for a conſiderable way inward, if we except the Lower Egypt, is as healthy as any part of the world. But the ſouthern coaſts, and particularly as we advance inward along the rivers, are ſo deſtructive to European conſtitutions, that probably neither our love of novelty, nor enterpriſing temper, will ever be ſufficient to overcome theſe difficulties, ſo as to form a permanent ſettlement. In all theſe places the firſt rains are found ſo certainly deleterious, even to the natives, that they endeavour at theſe times to confine themſelves to their houſes, and to ſhut out as much as poſſible the external air. After a time, though the rain continues, the miaſma is leſs peſtilential, but ſoon after its ceſſation, as the ſurface of the ground becomes drier from its expoſure to an almoſt vertical ſun, the exhalations are pregnant with the exciting cauſes of all the tropical diſeaſes.

In the countries leading from Africa to Aſia, particularly Baſſora, and other parts about Arabia, the Engliſh find the climate healthy, excepting at certain well-marked ſeaſons.

Of the four preſidentſhips in the Eaſt Indies, that of Bencoolen, in the iſland of Sumatra, is found the moſt unhealthy. Bengal, however, at certain ſeaſons, is ſcarcely leſs fatal to the Britiſh, and often even to the Aſiatic inhabitants. In the year 1762, it was well aſcertained that 30,000 blacks and 800 Europeans died of the fevers of that country during the ſickly ſeaſon. Bombay has been rendered more healthy ſince an embankment, by which the overflowing of the ſea has been prevented; and Madras has generally been conſidered a ſtation not unfavourable to Britiſh conſtitutions.

Of all the unhealthy ſpots in Aſia, Batavia is pretty generally allowed to be the worſt. The fatal miſtake, too common among Europeans, of attempting to aſſimilate the cuſtoms of a new country to their own, is ſaid very much to have increaſed the inſalubrity of that ſettlement. It ſeems hardly conſiſtent with common underſtanding, that the Dutch, after the experience of ſo many years, ſhould ſtill perſevere in preſerving their dykes, to leſſen the expence of carriage at the charge of human life. Yet ſuch we are aſſured is the caſe. Among the many inſtances of mortality, for which that colony is ſo well known, we ſhall mention only two. In the year 1763, the Falmouth, a ſhip of 50 guns, was at Batavia for about ſix months, during which time ſhe buried 75 of her crew, and 100 ſoldiers of the 79th, who had embarked on board her; every ſoul on board having been ſeized with fever, excepting only the captain. In the year 1764, the Panther, during a very ſhort ſtay, buried 25 of her men, among whom was the commander, captain Matthewſon. Nor was the ſickneſs confined to the ſhip's company. The whole city exhibited no other ſcene but diſeaſe and death. Streets crowded with funerals, bells tolling from morning till night, and horſes jaded with dragging hearſes to the burial places.

Though we have remarked above the great probability that the nature of this miaſma is every where the ſame, as its ſources are evidently ſimilar, yet it is right to obſerve that its effects on the human body are ſomewhat diverſified in different quarters of the globe. Throughout the whole of Hindooſtan, and northward, as far as the Britiſh have formed any ſettlements, the liver ſeems to be principally affected, and the principal danger to ariſe from the too high action of its veſſels, and even the entire diſorganization of that important viſcus.

On the ſouthern coaſt of Africa, and along the margins of its extenſive rivers, the liver is the organ principally affected, and rarely, if ever, recovers its due functions, where the injury has been conſiderable. The liver ſuffers in the tropical regions of the Weſt, though not with the ſame uniformity. In the ſouthern parts of the N. weſtern hemiſphere, and in all the Weſt India iſlands, the liver is often affected, but in many inſtances of the moſt violent fevers in this part of the world, it may be doubted whether the ſtomach is not primarily affected, and the liver only ſympathetically, the black vomit being now pretty generally admitted to be derived from the ſtomach, and the yellow colour of the ſkin not making an eſſential character of the fever known by that name. It is not improbable that the Zealand diſeaſe, though diſtinguiſhed by the name of the gall-ſickneſs, may only affect the liver in common with the other viſcera. It is certain that the brain ſuffers much in this diſeaſe, and not uncommonly thoſe who eſcape with life remain for months, and ſometimes years, with impaired memory and even deranged intellect.

In England, the enlargement of the ſpleen is the moſt common effect; the conſequences of which are very rarely conſiderable, if the diſeaſe is not ſuffered to remain long without relief.

The moſt important conſideration, and the moſt to our preſent purpoſe, is the means of preventing the exiſtence of miaſma, or, where that cannot be done, of avoiding its effects. The firſt, it is evident, can only be accompliſhed by draining the low grounds. This may always be attained where the ſurface is above the level of the ſea, or ſtill eaſier, if above the level of a neighbouring river. What has been done in this way in our iſland is hardly credible. The attempts to drain the Pontine marſhes are not leſs honourable to human induſtry; and if we can believe the preſent accounts, it would appear that ſuch attempts are now perſevered in with more ſteadineſs than ever. The vaſt embankments made by cardinal Richelieu on the coaſt of Rochelle, in the bay of Biſcay, are well known, and muſt for ever live in the writings of Voltaire. When, as is often the caſe, a town has been conſtructed on a hill by the banks of a river, if the population, after ſpreading along the ſide of the river, ſhould gradually extend itſelf over the back of the hill, at right angles with the river of the ſea-coaſt, there will always be danger of water ſtagnating in the valley behind. The force of the miaſma from this cauſe will be greatly increaſed by the illuvies from the cottages which uſually are the firſt erections at theſe extremities. To this London at one time owed, if not its agues, at leaſt its vernal and autumnal fevers, as deſcribed by Sydenham. The great fire proved the means of forming a proper level as far as that formidable, though fortunate event extended; but it was not till within theſe laſt thirty years, that the northern part of the city, or rather its ſuburbs, has been drained by a ſewer, which, if ever London ſhould ſhare the fate of Carthage, will immortalize the well-directed induſtry and enterprize of its inhabitants. This ſewer, which is cylindrical, not leſs than ſix feet in diameter, and in ſome parts more than twenty feet below the ſurface, was carried through ſome of the narroweſt ſtreets, conſiderably below the foundations of the houſes; to protect which, ſuch a quantity of timber and planks was buried as would form almoſt an impaſſable grove if it were all to appear above ground. The ſudden growth of the cities in North America has produced the moſt fatal effects in proportion as the heat of the ſolſtitial and autumnal ſun is greater, and as the increaſe of their towns has outrun moſt others in every part of the world. This is now ſo well underſtood, that the more prudent inhabitants of the large towns are attending much more to ſecuring themſelves from yellow fever by draining, than by the enforcement of quarantines.

In our own country it is incredible to what extent the ſpirit of draining has extended; beſides thoſe large undertakings which can only be brought about by the union of whole counties. Sometimes aſſiſted, or at leaſt empowered, by parliamentary authority, every enterpriſing farmer, whoſe lands are of any extent, has his *underground drain* wherever it is neceſſary, and can be accompliſhed.

We are not, however, to conſider all the danger as removed when an old moraſs is drained: for even if ſuch land is ſecured from being overflowed under the moſt unfavourable ſeaſons, which is rarely the caſe, yet whenever it is firſt converted from paſture to arable, fevers are in ſome places excited much more formidable than the common intermittent. This leads us to the ſecond conſideration, that of avoiding the effects of miaſma where the cauſe cannot be entirely removed.

The firſt part of the inquiry here muſt be, whether the diſeaſe is infectious? If we reaſon from cauſe to effect, we ſhould conceive that a diſeaſe derived from exhalations from the earth could only be excited by a ſimilar cauſe, and, conſequently, that a ſick perſon removed from the ſource could convey no contagion to others. But we ſhould recollect that he may arrive with his clothes ſo impregnated with the effluvia of ſuch miaſma, as to be dangerous to thoſe who firſt receive him, as we find perſons often carry with them the ſmell of their particular occupation or habits. To determine, therefore, that a diſeaſe is contagious, it will be neceſſary to prove that others have been infected who have been expoſed to the ſick only, and neither to the ſeat of the miaſma itſelf, nor to ſuch ſubſtances as may contain what is called the fomes.

At the ſource of the diſeaſe we ſhall find the greateſt difficulty in determining the queſtion; for where one general cauſe affects ſeveral, it will often be difficult to ſay whether an attendant on the ſick has taken the diſeaſe from them, or from the ſame common cauſe that has affected the whole neighbourhood. This difficulty we ſhall ſee is much increaſed when we come to the article TYPHUS. At preſent, we ſhall only make two general remarks:

Firſt, that wherever a number of perſons are collected, if ſickneſs of any kind prevails among them, a kind of infectious air is generated, which is the ſource of typhus fever.

Secondly; that during the prevalence of any epidemic, thoſe who are affected with any other diſeaſe are generally the earlieſt ſeized with the epidemic, their reduced ſtate of health rendering them leſs able to reſiſt the force of the miaſma; and as two diſeaſes cannot occupy the ſame conſtitution at the ſame time, the conſequence muſt often be, that their former complaint gives way to the reigning diſeaſe.

It may ſeem remarkable that this chain of events ſhould be more accurately attended to by the ancient hiſtorians than by modern phyſicians; but the terms in which they explain themſelves may ſhew the cauſe of this difference. Thucydides makes no mention of contagion till the advanced period of the plague in Athens; and Livy expreſsly ſays, that at firſt the men became ſick from the badneſs of the ſeaſon, and the unhealthineſs of the place, and that afterwards the attendance on the ſick rendered diſeaſe more common. By this evidently marking, that the accumulation of the ſick had induced the hoſpital, in addition to the endemic, fever. See CONTAGION.

We have been obliged to anticipate this part of a ſucceeding article, becauſe it involves a queſtion of the higheſt importance, in avoiding the *effects* of miaſmata where the *cauſe* cannot be entirely removed. If the diſeaſe induced by ſuch a cauſe had a contagious property ſimilar to ſmall-pox and meaſles (ſee Dr. Cleghorn on the Diſeaſes of Minorca), the probability is, that it would not ceaſe till it has invaded all who are expoſed to it; and that ſhould any leave the country with the diſeaſe, or its fomes, the conſequences would be equally general in every place to which the ſick ſhould be carried. In this caſe the only remedy would be to confine the ſick and healthy to the ſpot, and not ſuffer them to eſcape till the diſeaſe has entirely ceaſed; after which there ſhould be an univerſal ablution and purification before any general intercourſe ſhould take place. But if the diſeaſe is known to ariſe only from the ſeaſon and the nature of the country; if from experience it ſhould be aſcertained that with a change of ſeaſon the diſeaſe will ceaſe; if it is further found by experience that no infection can be traced till the number and accumulation of the ſick has produced a hoſpital or camp fever; if all this can be aſcertained, ſurely the firſt ſtep ſhould be to encourage all the inhabitants inſtantly to quit ſo fatal a ſpot, and not to return to it till a change of ſeaſon has produced a change in the properties of the atmoſphere. It is much to be regretted that this diſcrimination has been ſo little attended to in the late controverſies concerning the yellow fever in the Weſt Indies, as well as the epidemics, which have viſited Gibraltar and the various cities in the ſouth of Spain. In America the queſtion ſeems to be unfolding itſelf; and, as we before remarked, the terror of contagion is gradually giving way to a more rational precaution.

Where a country has been drained, after the ploughing of which the exhalations are found deleterious, no remedy remains but to confine this branch of huſbandry to the ſolſtices, afterwards leaving the broken ground to the effects of air and rain. This caution ſhould be extended to the opening of new land wherever the ſurface is formed of an accumulation of autumnal leaves impeding the current of rain, and annually putrifying for a conſiderable number of years.

When veſſels are cruiſing, or moored in the neighbourhood of ſwamps or thick woods, particularly in tropical regions and at dangerous ſeaſons, the ſailors ſhould never be allowed to ſleep on deck, and as few as poſſible ſhould remain there after ſun-ſet. If it is neceſſary to wood or water, every endeavour ſhould be uſed to employ for this purpoſe the aborigines of the place, or negroes, whoſe conſtitutions are ſeldom affected by ſuch miaſmata, and when they are, the effect rarely exceeds that of the common tertian, which readily gives way to the uſual remedies. If it is abſolutely neceſſary to ſend the crew on ſhore, they ſhould always return before ſun-ſet and ſleep on board.

When, as is often the caſe, it is found neceſſary to conduct a ſiege on one of theſe unwholeſome ſpots, the firſt conſideration ſhould be to commence the operations at the leaſt dangerous ſeaſon. At this time the greateſt attention ſhould be paid to raiſing batteries as high as poſſible, conſiſtently with the ſafety of the beſieged, the miaſma being always found to be moſt powerful the nearer to the ſoil. At the ſame time the level of the ground ſhould be examined, to ſee how far it will admit of draining without turning up too much of the ſurface. When the ſickly ſeaſon arrives, as few men as the ſervice will permit ſhould be left on the ground during night, who, on the ſucceeding morning, and for ſeveral days after, ſhould be carefully examined by the medical officer, that the firſt approaches of diſeaſe may be inſtantly met. Such men as are found beſt to withſtand the effects of the miaſma ſhould be ofteneſt on duty. Above all, the hoſpitals ſhould be prepared before they are wanted, and in a ſituation as remote as poſſible from the ſource of diſeaſe. Where the ſituation of the place will admit, it would be beſt to uſe floating hoſpitals, or hoſpital-ſhips, which in fair weather might make frequent cruiſes with their port-holes and ſcutcheons open, and with as many of the men on deck as can be moved thither. The attendants ſhould be ſelected among the convaleſcents.

By attention to theſe rules, many expeditions might be much more ſucceſsful, and much leſs waſteful of human life: many lands might be cultivated by thoſe who would enjoy the benefit of their bold and enterpriſing undertaking, and many lives rendered comfortable which at this time are dragged on with miſery and reſigned without regret. See EPIDEMIC; FEVER, *Cauſes of*; HEALTH, &c.

MIATA, in *Geography*, one of the Society iſlands in the S. Pacific ocean. S. lat. 7° 52′. W. long. 148 6′.

MIA-TAU, a cluſter of ſmall iſlands in the Chineſe ſea, near the coaſt of Chang-tong; extending from ſix to 36 miles N. of Tong-tcheou.

MIATHIR, a town of Morocco, in the province of Duquella, near a mountain of the ſame name.

MIAU-SHEHR, a town of Perſia, in the province of Ghilan; 50 miles N.W. of Reſhd.

MICA, *Glimmer*, Wern.; *Mica*, Haüy.

The uſual colour of this mineral is grey, which occurs yellowiſh, greeniſh, ſmoke, and aſh-grey; the yellowiſh-grey paſſes into yellowiſh and greeniſh-white, and into ſilvery, and alſo into wax-yellow, braſs and gold-yellow, reddiſh, pinchbeck, and blackiſh-brown ; the greeniſh-grey paſſes into mountain and aſparagus-green, alſo into leek-green and blackiſh-green ; the aſh-grey is found of various ſhades, and paſſes into perfect black. Sometimes ſeveral colours occur together in the ſame piece. Upon the whole the colour is found conſiderably to vary, according to the different degrees of tranſparency of the ſpecimen. The black variety appears brown, when placed between the eye and the light. The colour of the powder is always greyiſh-white

Mica is found principally diſſeminated and in thin layers alternating with other foſſils, ſuch as quartz and feldſpar, in gneiſs, &c. ; but it alſo frequently occurs in maſs and cryſtallized.

Its primitive form is the ſhort, ſtraight, rhomboidal priſm of 120° and 60°. Integrant molecule the ſame.

The principal cryſtallizations are ; 1. The ſhort ſtraight four-ſided priſm with rhomboidal planes ; being the primitive form (Mica *primitif*, Haüy, pl. 60, fig. 205.) Theſe priſms are generally ſo low, that they may be conſidered as four-ſided tables. They are eaſily and diſtinctly divided in a direction parallel to the baſes ; the cleavage in the other direction is generally indiſtinct.

2. The regular ſix-ſided priſm, generally very low, ſo as to appear tabular. (Mica *priſmatique*, Haüy, ib. fig. 207.)

3. The lengthened rectangular table (Mica *binaire*, Haüy, ib. fig. 208.)

4 The low regular ſix-ſided priſm with truncated terminal edges. (Mica *annulaire*, Haüy, ib. 206.)

The cryſtals are ſometimes large, but generally middle-ſized and ſmall ; they are ſometimes found ſeparate, but oftener grown together ; they are now and then ſeen faſcicularly aggregated and in roſes. The lateral planes of the cryſtals are ſmooth and ſplendent ; the terminal planes ſhining. Internally ſpecular ſplendent ; luſtre ſometimes reſinous, ſometimes pearly, often ſemi-metallic and metallic ; in the uncryſtallized mica, the luſtre of the planes of fracture is generally leſs intenſe.

Fracture partly ſtraight, oftener curved, or undulatingly foliated. The foliated fracture ſometimes paſſes into the broad and narrow radiated, which is partly parallel, partly faſcicularly or ſtellularly diverging. The fractural ſurface, particularly that of the broad radiated variety, is ſometimes marked with feather-like ſtreaks. Fragments tabular. The maſſive ſhews coarſe, large and ſmall-grained diſtinct concretions ; the radiated is compoſed of cuneiform columnar concretions.

The common maſſive varieties of mica are opaque, or only tranſlucent on the edges ; the detached folia are moſtly tranſlucent and even tranſparent. Some cryſtallized varieties are perfectly tranſparent in all directions. The ſeparation of the folia from each other, though not obſervable to the eye, is generally the cauſe of the loſs of tranſparency.

It is ſemi-hard, approaching to ſoft ; eaſily diviſible in the direction of the folia, and may be eaſily cut with a knife ; it feels ſmooth, not unctuous, and is elaſtic flexible. Specific gravity 2.654—2.634, Haüy ; 2.726, Karſt ; 2.767, Kirw. ; 2.866, Reuſs ; 2.934, Blumenb.

Before the blowpipe, the dark coloured varieties (according to Wiedenmann) take a pinchbeck or braſs-yellow hue, but they are nearly as difficultly fuſible into enamel as the colourleſs varieties. The enamel of black coloured mica affects the magnetic needle.

The analyſes which we poſſeſs of this ſubſtance vary conſiderably, at leaſt with reſpect to the relative quantity of the conſtituent parts of the ſeveral varieties.

	Muſcovy Glaſs.	Common.	From Zinnwald.	Muſcovy Glaſs.	Black Siber.
Silica	40	50.	47.	48.	42.50
Argil	46	35.	20.	34.25	11.50
Magneſia	5	1.35			9.
Oxyd of iron	9	7.0	15.50	4.50	22.
Manganeſe			1.75	0.50	2.
Lime		1.33			
Potaſh			13.50	8.75	10.
Loſs		5.32	2.25	4.	3.
	100	100	100	100	100
	Bergm.	Vauq.	Vauq.	Klapr.	Klapr.

This very common but remarkable foſſil, forms a principal ingredient of ſome of thoſe rocks which belong to the primitive ſlate formation of Werner, particularly granite, gneiſs, and mica ſlate : it is alſo found in primitive limeſtone, and in grau-wacke. Nor is it wanting in the trapp-formation, as in ſienite, porphyry, greenſtone, baſalt, wacke ; though in the laſt mentioned rocks it is probably derived from primitive rocks by diſintegration. In ſome caſes it is known to form entire beds, like thoſe at Zinnwald. It rarely occurs in veins, ſuch as thoſe belonging to the tin-ſtone formation in Bohemia and Saxony.

The localities of mica being thoſe of the widely extended primitive rocks above-mentioned, need not to be particulariſed. The mica in large plates, called Muſcovy glaſs, from the uſe to which it is applied, occurs in granite in ſeveral parts of Siberia, and on the ſhores of the Caſpian, at Uda, on the borders of the Upper Tunguſka, the lake Jeneſey, Baikal, in Georgia, &c.

By far the greateſt part of the large foliated mica is employed in the Ruſſian empire, eſpecially in Siberia, where it is generally uſed inſtead of glaſs for windows. The poorer claſſes employ the ſmall plates, which they ſow together. It is ſaid to have been a ſubſtitute for glaſs in the windows of Ruſſian men of war, as being leſs liable to be broken by the concuſſion of the air during the diſcharge of heavy artillery ; but to this uſe mica is no longer applied. We find that in the year 1781, upwards of 200 pud of this variety of mica were exported from Peterſburg to Lubeck, and 2721 pud to Great Britain. Beckmann, who makes mention of this exportation, is at a loſs to gueſs the uſe in which theſe 116,800 pounds of Muſcovy glaſs may have been employed.

According to Ellis's account, the ſame kind of mica occurs in large plates in Hudſon's bay ; and Kalm found it in Pennſylvania, in leaves of half a yard in diameter, and of equal tranſparency with the Siberian variety. Indeed the Swedes, who from 1630 to 1655 had colonies in New Jerſey and Pennſylvania, employed it, as the Ruſſians do, inſtead of glaſs in the windows.

The tenuity of the laminæ of the large foliated varieties is ſuch, that, according to Haüy's calculation, a piece $\frac{4}{9}$ths of a line in thickneſs, may be divided into 23,255 ſeparate laminæ. This property, and the facility with which it is cut, render the Muſcovy glaſs peculiarly proper for incloſing minute objects to be viewed by the microſcope.

MICA-*ſlate*, *Glimmer-ſchiefer*, Werner ; *Micaceous ſhiſtus*, Kirwan ; *Schiſte micacé*, Broch.

This primitive rock is eſſentially compoſed of mica and quartz, diſpoſed in layers, which are more diſtinct than thoſe of gneiſs, into which it is frequently ſeen to form a tranſition. The colour of the mica, which generally forms the predominant part, is uſually of a grey colour, mixed with greeniſh; the quartz is almoſt always white.

This rock, which is of great importance to the miner, as being particularly rich in ores, contains alſo frequently other minerals, particularly common and noble garnets, which may even be conſidered as forming an eſſential component part of mica ſlate; ſhorl, both the common and tourmaline (ſuch as that of Dunkeld and Blair-in-Athol in Scotland), kyanite (which has been found in the varieties from Mainland, one of the Shetland iſlands, and near Banchory in Aberdeenſhire), rutile (that of Salzburg, Hungary, &c.), feldſpar, but only in ſingle grains.

Beſides the common mica ſlate, which is ſtraight, and rather thick ſlaty, the Wernerian geognoſians diſtinguiſh three other varieties, *viz.* the undulated mica ſlate, which has not been found to include other ſubſtances; the talcky mica ſlate, which is ſtraight ſlaty, compoſed of green mica, and traverſed by thick layers of quartz; and laſtly, the fine ſlaty variety, which forms a tranſition into clay ſlate, which reſts on it; it is generally of a greyiſh-yellow colour, and almoſt entirely unmixed with quartz.

As mica ſlate paſſes on one ſide into clay ſlate, (the next rock in ſucceſſion,) in the ſame manner it forms a very diſtinct tranſition into gneiſs, on which it reſts; the outgoings of its ſtrata being lower than thoſe of the latter, and higher than thoſe of the clay ſlate, which uſually cover them. It ſurrounds the older rocks in mantle-ſhaped ſtratification.

The mica ſlate mountains, which are generally much leſs craggy and bold than thoſe of gneiſs, contain far more foreign beds than both granite and gneiſs mountains; the moſt remarkable beds obſerved in them are thoſe of granular limeſtone, of hornblende ſlate, hornblende rock, and actinote; as likewiſe galena, copper and iron pyrites, magnetic iron-ſtone, and other ores. The greateſt part of the metalliferous mines of Sweden and Norway, and ſeveral of thoſe of Hungary and Saxony, are ſituated in this rock.

Mica ſlate conſtitutes conſiderable mountains in moſt parts of Europe, and alſo, according to Humboldt, in South America. In Scotland, it occurs abundantly in the valley between Dunkeld and Blair-in-Athol, on the mountain of Schehallion, in the iſland of Arran, the iſland of Jura and Iſla, &c. Jameſon.

It is often employed for conſtructing or lining furnaces, whence it has been called *Geſtellſtein*, or *Saxum fornacum*; names which are, however, given to ſeveral other foſſil rocks applied to the ſame purpoſe.

MICABA, in *Geography*, a town of Japan, in the iſland of Niphon; 100 miles N.N.E. of Meaco.

MICAH, in *Scripture Hiſtory*, the ſeventh in order of the twelve minor prophets. He is called the "Moraſthite," or of "Moreſa," a village near the city of Eleutheropolis, in the ſouth of Judah. He was nearly contemporary with Iſaiah, and has ſome expreſſions in common with him: compare Iſaiah, ii. 12. with Micah, iv. 1; and Iſaiah, xii. 15. with Micah, iv. 13. St. Jerom ſays, that Micah was buried at Moraſthi, and Sozomen ſays, that his tomb was diſcovered to Zebennus, biſhop of Eleutheropolis, in the reign of Theodoſius the Great. Some have confounded Micah with Micaiah, ſon of Imlah, who was of Ephraim, and who propheſied in the time of king Ahab. Micah propheſied under Jotham, Ahaz, and Hezekiah for about 56 years, from the beginning of the reign of Jotham, or 754 B.C., to the laſt year of Hezekiah 698 B.C. His prophecy contains ſeven chapters; in which the firſt foretells the calamities of Samaria; afterwards he propheſies againſt Judah, and having exclaimed againſt the iniquities of Samaria, he foretells the captivity of the 10 tribes, and their return. After a pathetic invective againſt the princes of the houſe of Jacob, and the judges of the houſe of Iſrael, he ſpeaks of the birth and reign of the Meſſiah. The two laſt chapters contain an invective againſt the iniquities of Samaria; after which he predicts the fall of Babylon, the re-eſtabliſhment of Iſrael, their happineſs, &c. in ſuch lofty terms, as chiefly agree with the ſtate of the Chriſtian church. The ſtyle of Micah is for the moſt part cloſe, forcible, pointed, and conciſe; ſometimes approaching the obſcurity of Hoſea; in many parts animated and ſublime, and in general truly poetical.

MICARELLE, in *Mineralogy*. See PINITE.

MICE, in *Gardening*, a ſort of vermin which are highly deſtructive to ſeveral ſorts of garden crops, ſuch as peas, beans, &c. in the early ſpring, and lettuces, melons, and cucumbers in frames in the winter ſeaſon. When diſcovered they ſhould of courſe be immediately deſtroyed, either by traps or ſome other means. See VERMIN.

The author of "Phytologia" has ſuggeſted, that "the deſtruction of grain after it is ſown by field-mice, which mine their way very quickly under newly ploughed lands near the ſurface, is ſuppoſed by Mr. Wagſtaff, in the papers of the Bath Society, to be effected in ſome ſeaſons to a very great extent. And that the tuſſocks of wheat, ſeen to ariſe in many fields, are owing to the granaries of theſe diminutive animals, which he has found to contain nearly a hatful of corn, which grows into a tuft, if the owner becomes accidentally deſtroyed. It is alſo further aſſerted, that they feed much on the young plants, as they ariſe from the ſeed, and multiply at that time very faſt. He detects their habitations by ſmall mounds of earth being thrown up, on or near the apertures of their dwellings, or of the paſſages which lead to their neſts or granaries; and by following the courſe of theſe paſſages, he found and deſtroyed the parents and the progeny." He likewiſe "recommends the taking up and dividing the tuſſocks of wheat, thus ſown in the autumn by the field-mice, and tranſplanting them in the ſpring; and alſo to thin other parts of a young crop, as they appear too thickly ſown, which he eſteems an advantageous practice."

And it is found, that "acorns when ſown, as well as garden beans, and peas, are liable to be dug up or devoured by theſe voracious little animals, which may be deſtroyed by traps baited with cheeſe; or beſt of all, by the encouragement of the breed of owls, ſo active in the purſuit of nocturnal vermin, and thence ſo uſeful to the gardener and farmer, who ſtill permit their ſervants and children to deſtroy both their eggs and callow young."

Theſe little plunderers may be readily deſtroyed by the uſe of the poiſonous ſubſtance, uſually known by the title of *nux vomica*, which ſhould be finely raſped down, and mixed with ſome ſort of meal or other ſimilar material, of which they are fond.

MICELLA, in *Geography*, one of the ſmaller Molucca iſlands.

MICHAEL I., in *Biography*, ſurnamed *Rhangabe*, emperor of the Eaſt, was ſon of Theophylact, governor of the iſles, and married Procopia, daughter of the emperor Nicephorus I., by whom he was raiſed to the office of great maſter of the palace. He was preſent at the battle againſt the Bulgarians, in which Nicephorus was ſlain A.D. 811. Stauracius, the ſon of the emperor, had received a ſevere wound in the battle, and was, beſides, univerſally hated. The empire was therefore offered to Michael, who at firſt heſitated to accept it, but finding that Stauracius deſigned to put out his eyes, he obliged him to retire to a convent, where he ſoon after died. Michael was poſſeſſed of private virtues, but wanted vigour to controul the ſpirit of his wife, who excited the indignation of the ſoldiers, by appearing at the head of the army, and it was generally acknowledged that he was deficient in the military talents requiſite at ſuch a criſis. He marched againſt the Bulgarians, ventured upon an engagement, in which he was defeated, and returned with diſgrace to Conſtantinople, leaving a diſcontented army under the command of diſaffected generals. By their intrigues the ſoldiery proceeded to the depoſition of Michael, and offered the imperial crown to Leo the Armenian. The ſenate, the clergy, and the people of the capital ſtill adhered to Michael, but he declared that not a drop of blood ſhould be ſhed on his account, and reſigning the enſigns of ſovereignty retired with his family to a monaſtery, having filled the throne leſs than two years. He was permitted to live in peace, and in a religious retreat, during thirty-two years, which he ſurvived his abdication. Gibbon. Univer. Hiſt.

MICHAEL II., ſurnamed the *Stammerer*, a native of Phrygia, was educated among the Jews and heretical Chriſtians, and during the early period of his life, he adopted opinions that probably rendered him obnoxious among thoſe who ſtyled themſelves of the orthodox faith. When he attained to years of diſcretion he was appointed an officer under Nicephorus, and was a principal inſtrument in raiſing to the throne Leo the Armenian. During the reign of this emperor he was employed in high offices, but having incurred the ſuſpicion of conſpiring againſt his ſovereign, he was arreſted and brought to trial. At that period, conviction and accuſation followed each other of courſe, and Michael was condemned to the cruel death of being burnt in the furnace of the private baths. The execution of this ſentence, which had been fixed for Chriſtmas-day, was ſuſpended through devout ſcruples of the empreſs, and in the mean time Michael informed his friends of his danger, and threatened them with detection, unleſs they effected his deliverance. The hope of ſelf-preſervation excited them to exertion, and in conſequence of it, Leo was dethroned and murdered, but Michael with fetters on his legs was ſeated on the imperial throne in December 820. One of his firſt acts was to reverſe the late ſovereign's decrees, by recalling a number of biſhops and other eccleſiaſtics who had been baniſhed, for refuſing to comply with the late emperor's edict againſt the worſhip of images. Notwithſtanding this conduct, Michael himſelf was by no means friendly to this kind of worſhip, and tolerated it only without the precincts of the capital. He is therefore reckoned among the enemies of the Catholic church, and the calamities of his reign have been imputed to his hereſy. A revolt in the Aſiatic provinces was the commencement of a civil war, which nearly ſubverted the throne. One Thomas, at the head of a vaſt army of barbarians, over-ran Leſſer Aſia and Syria, defeated the troops ſent againſt him, and laid ſiege to Conſtantinople. At length, however, he was unſucceſsful in his efforts againſt the eſtabliſhed power, and falling into the emperor's hand, he was put to a cruel death. During theſe internal commotions, the Saracens landed in Crete, and formed a ſettlement in that iſland, from which Michael in vain attempted to expel them. During the ſixth year of his reign he married, from a convent, Euphroſyne, the daughter of Conſtantine VI., which has been imputed to him as a moſt irreligious act; it ſufficed likewiſe as an example to one of his officers, Euphemius, to gratify a licentious paſſion, by forcibly taking a nun from her convent in Sicily, which was the cauſe of the loſs of that iſland. Euphemius, in order to avoid puniſhment, fled to the Saracens in Africa, and returning with a large body of troops of that nation, endeavoured to gain poſſeſſion of Syracuſe. He loſt his life in the attempt; but the Saracens, thus introduced into Sicily, by degrees made themſelves maſters of it, as well as of the neighbouring provinces of Italy. Michael, after an unfortunate reign of nearly nine years, died in 829, and was ſucceeded by his ſon Theophilus.

MICHAEL III., grandſon of the preceding, was born in 836, and ſucceeded his father Theophilus in 842, when he was only ſix years of age. He had been educated in habits of piety and virtue by his mother Theodora, but as he grew up, he abandoned all the early impreſſions of his childiſh years, became famous for the diſſolute courſe of his life, and deſervedly obtained a place among the moſt unworthy emperors. He did not aſſume the reins of government till he was in his twentieth year, when Theodora and her daughters were obliged to quit the court and enter a monaſtery, where ſhe ſoon died of a broken heart. Michael ſeemed to rejoice in the event: while his virtuous mother was alive, her conduct was probably ſome reſtraint to his paſſions, but as ſoon as death had levelled her with the duſt, her worthleſs ſon was anxious to ſurpaſs even a Nero in his profligacy and buffoonery. In imitation of that prince, whoſe name and memory are devoted to infamy, he purſued the ſports of the circus, and took into his favour and confidence thoſe who were deemed the moſt ſkilful charioteers. He was perpetually guilty of exceſs in wine, and, in the hours of his brutal intoxication, iſſued the moſt ſanguinary commands, which his ſervants, more humane than their maſter, frequently ventured to diſobey. It was one of his amuſements to profane with mock ſolemnities the moſt ſacred ordinances of religion. Amidſt theſe follies he undertook an expedition to the Euphrates againſt the Saracens, who put him and his army to flight. He was long under the influence of Bardas, whom he raiſed to the dignity of Cæſar, and by whoſe advice the patriarch Ignatius was depoſed and impriſoned, and the learned Photius placed in his chair. In 806, Michael was induced by Bardas to undertake an expedition into Crete, to oppoſe the ravages of the Saracens, who from that iſland had made a deſcent into Thrace. This advice proved fatal to the favourite and miniſter, for having excited the jealouſy of the emperor, he ordered him to be ſtabbed in the tent of audience. This cruel and treacherous deed excited the indignation of the ſoldiers, and Michael returned privately to Conſtantinople, where he ſoon after raiſed Baſil the Macedonian, who had been the inſtrument in the aſſaſſination of Bardas, to a partnerſhip with him in the throne, and devolved upon him all the buſineſs of the ſtate. Baſil, who it is ſaid, had juſt ideas of the imperial character and duties, endeavoured by remonſtrances to reclaim Michael from his abandoned courſe of conduct. But his habits were too deeply rooted to admit of a change, and it was determined to ruin the monitor. Baſil was fortunately apprized of his danger, and reſolved to ſtrike the firſt blow, and with the aid of accomplices murdered him while aſleep, and in a ſtate of intoxication, in the year 867, in the thirty-firſt year of his age. Univer. Hiſt. Gibbon.

MICHAEL IV., a native of Paphlagonia, of obſcure birth, was brought up to the trade of a money-changer, but being introduced at the court of Romanus III., his perſonal beauty caught the eye of the licentious empreſs Zoe, who made him her chamberlain, and exacted from him attentions inconſiſtent with the homage which he owed to his ſovereign. At length the empreſs, advancing from one degree of guilt to another, poiſoned her huſband, celebrated her nuptials with Michael, and raiſed him to a partnerſhip in the throne.

This event was accompliſhed in the year 1034. The empreſs was diſappointed in the expectations which her paſſions had excited, as well on account of the ill ſtate of health which her huſband fell into, as on account of the torture which he experienced from a conſciouſneſs of the crimes in which he had participated. All authority ſoon devolved into the hands of his brother John, an eunuch, who had originally introduced him to court, and who quickly reduced Zoe to a ſtate of inſignificance, ſurrounded with ſpies, and made a priſoner in her own palace. Michael began now to endeavour to atone for his guilt by liberality to the poor, and by the endowment of churches and hoſpitals. A revolt of the Bulgarians rouſed him to exertion; he headed his army, and though in his firſt expedition he was obliged to retreat with diſgrace, in a ſecond encounter he was more ſucceſsful, and returned in triumph to Conſtantinople. Warned with the approach of death, he retired to a monaſtery, which he had himſelf founded, and in which he died, in the year 1041: having firſt nominated as a ſucceſſor his ſiſter's ſon,

MICHAEL V., ſurnamed *Calaphates*, from his father's occupation of a caulker of ſhips. He was proclaimed emperor immediately on the death of his uncle, but his reign was of very ſhort duration. His firſt ſovereign decrees were the baniſhment of his uncle John, the eunuch, and the confinement of Zoe to a monaſtery. The people, who generally take part with the oppreſſed, revolted at theſe acts of tyranny, recalled Zoe and her ſiſter Theodora, and proclaimed them joint ſovereigns. Michael was now glad to take refuge in a monaſtery, and aſſumed the religious habit, hoping to eſcape farther injury, but at the inſtance of Theodora he was deprived of his ſight, an uſual though horrible puniſhment at that period, and, with all his relations and adherents, was ſent into baniſhment, having occupied the throne only four months. Gibbon. Univer. Hiſt.

MICHAEL VI., ſurnamed *Stratioticus*, was appointed by the empreſs Theodora as her ſucceſſor on the throne, which he aſcended in the year 1056. He was already advanced in years, and enjoyed a reputation for military talents, but was wholly unacquainted with the art of government, its nature and principles. He gave himſelf up to the dominion of his eunuchs, who made an ill uſe of their influence, ſo that a conſpiracy was excited, and Iſaac Comnenus was elevated to the imperial dignity. The new emperor aſſembled an army in the eaſtern provinces, with which he proceeded towards the capital. In the neighbourhood of Nice he was met by the forces of Michael, and an engagement enſued, in which the latter were completely overthrown. Michael now ſaw that he had in vain exacted an oath from the citizens of Conſtantinople never to acknowledge Comnenus for emperor. At the approach of the conqueror, a decree was unanimouſly paſſed, inveſting him with the imperial title and authority, and a deputation of biſhops was ſent to Michael, commanding him formally to renounce the ſovereignty. "What," ſaid the fallen prince, "will you give me in exchange for the empire?" "The kingdom of heaven," they replied. He ſubmitted and retired to a monaſtery, after a reign of about a year. Gibbon. Univer. Hiſt.

MICHAEL VII., ſurnamed *Parapinaces*, the ſon of Conſtantine XI., was proclaimed emperor in the year 1071, on the defeat and capture, by the Turks, of Romanus Diogenes. He had been well educated, and had ſtudied philoſophy and rhetoric, but was unfit for the cares of the empire, which devolved upon his uncle. He was charged with diminiſhing the meaſure of corn for his own emolument, during a ſcarcity, which fixed upon him his reproachful ſurname. An invaſion of the Turks, and a revolt among his own people, forced him to reſign his crown, and retire to a monaſtery, after a reign of ſix years and a half. He died at Epheſus, having been conſecrated biſhop of that ſee. Univer. Hiſt.

MICHAEL VIII., of the noble family of Palæologi, was brought up to the military ſervice, and obtained popularity and diſtinction by the graces of his perſon and manners. In his youth he was commander of the French mercenaries in the employ of the empire. During the reign of John Vataces he was accuſed of ambitious deſigns, but cleared himſelf ſo well of the charge, that he was not only honourably acquitted, but made governor of Nice. In the year 1255, new charges were brought againſt him, and he privately withdrew to the Turkiſh ſultan of Iconium, by whom he was honourably received, and placed at the head of a body of Greeks in Turkiſh pay, with whom he diſtinguiſhed himſelf againſt the Tartars. After this he was recalled by the emperor Theodore, and at his death, in 1259, he recommended him as the guardian and protector of his ſon John, who was then a minor. He now aſſumed the title of grand-duke, and the office of regent of the empire was delegated to him. His ambition began to diſplay itſelf, and he employed every art to give ſplendour to his adminiſtration, and impreſs the people with the idea of his fitneſs for the throne. The news of a victory over the deſpot of Epirus was the ſignal for the people in Michael's intereſt to ſalute him with the title of emperor, and it was agreed that he and the young prince John ſhould wear the purple conjointly. The patriarch, with great reluctance, was induced to place the imperial crown upon the head of Michael alone, while John walked in his train, diſtinguiſhed only by a diadem of very inferior worth. This was in 1260, and in the following year Michael received the welcome intelligence of the recovery of Conſtantinople, to which city he and his court removed from Nice. He ſhewed that he was capable of acting on the moſt liberal principles: he reſtored the city to its ancient ſplendour, and encouraged the continued reſidence of the Genoeſe, Venetian, and Piſan merchants; but having attained to a good ſhare of popularity, he felt himſelf ſufficiently ſtrong to commence a new era by reigning ſole emperor. To remove his competitor from the chance of oppoſing his projects, he cauſed his ſight to be deſtroyed. For this infamous act of barbarity, the patriarch Arſenius pronounced a ſentence of excommunication againſt him, which he refuſed to recal, unleſs he would exhibit ſigns of repentance by abdicating his throne. The emperor, truſting to his own ſtrength, depoſed and baniſhed the patriarch, but he had attached to his cauſe ſo large a party among the clergy, that a ſchiſm in the Greek church was the conſequence, which continued a number of years. Michael, as a warrior and politician, was ſucceſsful in many of his projects; he recovered ſeveral of the fineſt iſlands in the Archipelago, as well as part of the Morea, from the Franks; but on the other hand, the deſpot of Epirus, and the king of Bulgaria, made incurſions into Thrace, and laid waſte the country with fire and ſword. Theſe and many other troubles induced him to ſeek the favour of the Roman ſee, by propoſing an union between the Greek and Latin churches, with an acknowledgment of the ſupremacy of Rome. This was effected at the general council of Lyons, under pope Gregory X., in 1274, an act which extremely diſguſted his own ſubjects, and he was obliged to inſtitute a violent perſecution againſt the ſchiſmatic Greeks, in order to preſerve the ſemblance of an union. This ſo irritated his own family, and the inhabitants of Conſtantinople, that he was eventually excommunicated by pope Martin IV., for the ſhare which it was known he had in the maſſacre of the French in Sicily, known by the name of the Sicilian veſpers. He died in 1283, at the age of 58, and in the 24th year of his reign. His ſon Andronicus, whom he had aſſociated with himſelf in the empire, inſtantly diſſolved the union of the churches, and refuſed his father Chriſtian burial. Gibbon. Univer. Hiſt.

Michael, Feodorovitch, czar of Ruſſia, was ſon of Theodore Nikiliz Romanof, an archbiſhop of Roſtock. After the dethronement of the czar Zuſki, in 1610, a party of Ruſſian nobles offered the crown to Ladiſlaus, prince of Poland, and a Poliſh garriſon had been admitted into Moſcow, which was the occaſion of much bloodſhed. It was after ſome time expelled by a more numerous party of Ruſſians, who elected Michael, the ſubject of this article, then a youth of ſeventeen, as new czar. He was diſtinguiſhed by his deſcent from a daughter of Ivan Vaſilevitch, and rendered dear to the nation by the virtues of his father. At the time of the election he was in a monaſtery with his mother, while his father was a priſoner in Poland; and when the propoſal was made to raiſe him to the throne, the unhappy fate of ſome of the late czars filled his mother with ſuch apprehenſions, that ſhe did every thing in her power to get him excuſed the intended honour. The ſenate, however, perſiſted in their choice, and Michael was ſolemnly elected in 1613. He was immediately involved in a war with the generals of Guſtavus Adolphus, king of Sweden, which was concluded in 1617, and in the following year a truce was made with the Poles, who had ſupported, by force of arms, the prior election of their prince Ladiſlaus, and had actually ravaged the country as far as Moſcow. In 1625, the young czar married Eudocia, the daughter of a poor gentleman of no fortune, but of great beauty and accompliſhments. The interval of peace he employed in promoting the internal proſperity of Ruſſia, and formed a commercial connection with the ſtates of the United Provinces. War was renewed with Poland in 1632, but was terminated in about two years, and from this period the czar preſerved his country in a ſtate of tranquillity, reſpected by neighbouring ſovereigns for his equity and good faith, and greatly beloved by his ſubjects, on account of the mildneſs and beneficence of his government. He died in 1645, in the thirty-third year of his reign, leaving his crown to his ſon Alexis. Coxe's Travels.

Michael Cerularius, patriarch of Conſtantinople, was raiſed to that dignity in the year 1043. He was a perſon of vaſt ambition, and a determined enemy to the church of Rome and the papal claims, and in 1053 he revived the famous conteſt between the Greek and Latin churches, which had been ſuſpended for a conſiderable time. He pleaded in his juſtification a ſacred regard to truth and the intereſts of religion, but the true and genuine cauſes were the arrogance and ambition of the Grecian patriarch and Roman pontiff. Among the meaſures to which they mutually had recourſe, in order to ſap the foundations of each other's authority and influence with the people, were accuſations of holding corrupt doctrines. Cerularius ſtruck the firſt blow, by a letter written in his own name, and in the name of Leo, biſhop of Acrida, in which he publicly accuſed the Latins of various errors. To this letter pope Leo IX. wrote a very imperious reply; aſſembled a council at Rome, and excommunicated the Greek churches. Bitter and very violent meaſures ſucceeded on both ſides till the year 1057, when a ſtruggle took place between Stratioticus and Iſaac Comnenus for the imperial crown: the patriarch embraced the intereſts of the latter, and was a chief inſtrument in raiſing him to that dignity. In the following year, the emperor being compelled by the exhauſted ſtate of the public treaſury to impoſe heavy taxes upon the people, drew from the monaſteries a part of their great wealth, with which they had been enriched by his predeceſſors. This the patriarch reſented, and threatened to pull him from the throne to which he had raiſed him, unleſs he reſtored what he had taken from the religious houſes. The emperor, without heſitation, arreſted, depoſed, and baniſhed the patriarch, and in a ſtate of exile he ſoon died. Some of this patriarch's letters remain, and are referred to by Cave, Dupin, and Moſheim.

Michael, *St.*, in *Geography*, a town of Italy, in the duchy of Mantua, on the Tartaro; 20 miles E. of Mantua.—Alſo, a town of Italy; 12 miles S.W. of Mantua.—Alſo, a ſmall iſland in the Engliſh channel, off Eaſt Looe, in Cornwall. N. lat. 50° 18′. W. long 4° 32′.—Alſo, a town of the duchy of Holſtein; 6 miles S. of Meldorp.—Alſo, a town of England, in the county of Cornwall, which, though a ſmall place without a market, ſends two members to parliament; 8 miles N.E. of Truro, and 249 W.S.W. of London. N. lat. 52° 22′. W. long. 4° 52′.—Alſo, a town of Canada, in the river St. Lawrence; 15 miles N.E. of Quebec.—Alſo, a river of Maryland, which runs into the Cheſapeak, N. lat. 38° 50′. W. long. 76° 22′.—Alſo, a town of Sweden, in the province of Savolax; 10 miles N.N.E. of Chriſtiana.—Alſo, a town of America, in the ſtate of Maryland, and county of Talbot; 21 miles S.E. of Annapolis.—Alſo, a town on the S. peninſula of St. Domingo iſland, called "Fond des Nagra;" 10 leagues N.E. of St. Louis.—Alſo, an iſland in the Atlantic, called "San Miguel," the largeſt of the Azores, diſcovered by Gonſalvo Velho Cabral in the year 1444. It is about ſixty miles in circumference, and has ſeveral towns and villages, which carry on a great trade in corn, wine, and cattle, though none of its harbours are good or ſafe. Its chief towns are Punta del Gada, and Villa Franca. The former is rendered important by its commerce, by its ſtrong caſtle, in which the Portugueſe keep a garriſon, and by its being the reſidence of the primate of the Azores. The number of inhabitants in this iſland is variouſly eſtimated, from 25,000 to 50,000. The town of Punta del Gada is ſituated in N. lat. 37° 47′. W. long. 25° 42′.

Michael, *St.*, *in Lungau*, a town of the archbiſhopric of Salzburg; 14 miles S.S.E. of Radſtadt.

Michael's *Bay*, *St.*, a bay on the W. coaſt of the iſland of Curaçoa.—Alſo, a bay of Nova Scotia, on the W. coaſt of the bay of Fundy.—Alſo, a bay on the E. coaſt of Labrador. N. lat. 52° 55′. W. long. 55° 40′.

Michael's *Point*, *St.*, a cape on the N.W. coaſt of Prince's iſland, in the Atlantic. N. lat. 1° 55′. E. long. 7° 1′.

Michael, *St.*, *Gulf of*, a bay on the coaſt of South America, in the S.E. part of the gulf of Panama, formed by the mouths of the rivers Congo, Santa Maria, and ſome others. In it are ſeveral iſlands, which ſhelter good ridings for ſhips, and the gulf is ſufficiently capacious for a large fleet. The ſides are ſurrounded with mangroves, growing in wet and ſwampy land.

Michael, *Order of St.*, in *Heraldry*, was inſtituted by Lewis XI., king of France, in the year 1469, but declined under the reigns of Charles IX. and Henry III. In the year 1661, Lewis XIV. regulated this order, and leſſened the number of knights; thus reſtoring its reputation, ſo that it roſe into high eſteem in France. The mantle of the order was of white damaſk, bordered all round with embroidery in gold and colours, repreſenting the collar of the order, and lined with ermine; the chaperon was of crimſon velvet, embroidered like the mantle, under which the knights wear a ſhort coat of crimſon velvet. The badge of the order is a medallion of gold, repreſenting St. Michael trampling on a dragon, enamelled in proper colours, and worn pendent to a collar, compoſed of eſcallop-ſhells, and chains of gold interwoven like knots. The knights uſually wear this badge pendent to a broad black watered ribbon.

Michael, *Order of the Wing of St.*, an order in Portugal, inſtituted in 1172 by Alphonſo, king of Portugal, in commemoration of a ſignal victory which he gained over Albarac, king of Seville, in conſequence, as he imagined, of his having ardently invoked the aid of St. Michael the archangel. The habit of the order was of white ſilk, on the left breaſt of which was embroidered a wing purple, within a circle of rays gold. The badge was a croſs fleury, fitchy gules, cantoned in baſe with two fleurs-de-lis; over the croſs, on an eſcroll, this motto, "QUIS UT DEUS."

MICHAELIS, John David, in *Biography*, a celebrated biblical critic, and profeſſor of divinity and the Oriental languages, was born at Halle, in Lower Saxony, in the year 1717. He received a private education, but the Greek language made no part of it till within half a year of its completion, a circumſtance which he never ceaſed to regret. In 1729 he was ſent to the public ſchool of the orphan-houſe, and at the ſame time he occaſionally attended his father's lectures on the Hebrew language. Here he received leſſons in divinity from Baumgærtner, but the chief benefit which he received from that profeſſor was in the philoſophical courſe. During the latter part of his time at ſchool, he acquired a great facility in ſpeaking Latin, and in thinking ſyſtematically, from the practice of diſputation, in which one of the maſters frequently exercifed him. By his Latin maſter he was taught to write Latin verſes, but as he advanced in life he renounced that ſtudy, conſidering it to be a pedantic miſemployment of time. In the year 1733, Michaelis entered into the univerſity of his native place, in order to qualify himſelf either for the clerical profeſſion, or for the chair of oriental literature, in which his father hoped to ſee him one day his ſucceſſor. Here he applied himſelf with all diligence to the ſtudy of mathematics, metaphyſics, theology, and the oriental languages. He alſo prepared himſelf for pulpit ſervices, and preached with great approbation at Halle and other places. In the year 1739 he took a degree in philoſophy, and about the ſame time he was the ſubject of a temporary melancholy, which threatened to prove a ſerious injury to his health, and which was owing to religious impreſſions, originating in certain miſconceptions of ſome of the ſcriptural precepts, to which he affixed literal interpretations. Upon his recovery, he was appointed aſſiſtant lecturer under his father, having ſhewn how well qualified he was for that ſituation, by publiſhing a ſmall treatiſe, "De Antiquitate Punctorum Vocalium." In 1741 he left his own country with a view of viſiting England, and paſſing through Holland, became acquainted with the celebrated Schultens, from whom he received many marks of the moſt friendly attention. Upon his arrival in England, he engaged to officiate for the German chaplain to the court, who was at that time in an infirm ſtate of health, and continued to preach at the palace-chapel nearly a year and a half. During this period he viſited the univerſity of Oxford, greatly increaſed his knowledge of the oriental languages, and formed an intimacy with ſome of the firſt literary characters of that age, particularly with Dr. Lowth, afterwards biſhop of London, on ſome of whoſe lectures "De Sacra Poeſi Hebræorum" he attended. Upon the return of Michaelis to Halle, he reſumed his labours in the profeſſional chair, as aſſiſtant to his father, and delivered lectures on the hiſtorical books of the Old Teſtament, the Syriac and Chaldee languages, and alſo upon natural hiſtory, and the Roman claſſics; by the exerciſe of his talents on theſe ſubjects he maintained and increaſed the fame which he had already acquired, but without having the proſpect of any immediate good eſtabliſhment. He therefore reſolved to quit Halle, and in 1745 he went to Gottingen, in the capacity of private tutor. In the following year he was made profeſſor extraordinary of philoſophy in the univerſity of Gottingen, and, in 1750, profeſſor in ordinary in the ſame faculty. In 1751 he was appointed ſecretary to the newly inſtituted Royal Society of Gottingen, of which he afterwards became director, and about the ſame time was made aulic counſellor by the court of Hanover. During the year 1750, he gained the prize in the Royal Academy of Berlin, by a memoir "On the Influence of Opinions on Language, and Language on Opinions." While the ſeven years' war laſted, in which the univerſity of Gottingen was particularly diſtinguiſhed, Michaelis met with but little interruption in his ſtudies, being exempted, in common with the other profeſſors, from military employment; and when the new regulations introduced by the French in the year 1760, deprived them of that privilege, by the command of marſhal Broglio, it was particularly extended to M. Michaelis. For this mark of his favour he was indebted to the good offices of his friend Thierry, who was in great eſteem with the miniſter. Soon after this, he obtained from Paris, by means of the marquis de Loſtange, the manuſcript of Abulfeda's Geography, from which he afterwards edited his account of the Egyptians. From this time that nobleman was Michaelis's firm friend, and had no little ſhare in procuring him the honour of being choſen correſpondent of the "Academy of Inſcriptions at Paris," in 1764, and of being elected one of the eight foreign members of that inſtitution. In the year 1760, the profeſſor gave great offence to thoſe of the clergy who ſtyled themſelves orthodox, by publiſhing his "Compendium of dogmatic Theology," conſiſting of doctrinal lectures which he had delivered by ſpecial licence from the government. Shortly after this, Michaelis ſhewed his zeal for the intereſts of ſcience and literature, by the part which he took in the project of ſending a miſſion of learned men into Egypt and Arabia, for the purpoſe of obtaining ſuch information concerning the actual ſtate of thoſe countries, as might ſerve to throw light on geography, natural hiſtory, philology, and biblical learning. He firſt conceived the idea of ſuch a miſſion, which he communicated by letter to the privy counſellor Bernſtorf, who laid it before his ſovereign Frederic V. king of Denmark. That ſovereign was ſo well ſatisfied of the benefits which might reſult from the undertaking, that he determined to ſupport the expence of it, and he even committed to Michaelis the management of the deſign, together with the nomination of proper travellers, and the care of drawing up their inſtructions. Upon the death of Geſner in 1761, Michaelis ſucceeded in the office of librarian to the Royal Society, which he held about a year, and was then nominated to the place of director, with the ſalary for life of the poſt, which he then reſigned. Two years afterwards he was invited by the king of Pruſſia to remove to Berlin, but his attachment to Gottingen led him to decline the advantages which were held out to him as reſulting from the change. In 1766 he was viſited at Gottingen by ſir John Pringle, whom he had known in England, and Dr. Franklin. With the firſt he afterwards correſponded on the ſubject of the leproſy, ſpoken of in the books of Moſes, and on that of Daniel's prophecy of the ſeventy weeks. The latter ſubject was diſcuſſed in the letters which paſſed between them during the year 1771, and was particularly examined by the profeſſor. This correſpondence was printed by ſir John Pringle in 1773, under the title of "Joan. Dav. Michaelis de Epiſtolæ, &c. LXX. Hebdomalibus Danielis, ad D. Joan Pringle, Baronettum; primo privatim mittæ, nunc vero utriuſque Conſenſu publicè editæ." In the year 1770, ſome differences having ariſen between Michaelis and his colleagues in the Royal Society, he reſigned his directorſhip. In 1775 his well-eſtabliſhed reputation had ſo far removed the prejudices which had formerly been conceived againſt him in Sweden, that the count Höpkin, who ſome years before had prohibited the uſe of his writings at Upſal, now prevailed upon the king to confer upon him the order of the Polar ſtar. He was accordingly decorated with the enſignia of that order, on which occaſion he choſe as a motto to his arms "libera veritas." In 1782 his health began to decline, which he never completely recovered; in 1786 he was raiſed to the rank of privy counſellor of juſtice by the court of Hanover; in the following year the Academy of Inſcriptions at Paris elected him a foreign member of that body; and in 1788 he received his laſt literary honour by being elected a member of the Royal Society of London. He continued his exertions almoſt to the very cloſe of life, and a few weeks before his death, he ſhewed a friend ſeveral ſheets, in MS., of annotations which he had lately written on the New Teſtament. He died on the 22d of Auguſt, 1791, in the ſeventy-fifth year of his age. He was a man of very extenſive and profound erudition, as well as of extraordinary talents, which were not leſs brilliant than ſolid, as is evident from the honours which were paid to his merits, and the teſtimony of his acquaintance and contemporaries. His application and induſtry were unwearied, and his perſeverance in ſuch purſuits as he conceived would prove uſeful to the world, terminated only with the declenſion of his powers. His writings are diſtinguiſhed not only by various and ſolid learning, but by a profuſion of ideas, extent of knowledge, brilliancy of expreſſion, and a frequent vein of pleaſantry. In the latter part of his life he was regarded not only as a literary character, but as a man of buſineſs, and was employed in affairs of conſiderable importance by the courts of England, Denmark, and Pruſſia. His works, as an author, were exceedingly numerous, of which a very long liſt is given in the General Biography. Of thoſe with which the Engliſh ſcholar has been brought acquainted, the moſt important is the "Introduction to the New Teſtament," tranſlated into Engliſh from the firſt edition, and publiſhed in 1761, in a quarto volume. In 1788, the fourth edition was publiſhed in two volumes quarto. The object of this work, which is purely critical and hiſtorical, is to explain the Greek teſtament, with the ſame impartiality, and the ſame unbiaſſed love of truth, with which a critic in profane literature would examine the writings of Homer, Virgil, &c. The firſt volume contains an examination of the authenticity, inſpiration, and language of the New Teſtament. The ſecond volume contains a particular introduction to each individual book of the New Teſtament. An Engliſh tranſlation of it has been publiſhed by the Rev. Herbert Marſh, in ſix volumes, royal octavo. Gent. Magazine, March 1792. See alſo the prefaces by Mr. Marſh.

Michaelis, John-Henry, a learned German divine and orientaliſt, the ſon of a citizen of Elrich, was born at Kettenburg, in the county of Hohenſtein, in the year 1668. He was intended for trade, but diſcovering a ſtronger inclination for ſtudy than buſineſs, he was allowed to follow the bias of his mind, and obtained admiſſion into the ſchool of St. Martin in the city of Brunſwick. Here he was appointed to inſtruct ſome of the younger ſcholars, in which employment he acquitted himſelf greatly to the ſatisfaction of the rector of the ſchool. After this he was entered of the univerſity of Leipſic, where he went through courſes of philoſophy and divinity, and alſo ſtudied the oriental languages and rabbinical Hebrew. In 1694 he quitted Leipſic for the univerſity of Halle, where he taught the Greek, Hebrew, and Chaldee with great reputation. Here he publiſhed, with the aſſiſtance of profeſſor Francke, a work entitled "Conamina brevioris Manuductionis ad Doctrinam de Accentibus Hebræorum Proſaicis." In 1696 he publiſhed another piece, entitled "Epicriſis philologica de reverendi Michaelis Beckii, Ulmenſis, Diſquiſitionibus philologicis, cum reſponſionibus ad Examen XIV. Dictor. Gen." He was now thoroughly converſant, not only with the Greek, Hebrew, and Chaldee, but likewiſe with the Syriac, Samaritan, Arabic, and rabbinical Hebrew, and having formed an acquaintance with Job Ludolf, he accompanied him to Frankfort, for the purpoſe of learning the Ethiopic language under his inſtructions. In 1699, he ſucceeded Francke in the Greek profeſſorſhip at Halle, and in 1707 was made keeper of the univerſity library. He was afterwards nominated profeſſor of divinity in ordinary, and admitted to the degree of D.D. In 1732 he was made ſenior of the faculty of divinity, and inſpector of the theological ſeminary. He died in 1738, at about the age of ſeventy. He was author of many works beſides thoſe already mentioned, the titles of which are enumerated in Moreri.

MICHAELMAS, the feaſt of St. Michael the archangel, held on the 29th of September.

Michaelmas *Iſland*, in *Geography*, a ſmall iſland at the entrance of king George III.d's Sound, on the S.W. coaſt of New Holland; 4 miles N.N.E. of Bald Head.

MICHAILA, St., a town of Ruſſia, in the government of Revel; 36 miles S. of Revel.

MICHAILOV, a town of Ruſſia, in the government of Riazan; 24 miles S.S.W. of Riazan. N. lat. 54° 20'. E. long. 38° 38'.

MICHALOWKA, a town of Poland, in Volhynia; 52 miles N. of Zytomiers.

MICHAUT, Pierre, in *Biography*, ſecretary to the count de Charolois, ſon of the duke of Burgundy, in 1466, was author of the poem, entitled "Doctrinal de la Cour, ou Danſe des Aveugle;" Inſtructions for the Court, or Blind-man's-buff. From a beautiful copy of this ſatirical poem, finely illuminated, M. Laborde has given repreſentations of all the muſical inſtruments uſed in France during the 15th century in the hands of the performers. Eſſai ſur la Muſ.

MICHAUXIA, in *Botany*, named by M. L'Heritier, in one of his monographs, in honour of his friend Andrew Michaux, botaniſt to the late king of France, Louis XVI., and well known by his botanical expeditions to Syria (where he gathered this plant), Perſia, North America, and New Holland. The *Flora Boreali-Americana*, often quoted by us, the fruit of his ſix years' labours in America, was publiſhed by his ſon. We have already offered ſome remarks on the name of the preſent genus. (See Medium.) As to its botanical ſtability, none who conſider the variety of ſhapes in the corollas of reputed *Campanulæ*, can feel quite ſure on the ſubject; but the author of this genus had contemplated the queſtion with ſingular attention, and with all his wonted ſagacity. He declares *Michauxia* to differ from *Campanula*, as *Chlora* from *Gentiana*, the number of the parts being as eight to five, and the corolla that of a *Phyteuma*, but in eight diviſions. It is at leaſt a good artificial genus, and now generally adopted, except that Juſſieu adheres to one of its ancient names. (See Mindium.) L'Herit. Monogr. 3. Schreb. 840. Willd. Sp. Pl. v. 2. 342. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 353. Lamarck Dict. v. 4. 134. Illuſtr. t. 295. (Mindium; Juſſ. 164.)—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Campanaceæ*, Linn. Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, in ſixteen lanceolate unequal ſegments, every other one reverſed. *Cor.* of one petal, wheel-ſhaped, much larger than the calyx, in eight very deep, widely ſpreading, linear-lanceolate, equal ſegments, revolute at their points. Nectary of eight valves, bearing the ſtamens. *Stam.* Filaments eight, awl-ſhaped, permanent; anthers vertical, linear, very long, preſſed cloſe to the ſtyle. *Piſt.* Germen inferior, turbinate; ſtyle columnar, permanent; ſtigma in eight awl-ſhaped, revolute ſegments. *Peric.* Capſule turbinate, abrupt, of eight angular cells, without valves, opening by pores at the baſe. *Seeds* very numerous, oblong, ſmall, affixed to the proper receptacle of each cell, which unites with the central column.

Eſſ. Ch. Calyx in ſixteen deep ſegments, alternately reflexed. Corolla in eight deep ſegments. Nectary of eight valves, bearing the ſtamens. Capſule of eight cells, opening by pores at the baſe. Seeds numerous.

Obſ. It muſt be allowed that the number of cells in the fruit being equal to that of the parts of the flower, is very different from *Campanula* and *Phyteuma*, and alſo that there is no botanical analogy between eight and five or three; ſo that as far as number can be allowed to guide us, no genus can be better defined.

1. M. *campanuloides*. Rough-leaved Michauxia. L'Herit. Monogr. t. 1, 2. Curt. Mag. t. 219. (Μηδιον; Dioſc. book 4. chap. 18. Medium Dioſcoridis, or Mindium Rhazis; Rauwolf. It. 284. f. 284. Dalech. Hiſt. append. 33. Bauh. Hiſt. v. 2. 805. Campanula peregrina maxima, laciniatis foliis; Moriſ. ſect. 5. t. 3. f. 31.)—Gathered by Rauwolf in Syria, near Tripoli; and by Michaux, above 200 years afterwards, in the ſame country. Labillardiere is alſo ſaid to have found it on mount Lebanon. It was raiſed from ſeed at Paris; and was communicated to Kew garden by L'Heritier in 1787, but being a greenhouſe biennial plant, and rarely ripening ſeeds in England, is now not to be met with. The *root* is ſpindle-ſhaped, whitiſh, milky, like the reſt of the plant. *Stem* from two to ſix feet high, erect, round, leafy, rough, more or leſs branched, many-flowered. *Leaves* ſcattered, lanceolate, acute, jagged, very rough, wrinkled, dark green, ſeſſile, claſping the ſtem; the lower ones ſtalked; the radical ones heart-ſhaped, ſoon diſappearing. *Flowers* ranged along the ſides, and ſolitary at the ends of the branches, ſeſſile, drooping, two inches in diameter, very handſome and ſingular, not unaptly compared by Curtis to ſome diſtant reſemblance of a Paſſion-flower. *Corolla* white, with a tinge of purple at the outſide. *Stamens* and *ſtyle* green, the upper half of the latter loaded with pollen, lodged by the *anthers* among the hairs which inveſt it, before they retire and curl themſelves together.

L'Heritier's two plates, of this plant and its fructification, are the fineſt poſſible, ſcarcely wanting the aſſiſtance of colour to give a complete idea of the objects, and even vieing, in that reſpect, with the prints of the Houghton Van Huyſums. The rude cuts of Rauwolf, Daclechamp, and Bauhin are expreſſive enough. Moriſon's engraving, copied and perverted as uſual, from them, is very bad. Curtis's plate is neceſſarily a fragment, but faithful. Tournefort and Linnæus were unaccountably deceived concerning this fine plant. The former confounded it with his own *Campanula foliis profundè inciſis, fructu duro*; Tourn. Cor. 3, which is *C. lyrata*; Lamarck Dict. v. 1. 588. Hence Lamarck was led into the ſame error, which he corrected in his v. 4. 134, as above quoted; and hence Mr. Saliſbury, in his Prodromus 127, calls our *Michauxia*, *Campanula lyræfolia*, citing Lamarck by miſtake, and aſſerting that its fruit is "exactly that of a *Campanula*." Linnæus confounded our plant with *C. laciniata*, Sp. Pl. 237, figured in Tournefort's Voyage, v. 1. t. 99, than which few things, at all akin, can be more diſtinct. He alſo, by the ſpecific name of *Medium*, applied to another kind of *Campanula*, very common in gardens, ſeemed to conſider that as the μηδιον of Dioſcorides, which we apprehend to be no leſs a miſtake. Dr. Sibthorp ſuſpected *C. laciniata* might be the true μηδιον, being probably unacquainted with the *Michauxia*. The latter ſurely anſwers beſt to the original deſcription, ſuch as it is, of which we here ſubjoin a tranſlation. "Medium grows in ſhady ſtony ſituations. Its leaves are like ſuccory (σερις). Stem three cubits high. Flowers purple, large, and circular. Fruit (or ſeed) ſmall, like that of *Cnicus*. Root a ſpan long, as thick as a walking-ſtick." The colour of the flowers probably varies, from different ſhades of purple, to white.

MICHAUXIA, in *Gardening*, comprehends a plant of the herbaceous flowering, exotic kind, of which the ſpecies cultivated is the rough-leaved michauxia (M. campanuloides.)

Method of Culture.—It may be raiſed from ſeed procured from its native ſituation, and ſown in the early ſpring ſeaſon in pots, and plunged in a hot-bed, or ſimply on a moderate hot-bed. When the plants have attained a little growth, they ſhould be removed into ſeparate pots, and be replunged in the hot-bed. This muſt afterwards be managed as tender green-houſe plants.

Plants of this ſort afford variety in collections of this nature.

MICHAW, in *Geography*, a town of Pruſſia, in Pomerelia; 22 miles W.N.W. of Dantzic.

MICHEL, St., a ſmall iſland in the gulf of Venice, near Venice, where the Proteſtants, who trade thither, have purchaſed ground on which to build a church.—Alſo, a town of Italy, in the Veroneſe; 14 miles N.W. of Verona.—Alſo, a town of France, in the department of Mont Blanc, and chief place of a canton, in the diſtrict of St. Jean de Maurienne; 7 miles S.S.E. of St. Jean. The place contains 1450, and the canton 6244 inhabitants, on a territory of 342½ kiliometres, in 8 communes.

MICHEL *di Capa, St.*, a town of Peru, in the juriſdiction of Arica, on the borders of a large foreſt of pimento, which is ſaid to produce annually 300,000lbs. weight of that ſpice.

MICHEL-*Gemote*, in *Hiſtory*. See PARLIAMENT.

MICHEL-*Synoth*. See PARLIAMENT.

MICHELAU, in *Geography*, a town of Pruſſia, in the territory of Culm; 36 miles E. of Culm.—Alſo, a town of Sileſia, in the principality of Brieg; 8 miles S.S.E. of Brieg. N. lat. 50° 46′. E. long. 17° 35′.

MICHELBACH, a town of Germany, in the county of Schwarzenburg; 20 miles W. of Anſpach.

MICHELI ROMANO, in *Biography*, a diſciple of Soriano, and a famous canoniſt, who flouriſhed at the latter end of the 16th century, and beginning of the next; author of a very curious and ſcarce work, publiſhed at Venice, 1615, entitled "Muſica vaga et artificioſa continente motetti con oblighi, e canoni diverſi, tanto per quelli che vorrano profeſſare d'intendere diverſi ſtudii della Muſica," folio; or, Artful and curious Muſic, as well for thoſe who receive delight from the performance of it, as for others who make muſic their peculiar ſtudy. Hiſt. vol. iii. p. 519.

MICHELI, JAMES-BARTHOLOMEW, an able mathematician, was born of an ancient family at Geneva, in 1692. He entered into the French military ſervice, and became a captain. In 1738, he retired to his native country, where he applied chiefly to mathematical and philoſophical ſtudies. He conſtructed a number of charts, invented a new thermometer,

mometer, and compoſed ſeveral memoirs, printed at Baſle. Theſe are on meteorology and the temperature of the globe; light; the comet of 1680; the univerſal deluge; &c. He ſurveyed the Glaciers of Switzerland, of which he took ſeveral views, which have been engraved. In the troubles which agitated his country he was a ſharer, and was impriſoned a long time by order of the government of Berne. He died in 1766.

MICHELI, PETER ANTHONY, an Italian botaniſt of great celebrity, particularly in what is now called the cryptogamic department, was born at Florence, December 11, 1679. His parents were indigent, and took but little care of his education. He is ſaid, nevertheleſs, to have been deſtined to the occupation of a bookſeller, but an inſatiable thirſt after natural knowledge over-ruled all other objects. Content in the humbleſt poverty, he reſigned himſelf to his favourite purſuit, truſting to that, even for his means of livelihood. Nor was he diſappointed. His good character, and diſtinguiſhed ardour, ſoon procured him the notice and favour of the marquis Coſmo da Caſtiglione, in whoſe family a taſte for Botany has been almoſt hereditary, and for whom Micheli in his early youth made a collection of Umbelliferous plants, which even then proved his accuracy and diſcernment. This gentleman introduced him to the celebrated count LAWRENCE MAGALOTTI, (ſee that article,) by whom he was preſented to his ſovereign, the grand duke Coſmo III. The *Inſtitutiones Rei Herbariæ* of Tournefort had juſt appeared at Paris; and the firſt pledge of the grand duke's favour, was a preſent of that book, which to Micheli, who had hitherto found the want of ſome ſyſtematic guide, was a moſt important and welcome acquiſition. He ſpeedily adopted the tone of his leader, with reſpect to generic diſtinctions and definitions, and improved upon him in a more frequent adaptation of original ſpecific ones.

In the autumn of 1706, the care of the public garden at Florence, founded by Coſmo I., was confided to Micheli, he being appointed botaniſt to the grand duke. He was commiſſioned to travel, not only in Italy, but in various diſtant countries, to collect plants, and to eſtabliſh a correſpondence, for the benefit of his truſt. By the co-operation of his friends Franchi and Gualtieri, the garden was enriched from the then more flouriſhing one at Piſa; and a Botanical Society was inſtituted at Florence in 1717, which greatly promoted the intereſts of the ſcience. In the ſummer of that year, the great William Sherard, returning from Smyrna to England, viſited Florence in his way, and formed a friendſhip with Micheli, that continued till his own deceaſe in 1728. A frequent correſpondence, and interchange of ſpecimens, took place between them, as amply appears by the collections preſerved at Oxford, and by the writings of Micheli.

The ſubject of our memoir continued his ſcientific ſtudies, as well as his bodily exertions in frequent journies. The fruit of the former was the publication of his great work, entitled *Nova Plantarum Genera*, a folio of 234 pages and 108 plates, in 1729. The reſult of his journies proved but too ſoon diſaſtrous. He ſpent near three months, from the 4th of September to the 30th of November 1736, in an excurſion to the north of Italy, viſiting the famous mount Baldus, and the Venetian iſles; but he caught a pleuriſy, from the conſequences of which he never recovered, dying at Florence, January 2, 1737, new ſtyle, in the 58th year of his age. He was buried in the church of Santa Croce, amongſt the aſhes of ſome of the greateſt men of his country, and of the civilized world, where a neat marble tablet was erected to his memory by his aſſociates. The ſimple and elegant inſcription was probably compoſed by his learned friend Antony Cocchi, to whom he always confided the reviſion of his Latin works, before publication, and who delivered an Italian oration in his praiſe, in the council chamber of the Old Palace, Auguſt 7, 1737, which was ſoon after publiſhed. The epitaph is as follows.

PETRUS ANTONIUS MICHELIUS

vixit annos LVII dies XXII in tenui re
beatus omnis hiſtoriæ naturalis
peritiſſimus magnorum etruriæ
ducum herbarius inventis et ſcriptis
ubique notus ac propter ſapientiam
ſuavitatem pudorem optimis
quibuſque ætatis ſuæ egregie carus
obiit IV nonas Januarias MDCCXXXVII
amici ære conlato titulum poſuere.

It does not appear that Micheli was ever married. He is deſcribed by his contemporaries as a man of the moſt pleaſing, modeſt, and liberal manners, no leſs ready to communicate, than eager to acquire, knowledge. His bodily conſtitution was good; his health uninterrupted; till his laſt illneſs, which was of ſo decided a nature, that he placidly yielded to his fate, not only with the Catholic ceremonies, but with the feelings of a Chriſtian. His friend Cocchi informs us, that "he was endued with a clear and conciſe natural eloquence; and although the poverty of his parents deprived him of the advantages of a learned education, he had, by his own application, acquired, with wonderful felicity, a knowledge of Latin."—"The writings of the moſt eminent botaniſts were ſo familiar to him, that he had learned to expreſs his ideas in Latin, by no means amiſs, he having a very quick perception as to any barbarous expreſſions."

We are anxious to collect every particular of the life and character of the author of ſuch a book as the *Nova Plantarum Genera;* a work much more extenſive in its compaſs than the *Hiſtoria Muſcorum* of Dillenius, ſuperior in phyſiological merit, as well as in technical ſtyle of definition, though deficient in hiſtorical and critical diſquiſition, as well as in deſcription. It is to be lamented that Micheli fell ſo much into the dry catalogue ſtyle of Tournefort, though he has greatly improved upon his model; becauſe they have neither of them attained any thing like the technical ſynoptical terſeneſs and preciſion of ſubſequent times. The great merit of Micheli conſiſts in his accurate ſcientific illuſtration of ſome of the moſt difficult tribes of plants, which Tournefort had left unattempted. The order of the *Calamariæ*, and particularly the difficult genus *Carex*, firſt aſſumed an intelligible form under his hands. The ſeeds of the latter, and their coverings, were firſt reſorted to, with the happieſt effect, for ſpecific diſcrimination. (See CAREX.) A vaſt number of ſpecies of the hitherto neglected genus *Lichen* were aſcertained and well delineated. It is with great injuſtice that Dillenius, whoſe figures of the cruſtaceous and imbricated Lichens are the meaneſt part of his work, charges Micheli with erring on the ſide of luxuriance in his repreſentations. He had indeed more favourable ſubjects of inveſtigation, owing to the climate in which he lived; for in Italy the plants in queſtion are found vaſtly more luxuriant and prolific than in the north of Europe; and we can aver that the figures and deſcriptions of Micheli are as faithful as thoſe of Dillenius himſelf; they cannot be more ſo. (See DILLENIUS.) The parts of the flowers of Moſſes, properly ſo called, were firſt diſplayed in the work of Micheli, though he did not underſtand their real uſes. (See MUSCI.) He was equally ſucceſsful in the collateral families, now termed *Hepaticæ*, founding the genera of *Blaſia*, *Marſilea*, *Jungermannia*,

nia, *Sphærocarpus*, *Anthoceros*, *Targionia*, &c. In the natural order of *Fungi*, till then almoſt totally neglected, he diſplayed great accuracy and originality, and gave the firſt ſynoptical diſtribution of thoſe difficult vegetables, by which his followers have profited. Many genera of the more perfect or phænogamic plants are alſo illuſtrated or founded in this work of Micheli; but neither their diſtinctions nor their nomenclature is, in general, ſo good as the former. In ſpecific diſtinction, he was too prone to raiſe varieties to the importance of ſpecies, of which his numerous kinds of *Trifoliaſtrum* are inſtances.

Our author had extended his ſtudies to the Submarine plants, or Sea-weeds, and had numerous plates engraved, for publication in a ſecond volume, had his life been prolonged. Of theſe plates a ſet of impreſſions, procured by the late lord Bute, was bought at his lordſhip's ſale, by the Rt. Hon. ſir Joſeph Banks, and is, through his liberality, acceſſible to all. Another ſet, now in the Linnæan library, was given to its preſent poſſeſſor by Dr. Targioni Tozzetti of Florence, whoſe father purchaſed all Micheli's remains, among which are valuable manuſcripts of various kinds; eſpecially the deſcriptions of theſe plates. There are likewiſe ſome rude drawings of *Orchideæ*, the work we believe of Micheli himſelf. His pencil however was not ſufficiently excellent to enable him to be in general his own draughtſman; ſtill leſs could he, like Dillenius, engrave the plates he publiſhed. In ſtudying the above-mentioned marine productions, it is not wonderful, nor reprehenſible, that he then confounded corals and corallines with plants, and made a genus out of the preſent *Sertularia*, which he called *Dillenia*.

Micheli had prepared an alphabetical catalogue of the plants in the garden, of which he had the ſuperintendance. This was publiſhed in 1748, in folio, with ſeven botanical plates, beſides a plan of the garden, under the title of *Catalogus Plantarum Horti Cæſarei Florentini*; for the race of the Medici, and the golden age of Florence, had now paſſed away. Their imperial ſucceſſors, however, patronized ſcience, and the volume in queſtion is dedicated to the emperor Francis I., by its editor John Targioni Tozzetti, who has prefixed an excellent hiſtorical preface of his own; as well as a more oratorical Italian diſcourſe, upon natural hiſtory, by the before-mentioned Antony Cocchi.

The ſtudies of Micheli were extended to foſſils, and petrifactions, of both which numerous ſpecimens remain in his muſeum; but he publiſhed nothing reſpecting them. An account of three of his botanical tours in Italy is ſaid, by Haller, to be extant, in the ſixth volume of Travels publiſhed by Targioni Tozzetti; but of this publication we have ſeen only the firſt volume. We ought alſo to mention his firſt publication in 1723, an octavo pamphlet on *Orobanche*, in Italian, chiefly with a view to its extirpation, as a noxious weed. This is ſaid to be beſt accompliſhed by eradicating the beans or other plants, on which the *Orobanche* may be perceived to have fixed itſelf, in the month of April; by which proceedure, being an annual herb, its propagation is cut off. Works of Micheli. Smith's Tour on the Continent. Cocchi Elogio di P. A. Micheli. Haller Bibl. Bot. S.

MICHELIA, in *Botany*, ſo denominated by Linnæus, in memory of the great Florentine botaniſt Micheli. (See the laſt article.) Linn. Gen. 278. Schreb. 374. Willd. Sp. Pl. v. 2. 1260. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 332. Juſſ. 280. Lamarck Dict. v. 1. 690. Illuſtr. t. 493. Gærtn. t. 137?—Claſs and order, *Polyandria Polygynia*. Nat. Ord. *Coadunatæ*, Linn. *Magnoliæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, coriaceous, ſplitting longitudinally, falling off as the flower expands. *Cor.* Petals numerous, lanceolate, in ſeveral rows; the outer ones largeſt. *Stam.* Filaments numerous, ſhort, linear, inſerted into the common receptacle of the piſtils below the germens; anthers terminal, linear, of two cells, burſting longitudinally at the inner ſide, ſurmounted by a bluntiſh point. *Piſt.* Germens numerous, imbricated in an oblong ſpike; ſtyles none; ſtigmas reflexed, obtuſe. *Peric.* Berries equal in number to the germens, coriaceous, globoſe, of one cell, diſpoſed in a large cluſter. *Seeds* from four to eight, angular on one ſide, convex on the other.

Eſſ. Ch. Calyx of one leaf, coriaceous, immediately deciduous. Petals numerous, in ſeveral rows. Berries numerous, with ſeveral ſeeds.

1. M. *Champaca*. Sweet Yellow Michelia, or Champawk. Linn. Sp. Pl. 756. (Champacam; Rheede Hort. Mal. v. 1. 31. t. 19. Sampacca; Rumph. Amboyn. v. 2. 199. t. 67. Champe; Bauh. Pin. 470.)—Leaves lanceolate, ſomewhat ovate. Calyx externally ſilky.—Native of Malabar, in ſandy places, flowering twice in the year, but not bearing fruit till it is very old. *Rheede*. Commonly cultivated throughout India, eſpecially in the Malay countries, but never found wild. *Rumphius*. Cultivated at Orford, Lancaſhire, by John Blackburne, eſq. in 1779. *Hort. Kew.* This *tree* is celebrated for the exquiſite perfume of its *flowers*, of which moſt Europeans, who have been in India, ſpeak with rapture, though ſome find it too powerful. The natives adorn their heads with theſe *flowers*, both for the ſake of the perfume, and for the elegant contraſt of their rich orange colour, with their own black hair. The *tree* is of a moderate ſize; the bark of its *root* red, bitter, and very acrid, according to Rheede. *Branches* round, alternate, ſmooth, leafy, chiefly at their extremities. *Leaves* alternate, ſtalked, a ſpan long, ovato-lanceolate, entire, taper-pointed; a little tapering at the baſe; ſomewhat ſilky when young, but finally ſmooth, or nearly ſo; rather glaucous beneath; furniſhed with a midrib, and many tranſverſe, oblique, parallel veins, connected by innumerable fine reticulations. *Footſtalks* an inch long, minutely hairy, channelled above. *Stipulas* none. *Flowers* not unlike a double narciſſus, axillary, ſolitary, on ſimple, ſhort, very thick ſtalks. *Petals* elliptic-lanceolate, the colour of the yolk of an egg, the outermoſt about an inch and a half long. *Calyx* ovate, ſcarcely an inch long, finely ſilky, ſplitting down one ſide, and ſeparating from the baſe, before the flower can expand. *Fruit* reſembling a large bunch of grapes, of a pale yellowiſh-white when ripe, very acrid to the taſte, and unpleaſant to the ſmell, according to Rheede. The *ſeeds* are from four to eight, angular from mutual preſſure, the ſize of ſmall peas.

Such is the real *M. Champaca*, of which we have obtained fine ſpecimens from Madras, and have conſequently been enabled to correct the deſcription of the *calyx*, which authors have greatly miſunderſtood. Rheede and Rumphius miſled Linnæus to ſuppoſe there was none; for he originally deſcribed this plant from books only. Afterwards procuring, by the name of *Tſiampacca lalac*, a ſpecimen of our *Magnolia pumila*, (ſee MAGNOLIA, n. 7, where it will appear how much ſuch exotic names are liable to corruption,) he miſtook this for *Michelia Champaca*, and thence altered the character of the genus, in his *Mantiſſa* 140, attributing to it a calyx of three oblong petal-like leaves. How Lamarck diſcovered and figured a ſhort permanent three-leaved calyx we know not. Linnæus had in his herbarium the real *Champaca*, inſcribed *Tſiampacca coenang*, as far as we can decypher the ſcrawl, which he marked *M. Tſiampacca*.

Tſiampacca. Our Indian botanical friends aſſure us this is only the ſame name ſpelt differently, and therefore ſome contend for the exiſtence of only one ſpecies of *Michelia.* We ſhall endeavour to eſtabliſh a ſecond.

2. M. *ſylveſtris.* Wild Whitiſh Michelia. (M. Tſiampacca; Linn. Mant. 78. M. euonymoides; Burm. Ind. 124. Sampacca ſylveſtris; Rumph. Amb. v. 2. 202. t. 68.)—Leaves elliptical. Calyx nearly ſmooth.—Linnæus received this from India by the name of *Tſiampacca poeti,* or White Champawk, which agrees with the name and ſynonym in Rumphius. It differs from the former in the broad elliptical ſhape, and perfect ſmoothneſs, of its *leaves.* The *calyx* alſo is ſmooth, having merely a very ſlight ſilkineſs at the tip; the reſt being finely granulated. Our ſpecimens ſhew nothing further, but they agree with all the above ſynonyms perfectly, except that Burmann has a very erroneous quotation of Sloane, and moreover ſays the Javaneſe call this ſpecies *Tſiampacca conneng,* which Linnæus, we know not on what authority, applied to the former. We could not retain Burrmann's ſpecific name, becauſe it ſeems ſuggeſted by Sloane's ſynonym, and is totally irrelative to our plant. *Tſiampacca* and *Champaca* are, as we have ſaid, ſynonimous and ambiguous. We therefore adopt a name from the manuſcripts of Linnæus, which it is pity he altered. Rumphius deſcribes the *M. ſylveſtris* as a more tall and upright *tree* than the *Champaca,* with larger and broader *leaves,* the breadth of four fingers (exactly as we have them); and he very accurately remarks that they have fewer ribs, or tranſverſe veins. *Flowers* exactly like the former, except that their *petals* are broader, whitiſh, or ſtraw-coloured, with but a ſlight degree of odour. When cultivated however they acquire a ſtronger and more delightful ſmell, though not equal to the *Champaca.* The *fruit* is much the ſame, though the *ſeeds,* which vary from two to ſeven in number, are ſcarcely ſo red. It is very poſſible that this may, after all, be only the wild ſtate of the *Champaca,* but we have now furniſhed ſufficient materials to prevent any future miſtake of either, and we truſt the generic character is ſufficiently eſtabliſhed. Gærtner obtained from Thunberg, as the fruit of *M. Tſiampacca,* what looks moſt like a *Magnolia,* and we cannot but think, the more it is compared with Rumphius, whoſe figures, we muſt always recollect, are diminiſhed, the more it will prove different from his.

If Andrews's tab. 229, *Magnolia fuſcata,* (ſee MAGNOLIA n. 8,) be compared with our deſcription of the *calyx* of *Michelia,* they will be found to agree. The *petals* however are thoſe of a *Magnolia,* and we muſt ſtill remain in doubt for want of the *fruit* of this elegant ſhrub. It is curious that Linnæus had a ſpecimen of this *Magnolia,* which he very incautiouſly marked *Michelia Tſiampacca.* On diſſecting a flower, he found the *calyx* of three leaves. Whether this be correct or not, though we have three coloured figures of this plant in our periodical publications, none of them enables us to form even a conjecture, except Andrews, and this but incidentally. We have ſome ſuſpicion that Loureiro's *Liriodendron Figo* may poſſibly be the ſame with *Magnolia fuſcata,* but unfortunately his ſlight mention of the fruit affords no certain information as to its genus. The *calyx* however, being of one leaf, agrees. He ſays his plant is called at Macao *Fula Figo.* Has this any connection with the *Fulle,* Bauh. Pin. 470?

This fine tribe of plants is ſo little underſtood by botaniſts, and ſo many errors have attended the hiſtory of the *Michelia,* which the Linnæan herbarium alone could explain or remove, that we have been more particular than uſual, and ſtill the ſubject is far from being exhauſted. S.

MICHELIA, in *Gardening,* comprehends a plant of the tree or ſhrub kind, of which the ſpecies commonly grown is the champaca, or Indian michelia, (M. champaca.)

Method of Culture.—This is a plant which may be increaſed by ſeeds, layers, and cuttings, being managed in the ſame manner as the more tender green-houſe plants afterwards.

They afford variety in collections of ſtove plants.

MICHELPACH, in *Geography,* a town of Auſtria; 12 miles S.E. of St. Polten.

MICHELSDORF, a town of Bohemia, in the circle of Chrudim; 9 miles N.E. of Leutmiſchl.

MICHICOUI, a river of America, in the ſtate of Vermont, which runs into lake Champlain. N. lat. 44° 55′. W. long. 72° 56′.

MICHIGAN, the largeſt lake in the territory of the United States, lies between 41° 8′, and 45° 40′ N. lat. and between 84° and 87° W. long. Its length is eſtimated at 260 miles from N. to S., and its circumference at 945 miles; and, according to Mr. Hutchins, it contains 10,368,000 acres. It is navigable for ſhips of any burden. It communicates with lake Huron at the N.E. part through the ſtraight of Michillimakkinak, which is ſix miles broad, with a fort of its name on an iſland at its mouth. In this lake are ſeveral kinds of fiſh, and particularly excellent trout, weighing from twenty to ſixty pounds. On the N.W. parts of this lake the waters paſs through a narrow ſtrait, and branch out into two bays; that to the northward is called Noquet's bay, and the other to the ſouthward Puans, or Green bay, which forms with the lake an extended peninſula, called cape Townſend, or Vermilion point. About thirty miles S. of Bay de Puans, is lake Winnebago, which communicates with it, and a very ſhort portage interrupts the communication ſouth-weſtward from Winnebago lake through Fox river, then through Ooiſconſm, into the river Miſſiſippi. Chicago river, at the S.W. extremity of lake Michigan, furniſhes a communication, interrupted by a ſtill ſhorter portage, with Illinois river. Lake Michigan receives many ſmall rivers from the W. and E., ſome of which are 150 and even 250 yards broad at their mouths.

MICHILLIMAKKINAK, called by the Canadians "La Groſs Iſle," the name of an iſland, fort, and village, on the S.W. ſide of the ſtraits of the ſame name. The iſland on which the village and fort ſtand is very barren, but, as the grand rendezvous of the Indian traders, a conſiderable traffic is carried on; and its ſituation will probably render it a place of commercial importance. It is within the line of the United States, and contains 251 inhabitants: diſtant about 200 miles N.N.W. from Detroit. N. lat. 45° 48′ 34″. W. long. 84° 30′.

MICHILLIMAKKINAK, *Little,* a river on the N.W. territory of America, which enters the S.E. ſide of Illinois river, by a mouth fifty yards wide, at which there are between thirty and forty ſmall iſlands. It runs a N.W. courſe, and is navigable about ninety miles. On its banks is plenty of good timber, *viz.* red and white cedar, pine, maple, walnut, &c.; and here are alſo coal-mines.

MICHIPICOTEN, a river which runs into lake Superior, on the N.E. ſide of the lake. At its mouth it forms a bay of its own name; and on the W. part of the bay is a large iſland, ſo called, cloſe to the land. On the E. ſide of the mouth of the above river, in N. lat. 47° 56′, is Michipicoten Houſe, belonging to the Hudſon's Bay company.

MICHISCOUI, the Indian and preſent name of the moſt northerly river in Vermont. It is navigable ſeven miles from its mouth.

MICHISCOUI *Tongue,* a long point of land which extends ſoutherly.

ſoutherly into lake Champlain from the N.E. corner of Vermont, on the W. ſide of the bay of this name, and forms the townſhip of Allburg.

MICHO, the name of a cove or bay of Canada, on the S. coaſt of the river St. Lawrence; 218 miles below Quebec. N. lat. 49° 5′. W. long. 66° 30′.

MICHOWITZ, a town of Bohemia, in the circle of Kaurzim; 12 miles W.S.W. of Kaurzim.

MICKELSO, a ſmall iſland in the Baltic, E. of Aland. N. lat. 60° 12′. E. long. 20° 5′.—Alſo, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 63° 27′. E. long. 21° 19′.

MICKERY, a ſmall iſland in the Frith of Forth; 8 miles N.W. of Leith. N. lat. 56° 2′. W. long. 3° 17′.

MICKLE, WILLIAM JULIUS, in *Biography*, was born, in 1734, at Langholm, in Dumfriesſhire, Scotland, of which place his father was miniſter. After a preparatory education under his father, he was ſent to the High-ſchool at Edinburgh, where he was continued till he was ſixteen years of age, when he went into the counting-houſe of a relation to be initiated in the art of brewing. He remained in this buſineſs a few years; but a taſte for reading and poetry rendered him unfit for the neceſſary routine of trade. In 1763, he quitted Edinburgh for London, with a view of ſoliciting employment in the ſea ſervice, to which he felt a ſtrong inclination. He took in his pocket a poem, entitled "Providence," which he contrived to get introduced to lord Lyttleton, at that period a patron of the muſes, but with reſpect to our author it produced nothing but a complimentary correſpondence. Several projects for a ſettlement at home and abroad, in a commercial or official ſituation, having failed, he at length accepted the humble ſituation of corrector to the Clarendon preſs at Oxford. In 1767, he publiſhed his poem, entitled "The Concubine," the title of which, after it had gone through three editions, was changed to "Sir Martyn," as the firſt title had occaſioned ſome miſconception of its nature. It was written in the ſtyle and manner of Spenſer, and diſplays much poetical imagery, with a conſiderable facility of verſification. Its object is to expoſe the evils and diſgraces reſulting from illicit love, terminating in concubinage. His name now became known to the public, and a way was prepared for the reception of his moſt conſiderable performance, which was the tranſlation of the "Luſiad" of Camoens. He had, at firſt, doubts of the probable ſucceſs of ſuch a work, and publiſhed, as a ſpecimen, the firſt book; and being encouraged by his friends and the public, he reſigned his office at the Clarendon preſs, and took lodgings at a farm-houſe, in order that he might devote his whole attention to the taſk. His tranſlation was finiſhed in 1775, and publiſhed under the title of "The Luſiad, or the Diſcovery of India," with an introduction, containing an account of the Portugueſe conqueſts in that country, the life of Camoens, a diſſertation on the Luſiad, &c. &c. This work obtained for him a high rank among the Engliſh poets, and it is ſaid by an able critic, that, "as far as ſplendour of diction and melody of verſification can go to eſtabliſh a poetical character, the name of Mickle has not many ſuperiors." No metrical tranſlator ever took greater liberties with his original than Mickle; and it is certain that his poem, and that of Camoens, have little more in common than the plan and outline. Their difference conſiſts not only in the language, but in many circumſtances and incidents of the piece. Thus Mickle has painted a ſtorm and a naval action in three hundred lines, of which there is not the ſmalleſt veſtige in the original. His ſuppreſſions are as frequent as his interpolations, of which the reader ſhould be apprized, if he go to compare the Portugueſe poem with its Engliſh tranſlation. His purpoſe was to give a poem that might live in the Engliſh language, which he has attained. Previouſly to the publication of the Luſiad, he had written a tragedy, entitled the "Siege of Marſeilles," which being offered to Garrick, was refuſed as unfit for the ſtage. The ſame ſentence was paſſed upon it by Mr. Harris and Sheridan, and he ſubmitted, after a time, to their deciſion with decent fortitude. In 1779, he went out as ſecretary to governor Johnſtone, who had been appointed to the command of the Romney man of war. He was left at Liſbon as joint-agent for prizes. Here, on account of the honour that he had done to the chief poet of the country, he received many very many flattering marks of attention, and was admitted into the Royal Academy of Liſbon at its firſt opening. While at the Portugueſe capital, he wrote his poem of "Almada-hill, an Epiſtle from Liſbon," which by no means ſupported the reputation which he had acquired by the Luſiad. In his foreign miſſion he had acquired ſome property, and on his return he ſettled at Wheatley, near Oxford, where he died in 1789, leaving behind him a character for ſtrict integrity and honour, intermixed, perhaps, with ſome foibles and imperfections.

MICKLE *Rooe*, in *Geography*, one of the ſmaller Shetland iſlands. N. lat. 60° 30′. W. long. 1° 49′.

MICKLEHAM, a village and pariſh ſituated in the hundred of Copthorn, and county of Surrey, England. The houſes are placed in a vale between Leatherhead and Dorking, and the valley is watered by the river Mole, and claims the attention of the topographer on account of the peculiar and pictureſque nature of its ſcenery, and the many handſome ſeats included within its juriſdiction. On the weſt of the village riſes a gentle hill, adorned by the handſome manſion of Norbury-park, the property of William Locke, eſq. and on the eaſt is Mickleham Down, a very fine ſheep-paſture, belonging to ſir Lucas Pepys, bart. Part of this Down is covered with plantations, which were begun by the late ſir Cecil Biſhop, about the year 1763, which ſerve both to ſhelter and ornament the ſeat of the proprietor, ſituated immediately beneath them. A part of the Roman road, called Stanes-ſtreet, can be diſtinctly traced not far from the houſe. At ſome diſtance further, to the ſouth-eaſt, is an eminence called Boxhill, from the vaſt quantity of box trees growing on its ſummit and ſide. This hill aſcends abruptly from the Mole, and commands, from its ſummit, a very grand and extenſive proſpect. What is remarkable, there is a well on the top of it, the water of which ſtands at only fifteen feet from the ſurface, whereas, on another hill oppoſite, it is neceſſary to raiſe the water 430 feet. The Mole, which in its paſſage through this pariſh forms a very ſerpentine current, ſinks entirely into the ground at different places, which commonly are denominated the Swallows.

The church of Mickleham is a very ancient building, and is rather remarkable in its architecture. It is built of ſtone, and conſiſts of a nave, with a chancel at the eaſt end of it, a ſmall chapel on the north ſide, and a ſouth aiſle, ſeparated from the nave by round pillars ſupporting ſemi-circular arches. The eaſt window is adorned with handſome tracery works, and on each ſide of the chancel are two windows, with lancet-ſhaped tops within a round-headed arch, which reſts upon round pillars, and is ornamented with a ſingle row of ſquare billet-work. At the weſt end riſes a low ſquare tower, ſtrengthened by double angular buttreſſes, and ſurmounted by a pyramidal ſpire. The font is of ſolid ſtone, the baſon having been hollowed out from it. Here are ſeveral monuments, but none of them peculiarly intereſting. The living is a rectory.

According to the parliamentary returns of 1801, the number of inhabitants in the whole pariſh amounted to 389 perſons, of whom 186 were males, and 203 females. The grounds of Norbury-park are finely wooded, and diverſified with lofty eminences. The houſe has long been noted for its pictures and works of art: one room is covered with paintings, by Barrett, and is much admired for its ſtyle and execution. It repreſents the mountain and lake ſcenery of Weſtmoreland. See Gilpin's Weſtern Counties, and Manning's Hiſtory of Surrey, edited by William Bray, eſq. F. S. A. fol. vol. ii. 1809.

MICKMACKS, American Indians, who inhabit the country between the Shapody mountains and the gulf of St. Laurence, in Nova Scotia, oppoſite to St. John's iſland. Theſe people are ſaid to convey their ſentiments by hieroglyphics, marked on the rind of the birch, and on paper, which the Romiſh miſſionaries perfectly underſtand. Many of them reſide at the heads of the rivers in King's and Hants counties.

MI CONTRA FA, in *Counterpoint*, was long regarded as a ſoleciſm in harmony. The natural diatonic ſcale conſiſting of tone, tone, and ſemitone, as C D *e f*, or *ut*, *re*, *mi*, *fa*; G A ♭ *c*, or *ſol*, *la*, *mi*, *fa*; if the 4th *fa*, in the key of C, or C in the key of G, was made ſharp, it would be called *tritonus*, or a diſſonant ſeries of four whole tones; which, before the ear was accuſtomed to crude intervals, in the infancy of counterpoint, was ſo offenſive, that it uſed to be ſaid, *Mi contra fa eſt diabolus*. Alluding to this in king Lear, act i. ſc. 7. there is a paſſage which has much embarraſſed the commentators: "O, theſe eclipſes portend theſe diviſions! *Fa*, *ſol*, *la*, *mi*." Shakſpeare, however, ſhews by the context, that he was well acquainted with the nature of the muſical intervals contained in the *tritonus*, or ſharp 4th, which, conſiſting of three tones without the intervention of a ſemitone, is extremely difficult to ſing, and diſagreeable to uncultivated ears when ſung, if *mi* or *fa* terminate the paſſage.

The falſe 5th is only an inverſion of the ſharp 4th, as B F or F B, which were held in equal horror by our fore-fathers; though at preſent the chief beauties of melody and harmony are derived from theſe intervals.

MICOTSI, MOSES, in *Biography*, a learned Spaniſh Jew, who flouriſhed in the 14th century, is chiefly known as author of a work, entitled "Sepher Miſeroth Gadol," or "The Great Book of Precepts," which is explanatory of the commandments of the Jewiſh law, and which was printed at Venice in 1545. It is much applauded by father Simon, who ſays it is highly deſerving of diligent peruſal, on account of the great learning and judgment with which the author has treated the ſubject. Moreri.

MICOYA BAY, in *Geography*, a bay ſituated on the S.W. coaſt of Mexico, on the Pacific ocean. N. lat. 10° 18′.

MICRANTHEMUM, in *Botany*, from μικρος, *ſmall*, and ανθος, *a flower*. Michaux Boreal-Amer. v. 1. 10. (Globifera; Gmel. Syſt. Nat. Linn. v. 2. 32.)—Claſs and order, *Diandria Monogynia*. Nat. Ord. *Rotaceæ*, Linn. *Lyſimachiæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, in four deep, ſomewhat ſpatulate ſegments; the two uppermoſt rather the ſmalleſt. *Cor.* ſcarcely longer than the calyx, of one petal, nearly bell-ſhaped; tube very ſhort, ſmooth within; limb in four deep unequal ſegments, obſoletely two-lipped, its upper ſegment ſmalleſt. *Stam.* Filaments two, incurved towards each other, with an appendage at the baſe; anthers of two roundiſh lobes. *Piſt.* Germen ſuperior, almoſt globular; ſtyle ſhort, rather declined; ſtigma capitate, depreſſed, oblique. *Peric.* Capſule nearly globular, clothed with the permanent calyx, of one cell and two valves. *Seeds* numerous, ovate, finely ſtriated, ſeſſile upon the central depreſſed receptacle.

Eſſ. Ch. Corolla unequally four-cleft. Stamens with an appendage at their baſe. Capſule of one cell and two valves. Seeds numerous. Calyx inferior, in four deep ſpatulate permanent ſegments.

1. M. *orbiculatum*. Michaux, t. 2. (Anonymos umbroſa; Walt. Carolin. 63. Globifera umbroſa; Gmel. n. 1.)—Native of damp ſhady places, in the woods of Carolina and Georgia, flowering in Auguſt. *Michaux*. *Roots* fibrous, annual? *Stems* proſtrate, branched, a ſpan long, thread-ſhaped, leafy, ſmooth like every other part of the herb. *Leaves* oppoſite, ſeſſile, nearly orbicular, entire, one-fourth of an inch long, with one rib, and ſeveral nearly longitudinal veins. *Flowers* axillary, alternate, ſolitary, on ſhort capillary ſimple ſtalks, not half the length of the leaves, white, the ſize of a ſmall pin's head.

MICRANTHUS, (from the ſame derivation as *Micranthemum*,) Wendl. Obſ. 39. (ſee PHAYLOPSIS); Willd. Sp. Pl. v. 3. 342.

MICRELIUS, JOHN, in *Biography*, a very learned German Lutheran divine, was born at Caſlin, in Pomerania, in the year 1597. He purſued his theological courſe at Stettin, and became diſtinguiſhed for his induſtry and talents. He took his degrees, in ſucceſſion, with much applauſe. In 1653, he made a voyage to Sweden, and received many tokens of reſpect, and teſtimonies of liberality, from queen Chriſtina. He died in 1658, leaving behind him ſeveral works of great learning and reſearch. Among theſe may be mentioned "Lexicon Philologicum;" "Lexicon Philoſophicum;" "Syntagma Hiſtoriæ Mundi;" "Syntagma Hiſt. Eccleſias;" ſome ſchool books, as "Arithmeticæ, uſus Globorum, &c.;" and a vaſt number of "Theſes," "Orations," &c.

MICROCARPÆA, in *Botany*, ſo named by Mr. Brown, from μικρος, *ſmall*, and καρπος, *fruit*, the capſules of his original ſpecies being no larger than a pin's head, and the numerous ſeeds conſequently extremely minute. Brown Prod. Nov. Holl. v. 1. 435.—Claſs and order, *Diandria Monogynia*. Nat. Ord. *Perſonatæ*, Linn. *Scrophulariæ*, Juſſ.

Eſſ. Ch. Calyx inferior, tubular, five-ſided, five-cleft. Corolla two-lipped. Barren ſtamens none. Capſule of two valves and two cells, with a contrary, and at length looſe, partition.

1. M. *muſcoſa*. Br. (Limoſella diandra; Linn. Mant. 252. Willd. Sp. Pl. v. 3. 342. Pæderota minima; Koenig in Retz. Obſ. faſc. 5. 10. Willd. Sp. Pl. v. 1. 77.)—Leaves linear-ſpatulate, about as long as the flower-ſtalks.—Gathered by the late Dr. I. G. Koenig, in ſandy, occaſionally inundated, places, at the Cape of Good Hope, as well as at Madras; and by Mr. Brown in the tropical part of New Holland. This diminutive plant grows in denſe patches. When examined ſeparately, it will be found very like the European *Limoſella aquatica*, though but one-fourth its ſize; nor can we wonder at Linnæus for having referred it, though diandrous, to the ſame genus; eſpecially ſince Krocker has found the *aquatica* to be ſometimes diandrous; ſee Willdenow. Mr. Brown however, finding the corolla irregular and two-lipped, and the capſule of two cells, thought himſelf juſtified in eſtabliſhing the preſent as a diſtinct genus; to which we cannot but aſſent; though it muſt be obſerved that the real *limoſella* betrays ſome irregularity of corolla in the incurvation of its two upper ſegments.—*M. muſcoſa* has a conſiderable likeneſs to *Montia fontana*. The whole *herb* is ſmooth. *Roots* fibrous, pale, probably annual. *Stem*

creeping, branched. *Leaves* oppoſite, erect, ſtalked, ſpatulate, narrow, entire; not an inch long, including their footſtalks. *Flower-ſtalks* axillary, ſolitary, quadrangular at leaſt when dry, ſcarcely overtopping the leaves. *Bracteas* none. *Flowers* ſolitary, erect; their limb pale purpliſh. Segments of the *calyx* broad, ſhort, and blunt.

2. M. *cochlearifolia.* (Pæderota cochlearifolia; Koenig MSS. Hedyotis maritima; Linn. Suppl. 119. Willd. Sp. Pl. v. 1. 566.)—Leaves obovate, concave. Flowers nearly ſeſſile.—Gathered by Koenig, and by his pupil Rottler, in the Eaſt Indies; we believe on the coaſt of Coromandel. This has the habit of the firſt ſpecies, but is of a much larger proportion. *Root* of long ſimple fibres, apparently annual. *Stems* numerous, proſtrate, variouſly branched and divaricated, four or five inches long, ſlender, ſmooth, leafy. *Leaves* oppoſite, on ſhort ſtalks, obovate, obtuſe, entire, ſmooth, ſomewhat fleſhy, rather concave, about half an inch in length, with ſome ſmaller axillary ones. *Flowers* axillary, oppoſite, ſolitary, on very ſhort thick ſtalks. *Capſule* nearly globoſe, the ſize of coriander ſeed, pale brown, thin and brittle.

Mr. Brown points out the very near affinity of this plant to the former, from which he ſays it differs, in having a capſule without valves. This is indeed ſo far correct, that the capſule uſually breaks caſually at the ſides; but traces of two diſtinct valves, each with a narrow partition from its centre, may readily be perceived, and theſe ſometimes ſeparate regularly at the top, in the uſual way, even to the baſe, as we find by examining various ſpecimens. This difficulty therefore being removed, we are glad to find a proper place for the plant in queſtion, whoſe diſagreement with Hedyotis we have already pointed out; ſee the concluſion of that article. Dr. Koenig having made it, like the former, a *Pæderota,* proves its having but two ſtamens, he being ſo rigid a Linnæan, that he uſually conſidered the characters of the artificial claſſes as abſolute, the orders having been, in his day, little obſerved.

MICROCHLOA, from μικρος, *ſmall,* and χλοα, *a graſs.* Brown Prod. Nov. Holl. v. 1. 208.—Claſs and order, *Triandria Digynia.* Nat. Ord. *Gramina.*

Eſſ. Ch. Spike unilateral, without joints. Calyx ſingle-flowered, of two nearly equal, acute, membranous valves. Corolla included, inverſed, of two beardleſs hairy valves. Stigmas feathery.

1. M. *ſetacea.* Br. (Rottboellia ſetacea; Roxb. Coromand. v. 2. 17. t. 132. Nardus indica; Linn. Suppl. 105. Willd. Sp. Pl. v. 1. 315.)—Native of old walls, on the coaſt of Coromandel, and of the tropical region of New Holland. A diminutive annual graſs, with a fibrous *root,* and ſeveral erect *ſtems,* from two to ſix inches high, ſmooth, round, and leafy. *Leaves* ſhort, keeled, channelled, with a ſheathing baſe. *Spikes* terminal, long, ſimple, very ſlender, a little incurved, compoſed of a ſingle rank of imbricated purpliſh *flowers,* all directed one way. *Stamens* yellow, two or three. *Styles* purple.

MICROCORYS, from μικρος, *ſmall,* and κορυς, *a helmet,* alluding to the ſhortneſs of the upper lip of the flower. Brown Prod. Nov. Holl. v. 1. 502.—Claſs and order, *Didynamia Gymnoſpermia.* Nat. Ord. *Verticillatæ,* Linn. *Labiatæ,* Juſſ.

Eſſ. Ch. Calyx ſemi-five-cleft. Corolla ringent; its concave upper lip very ſhort; middle ſegment of the lower lip broadeſt. Two upper ſtamens included, the fertile lobe of their anthers ſmooth, the empty one bearded; two lower with deeply cloven abortive anthers.

A genus of *ſhrubs,* found by Mr. R. Brown in the ſouth part of New Holland. All the ſpecies have entire *leaves,* three in a whorl. *Flowers* axillary, ſolitary, either white or purple, each with two *bracteas.*

1. M. *virgata.*—Leaves linear, obtuſe, ſmooth like the calyx. Bracteas deciduous. Stem erect, with thread-ſhaped branches.

2. M. *barbata.*—Leaves linear, obtuſe, ſmooth. Calyx and corolla externally hairy. Bracteas deciduous. Stem diffuſe.

3. M. *purpurea.*—Leaves oval-oblong, recurved at the margin; minutely downy on both ſides; dotted beneath. Young branches ſilky. Calyx hoary. Bracteas briſtle-ſhaped, permanent.

MICROCOS, ſo called by John Burmann, Theſaur. Zeyl. 159, who appears to have had in his contemplation the ſmallneſs of the berry, or drupa, and therefore the word is to be derived from μικρος, *ſmall,* and κοκκος, *a berry,* abbreviated for the ſake of harmony. Linn. Gen. 267. Schreb. 356. Willd. Sp. Pl. v. 2. 1168. Gærtn. t. 57.—Claſs and order, *Polyandria Monogynia.* Nat. Ord. *Columniferæ,* Linn. *Tiliaceæ,* Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five oblong, bluntiſh, ſpreading, deciduous leaves. *Cor.* Petals five, linear, equal, emarginate, rather ſpreading, various in ſize. Nectary none. *Stam.* Filaments numerous, capillary, the length of the calyx, inſerted into the baſe of the germen; anthers roundiſh. *Piſt.* Germen roundiſh, ſupported by a ſhort five-ſided column, at whoſe top the ſtamens are inſerted; ſtyle cylindrical, ſhorter than the ſtamens; ſtigma bluntiſh. *Peric.* Drupa roundiſh. *Seed.* Nut turbinate, clothed with long capillary fibres connected with the pulp, of three cloſe cells, filled with ſolitary kernels.

Eſſ. Ch. Calyx of five leaves. Petals five, without any ſeparate nectaries. Drupa ſtalked, with a hairy nut of three cells.

Linnæus, after having adopted this genus from Burmann, reduced it in his *Syſtema Vegetabilium* to *Grewia,* from which Gærtner, who is followed by Schreber and Willdenow, again ſeparated it. He ſeems to have fallen into an error in ſaying, v. 1. 274, that the ſeeds of *Grewia* have no albumen; but there are ſufficient diſtinctions beſides. (See Grewia.) Beſides the characters in the fructification, we may add, on the ſcore of habit, that the infloreſcence of *Microcos* is panicled and terminal, that of *Grewia* axillary, and either ſimple or ſomewhat umbellate. We are enabled to ſtrengthen the genus with two new ſpecies, in addition to the original one.

1. M. *paniculata.* Smooth Microcos. Linn. Sp. Pl. 735. (M. foliis alternis oblongis acuminatis; Burm. Zeyl. 159. t. 74. Grewia Microcos; Linn. Syſt. Nat. ed. 12. v. 2. 602. Juſſ. Ann. du Muſ. v. 4. 89. Ait. Hort. Kew. ed. 2. v. 3. 301. Schageri-Cottam; Rheede Hort. Malab. v. 1. 105. t. 56.)—Leaves ovate, nearly ſmooth.—Native of various parts of the Eaſt Indies, in a ſandy ſoil. A *ſhrub* about a man's height, with alternate, round, leafy *branches,* which are a little downy when young only. *Leaves* alternate, on ſhort roughiſh ſtalks, ovate, pointed, more or leſs oblique, from three to five inches long, and two broad, ſlightly and unequally ſerrated, green on both ſides, furniſhed from the baſe with three ribs, but the lateral ones vaniſh about the middle, and are replaced by many large veins from the mid-rib, connected by an infinity of minute reticulations; both ſides are a little rough to the touch, but naked, except a briſtly roughneſs on the ribs. *Panicle* terminal, doubly or triply compound, the branches clothed with a ſcurfy, ſomewhat ſtellated, pubeſcence. *Flowers* reddiſh, two or three together, in a common *involucrum* of

about ſeven oblong downy deciduous leaves, reſembling thoſe of the perianth, which is leſs downy within. *Petals* not longer than the germen, obtuſe, recurved, downy at the outſide.

2. M. *tomentoſa*. Downy-leaved Microcos.—Leaves elliptical, very downy beneath.—A ſpecimen of this is preſerved in the herbarium of the younger Linnæus, marked *Grewia*, but without any indication of its native country. The *branch* is round, clothed with denſe ruſty down, as are the *footſtalks*, *flower-ſtalks*, and backs of the *leaves*, the latter part being very ſoft. The *leaves* are the ſize of the former, but elliptical and blunt, with a ſhort point, and obſoletely ſerrated chiefly towards the extremity. Their upper ſurface feels ſoft, from ſcarcely viſible downineſs. The *panicle* is much like the foregoing, but the leaves of the *involucrum* are linear, narrow, and more diſtant; others reſembling them, but three-cleft, being ſcattered about the lower part of the *panicle*, ſo that they ought rather to be called *bracteas*.

3. M. *ſcabra*. Rough-leaved Microcos.—Leaves oblong, heart-ſhaped at the baſe, rough at the back.—Sent from Amboyna, by the late Mr. Chriſtopher Smith. A larger ſpecies than either of the former; its *branches*, *ſtalks*, and backs of the *leaves* rough and harſh to the touch. The *leaves* are a foot long or more, four or five inches broad, pointed, obliquely heart-ſhaped at the baſe, with five radiating hiſpid ribs, and innumerable tranſverſe, parallel, reticulated veins; the margin is ſlightly uneven; the upper ſurface rather ſhining and ſmooth, except the ribs; the under opaque, and minutely hiſpid, with ſtarry, finally deciduous, hairs. *Panicle* ample, ſpreading, repeatedly branched, terminal, but attended by axillary branches, likewiſe doubly compound, from ſome of the upper leaves. *Involucral* leaves, embracing two or three flowers, dilated, membranous, downy, often palmate; the *bracteas* which reſemble them, under each branch of the panicle, more decidedly palmate. *Flowers* the ſize of the two former, but much more abundant. *Petals* lanceolate, tapering at the baſe, as long as the calyx, hairy at their backs.

We have ſeen nothing of the fruit of theſe two laſt ſpecies, but their infloreſcence, with the peculiar involucral leaves or bracteas, being ſo unlike in all, and the ſtructure of the flowers, as far as we can inveſtigate it, agreeing equally well, it is preſumed there can be little uncertainty about their genus, if *Microcos* be allowed that rank at all. S.

MICROCOSM, Μικροκοσμος; formed from μικρος, *little*, and κοσμος, *world*, a Greek term, literally ſignifying *little world;* chiefly underſtood of *man*, who is ſo called by way of eminence, as being an epitome of all that is wonderful in the great world, or macrocoſm.

MICROCOSMETER, a name given by Dolæus to an imaginary being, which he ſuppoſes to reſide in the brain, and direct all the actions.

MICROCOUSTICS, the ſame with microphones.

MICROGRAPHIA, MICROGRAPHY, compounded of μικρος, *ſmall*, and γραφη, *deſcription*, a deſcription of the parts and portions of objects that are too ſmall to be viewed without the aſſiſtance of a microſcope.

MICROLÆNA, in *Botany*, ſeems to be formed of μικρος, *ſmall*, and ληνος, *wool*. alluding to the little bearded ſtalk of the flower. within the calyx. Brown Prod. Nov. Holl. v. 1. 210.—Claſs and order, *Tetrandria Digynia*. Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx ſingle-flowered, of two minute valves. Corolla ſupported by a bearded ſtalk, longer than the calyx, double, each of two valves, ſmooth; thoſe of the outermoſt nearly equal, each with a terminal awn. Nectary of two oppoſite ſcales, alternate with the valves of the corolla. Stigmas ſeſſile, feathery,

1. M. *ſtipoides*. Br. (Ehrharta ſtipoides; Labill. Nov. Holl. v. 1. 91. t. 118.)—Gathered by M. Labillardiere in Van Diemen's land, and by Mr. Brown at Port Jackſon.—A ſmooth graſs, about a foot and a half high. *Stem* round, ſlender, ſimple, leafy. *Leaves* ſpreading, ſhort, flat, taper-pointed, with very long ſheaths, and a jagged ſtipula. *Panicle* a ſpan long, capillary, drooping, ſimply branched. The bearded ſtalk on which the flower ſtands within the calyx, and the long awned glumes, give this graſs the aſpect of an *Andropogon*, or *Stipa*. The French author deſcribes and figures ſix *ſtamens*, and therefore referred the plant to *Ehrharta*, with which it has no other character in common, nor ſcarcely any agreement in aſpect. Mr. Brown, after repeated examinations, declares it to be certainly tetrandrous. The *ſtigmas* are two, ſeſſile and feathery. *Seed* elliptic-oblong, ſlightly compreſſed, encloſed in the permanent huſks of the corolla. The *nectary* is extremely minute.

MICROLEUCONYMPHÆA, one of Boerhaave's ſeſquipedalian names, ſuch as he diſtributed plentifully among the Proteaceous family, and which is equivalent to Small-white-water-lily. He applied it to the plant now more happily termed HYDROCHARIS; ſee that article.

MICROLOGUS, Μικρολογος, from μικρος, *parvus*, and λογος, *ratio*, *ſermo*, that which gives reaſons for obſcure and minute things, a minute enquiry into latent things: the title given by Guido d'Arezzo to his treatiſe on muſic, in which his ſyſtem is unſolded.

The moſt curious part of the micrologus is the chapter "De Diaphonia, et Organi jura;" as it ſhews the ſtate of muſic at the time it was written, and gives ſuch ſpecimens of the firſt rude attempts at harmony as may be ſafely pronounced authentic. See GUIDO, HEXACHORD, and COUNTERPOINT.

MICROLOMA, in *Botany*, from μικρος, *ſmall*, and λωμα, *a fringe*, the five tufts of hairs, alternate with the ſcales, in the middle of the flower, having altogether that appearance. Brown Tr. of the Wernerian Society, v. 1. 53. (Ceropegia; Lamarck Illuſtr. t. 179.)—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Eſſ. Ch. Corolla pitcher-ſhaped, with an inflated angular tube, much longer than the limb, naked at the mouth. Scales five, inſerted into the tube under each ſinus, alternate with as many tufts of hair. Stamens without a crown. Anthers arrow-ſhaped, tipped with a membrane; maſſes of pollen compreſſed, attached by the apex, pendulous. Stigma with a ſmall point. Follicles . . . . .

A genus of twining ſlender *ſhrubs*, with oppoſite *leaves*, and *umbels* inſerted between the *footſtalks*. It is formed of the two Linnæan Cape ſpecies of *Ceropegia*, which Mr. Brown obſerves are widely different from the original ſpecies of that genus. See CEROPEGIA, (by miſtake CEROPEGIUM).

1. M. *ſagittatum*. (Ceropegia ſagittata; Linn. Mant. 215. Lamarck fig. 1. Cynanchum radice glanduloſa, foliis anguſtis ſinuatis, floribus urceolatis miniatis; Burm. Afr. 36. t. 15.)—Leaves arrow-ſhaped, downy. Limb of the corolla rather acute.—Native of the Cape of Good Hope. *Root* of ſeveral oblong fleſhy knobs. *Stems* two or three, ſlender, twining, ſomewhat branched. *Leaves* on ſhortiſh ſtalks, linear-oblong, revolute, dilated and arrow-ſhaped at the baſe. *Flowers* in ſmall hairy lateral umbels, ſcarlet, with a ſharp hairy *calyx*. The angles of the *corolla* alſo are downy.

2. M. *lineare.* (Ceropegia tenuifolia; Linn. Mant. 215. Syſt. Veg. ed. 14. 255. Lamarck fig. 2. Periploca tenuifolia; Linn. Sp. Pl. 310, β. Cynanchum linearibus foliis acutis, floribus urceolatis rubris; Burm. Afr. 37. t. 16. f. 1.)—Leaves linear, ſmooth. Limb of the corolla very blunt.—Native of the Cape of Good Hope. The *root* is tuberous. Habit very like the foregoing, but the *leaves* are more narrow, ſtrictly linear throughout, and ſmooth. *Flowers* red, differing from the former in the very oblique and obtuſe form of the ſegments of their limb.

Mr. Brown appears to have, by miſtake, copied the Linnæan ſpecific name *tenuiflora* inſtead of *tenuifolia*, which laſt need not have been changed, though the appellation he has choſen we confeſs to be more particularly expreſſive.

MICROMETER, an aſtronomical machine, which, by means of a very fine ſcrew, ſerves to meaſure extremely ſmall diſtances in the heavens; as the apparent diameters of the planets, to a great degree of accuracy.

The word comes from the Greek μικρος, *parvus*, and μετρον, *menſura:* becauſe a ſmall length, *e. g.* an inch, is hereby divided into vaſt numbers of parts, *e. g.* in ſome 2800, and in others more.

This inſtrument is ſo contrived as to move a fine wire parallel to itſelf, in the plane of the picture of an object, formed in the focus of a teleſcope, and with great exactneſs to meaſure its perpendicular diſtance from a fixed wire in the ſame plane; and thus are meaſured ſmall angles, ſubtended by remote objects at the naked eye. *E. G.* Let a planet be viewed through a teleſcope: and when the parallel wires are opened to ſuch a diſtance as to appear exactly to touch two oppoſite points in the circumference of the planet, it is evident, that the perpendicular diſtance between the wires is then equal to the diameter of the picture of the planet, formed in the focus of the object-glaſs. Let this diſtance, whoſe meaſure is given by the mechaniſm of the micrometer, hereafter deſcribed, be repreſented by the line pq, *Plate* X. *Optics*, *fig.* 5; then, ſince the meaſure of the focal diſtance $q\,4$ may be alſo known, the ratio of $q\,\mathrm{L}$ to qp, that is, of the radius to the tangent of the angle $q\,\mathrm{L}\,p$, will give the angle itſelf by a table of ſines and tangents; and this angle is equal to the oppoſite angle P L Q, which the real diameter of the planet ſubtends at L, or at the naked eye. There is ſome controverſy about the invention of the micrometer. Meſſrs. Auzout and Picard have the credit of it in common fame, as being the firſt who publiſhed it, in the year 1666; but Mr. Townley, in the Philoſophical Tranſactions, reclaims it for one of our own countrymen, Mr. Gaſcoigne. He relates, that from ſome ſcattered papers and letters of this gentleman, he had learnt, that, before our civil wars, he had invented a micrometer, of as much effect as that ſince made by M. Auzout, and had made uſe of it for ſome years, not only in taking the diameters of the planets, and diſtances upon land, but in determining other matters of nice importance in the heavens; as the moon's diſtance, &c.

Mr. Gaſcoigne's inſtrument fell into the hands of Mr. Townley, who ſays, that by the help of it he could make above forty thouſand diviſions in a foot. This inſtrument being ſhewn to Dr. Hooke, he gave a drawing and deſcription of it, and propoſed ſeveral improvements in it, which may be ſeen in the Philoſophical Tranſactions, Abr. vol. i. p. 217. Mr. Gaſcoigne divided the image of an object, in the focus of the object-glaſs, by the approach of two pieces of metal, ground to a very fine edge, in the place of which Dr. Hooke would ſubſtitute two fine hairs ſtretched parallel to one another. Two other methods of Dr. Hooke, different from this, are deſcribed in his Poſthumous Works, p. 497, &c. An account of ſeveral curious obſervations which Mr. Gaſcoigne made by the help of his micrometer, particularly in the menſuration of the diameter of the moon and other planets, may be ſeen in the Phil. Tranſ. vol. xlviii. p. 190, where Dr. Bevis refers to an original letter of Mr. Gaſcoigne, to Mr. Oughtred, written in 1640—1, for an account given by the author of his own invention, &c.

Monſ. de la Hire, in a diſcourſe on the era of the inventions of the micrometer, pendulum clock, and teleſcope, read before the Royal Academy of Sciences in 1717, makes M. Huygens the inventor of the micrometer. That author, he obſerves, in his Obſervations on Saturn's Ring, &c. publiſhed in 1659, gives a method of finding the diameters of the planets by means of a teleſcope; *viz.* by putting an object, which he calls *virgula*, of a proper bigneſs to take in the diſtance to be meaſured, in the focus of the convex object-glaſs: in this caſe, ſays he, the ſmalleſt object will be ſeen very diſtinctly in that place of the glaſs. By ſuch means, he adds, he meaſured the diameters of the planets, as he there delivers them.

This micrometer, M. De la Hire obſerves, is ſo very little different from that publiſhed by the marquis de Malvaſia, in his Ephemerides, three years after, that they ought to be eſteemed the ſame: and the micrometer of the marquis differed yet leſs from that publiſhed four years after his by Auzout and Picard. Hence, M. De la Hire concludes, that it is to M. Huygens the world is indebted for the invention of the micrometer; without taking any notice of the claim of our countryman Mr. Gaſcoigne, which, however, is prior by many years to any of them.

M. De la Hire ſays, that there is no method more ſimple or commodious for obſerving the digits of an eclipſe, than a net in the focus of the teleſcope. Theſe, he ſays, were generally made of ſilken threads, and for this particular purpoſe ſix concentric circles had alſo been made uſe of, drawn upon oiled paper; but he adviſes to draw the circles on very thin pieces of glaſs, with the point of a diamond. He alſo gives ſeveral particular directions to aſſiſt perſons in uſing them. In another memoir he ſhews a method of making uſe of the ſame net for all eclipſes, by uſing a teleſcope with two object-glaſſes, and placing them at different diſtances from one another. Ac. Par. 1701, and 1717.

MICROMETER, *Conſtruction and Uſe of the.* Wolfius deſcribes a micrometer of a very eaſy and ſimple ſtructure, firſt contrived by Kirchius, thus:

In the focus of a teleſcope fit a braſs or iron ring A B (*Plate* X. *Optics*, *fig.* 6.) with female ſcrews diametrically oppoſite to each other; into theſe inſert male ſcrews C E and F B, of ſuch length as that they may be turned in the tube, ſo as to touch each other: and with this inſtrument very ſmall ſpaces in the heavens may be accurately meaſured.

For when any objects, viewed through a tube, appear contiguous to the ſcrews, if theſe be turned till they juſt touch two oppoſite points, whoſe diſtance is to be meaſured, it will be evident how many threads of the ſcrew they are apart. To determine how many ſeconds anſwer to each thread, applying the tube towards the heavens, turn the ſcrews till they touch two points, whoſe diſtance is already accurately known; and obſerve the number of threads correſponding to that interval; thus, by the rule of three, a table may be made of the ſeconds correſponding to the ſeveral threads; by means of which, without greater labour, the diſtances of any points may be determined.

The ſtructure of another micrometer, with the manner of fitting it to the teleſcope, and applying it, is as follows: A B C g (*fig.* 7.) is a rectangular braſs frame, the ſide A B being about three inches long, and the ſide B C, as likewiſe the oppoſite ſide A *g*, about ſix inches; and each of the three ſides about eight-tenths of an inch deep: the two oppoſite ſides of this frame are ſcrewed to the circular plate, to be mentioned hereafter.

The ſcrew P, which has exactly forty threads in an inch, being turned round, moves the plate G D E F, along two grooves made near the tops of the oppoſite ſides of the frame; and the ſcrew Q, having the ſame number of threads in an inch as P, moves the plate R N M Y along two grooves, made near the bottom of the ſaid frame, in the ſame direction as the former plate moves, but with only half the velocity of that other; theſe ſcrews are turned both at once, and ſo the plates are moved along the ſame way, by means of a handle turning the endleſs ſcrew S, whoſe threads fall in between the teeth of the pinions on the ſcrews P and Q. And note, that two half revolutions of the endleſs ſcrew S carry the ſcrew P exactly once round.

The ſcrew P turns the hand *a*, faſtened to it, over a hundred equal diviſions, made round the limb of a circular plate, to which the above named two oppoſite ſides of the frame are ſcrewed at right angles; the teeth of the pinion on the ſcrew P, whoſe number is 5, take into the teeth of a wheel on the backſide of the circular plate, whoſe number is 25. Again, on the axis of this wheel is a pinion of two, which takes into the teeth of another wheel, moving about the centre of the circular plate, on the outſide of it, and having fifty teeth; this laſt wheel moves the leſſer hand *b* once round the above mentioned circular plate in the $\frac{1}{100}$dth part of the time the hand *a* is moving round: for becauſe the number of teeth in the pinion of the ſcrew P is 5, and the number of teeth of the wheel this pinion moves, is 20; therefore the ſcrew P moves four times round in the time that wheel is moving once round. Further, ſince there is a pinion of two which takes into the teeth of a wheel, whoſe number is 50; therefore this wheel with 50 teeth will move once round in the time that the wheel of 20 teeth moves 25 times round; and, conſequently, the ſcrew P, or hand *a*, muſt move a hundred times round in the ſame time as the wheel of 50 teeth, or the hand *b*, has moved once round.

Hence it follows, that if the circular plate W, which is faſtened at right angles to the other circular plate, be divided into two hundred equal parts, the index *x*, to which the handle is faſtened, will move five of thoſe parts in the ſame time in which the hand *a* moves one of the hundred diviſions round the limb of the other circular plate. Thus by means of an index *x*, and plate W, every fifth part of each of the diviſions round the other plate may be known.

Further, ſince each of the ſcrews P and Q have exactly forty threads in an inch; therefore the upper plate G D E F will move one inch while the hand *a* moves forty times round; the four-thouſandth part of an inch while the hand moves over one of the diviſions round the limb; and the twenty-thouſandth part of an inch while the index *x* moves one part of the two hundred round the limb of the circular plate W: and the under plate R N M Y will move half an inch, the two-thouſandth part of an inch, and the ten-thouſandth part of an inch, the ſame way, in the ſaid reſpective times.

Hence, if the under plate, having a large round hole in it, be fixed to a teleſcope, ſo that the frame is moveable, together with the whole inſtrument, except the ſaid lower plate; and the ſtraight ſmooth edge H I, of the fixed plate A B I H; as likewiſe the ſtraight ſmooth edge D E, of the moveable plate G D E F, be perceivable through the round hole in the under plate, in the focus of the object-glaſs; then when the handle of the micrometer is turned, the edge H I, of the narrow plate A B I H, fixed to the frame, and D E, of the moveable plate, will appear through the teleſcope equally to aproach to, or recede from, each other.

By theſe edges we ſhall be able to meaſure the apparent diameters of the ſun, moon, &c. the manner of doing which take as follows:

Suppoſe, in looking at the moon through the teleſcope, you have turned the handle till the two edges D E and H I are opened, ſo as juſt to touch or claſp the moon's edges; and that there were twenty-one revolutions of the hand *a* to complete that opening: firſt ſay, as the focal length of the object-glaſs, which ſuppoſe ten feet, is to radius, ſo is one inch to the tangent of an angle ſubtended by one inch in the focus of the object-glaſs; which will be found twenty-eight minutes thirty ſeconds: again, becauſe there are exactly forty threads of the ſcrews in one inch; ſay, if forty revolutions of the hand *a* give an angle of 28′ 30″, what angle will twenty-one revolutions give? The anſwer will be, fifteen minutes eight ſeconds; and ſuch was the moon's apparent diameter. And ſo may the apparent diameters of any other objects be taken. It muſt be here obſerved, that the diviſions on the top of the plate G D E F are diagonal diviſions of the revolutions of the ſcrews, with diagonal diviſions of inches againſt them; thus, as the ſaid plate ſlides along, theſe diagonals are cut by diviſions made on the edge of the narrow plate K L, fixed to the oppoſite ſide of the frame by means of two ſcrews. Theſe diagonal diviſions ſerve for a regiſter to count the revolutions of the ſcrews, and to ſhew how many there are in an inch, or the parts of an inch.

Dr. Derham tells us, that his micrometer is not, as uſually, to be put into a tube, but to meaſure the ſpectres of the ſun on paper (of any radius), or to meaſure any part of them. By this means, he can eaſily, and very exactly, with the help of a fine thread, take the declination of a ſolar ſpot at any time of the day; and, by his half-ſeconds watch, meaſure the diſtance of the ſpot from the ſun's eaſtern and weſtern limb.

A micrometer of a better ſort is made in this manner: in the middle of an oblong plate of braſs, (A B, *Plate* X. *Optics*, *fig.* 8.) there is cut an oblong hole, *a b c d e f*, (to be placed in the focus of a teleſcope,) having a fine wire, *b e*, extended lengthways over the middle of it, at right angles, to two ſlender braſs bars or ſights *g h*, *i k*, lying croſs the hole; of which *g h* is fixed to the plate A B by ſcrews at *g* and *h*, but *i k* is moved parallel to *g h* by twiſting a round knob C fixed upon one end of a long iron ſcrew D E, which turns upon a tapering point at its end D, while its other end turns round in a hole at E in the centre of an index plate E F, fixed at right angles to the main plate A B. The long ſcrew D E works through two hollow ſcrews in two cubical blocks of braſs, fixed behind the plate *l m*, bent ſquare to the plate *n o*, that ſlides upon the main plate A B, either backward or forward, and carries a perpendicular arm *o p* extended over the hole *b e*; while *p*, the extremity of the arm *o p*, ſlides under a braſs ledge *q r*, ſcrewed to the main plate A B, along the ſide of the hole. One ſide, *s t*, of the moveable ſight-plate *i k s t*, lies over the arm *o p*, being fixed to it by the flat-headed ſcrews at *s* and *t*, the holes in the plate *s t* being oblong or larger than the ſhanks of the ſcrews, to give liberty for placing the edge *i k* coincident with *g h*, when carried up to it by turning the ſcrew D E by the knob C; the part *i k*, which projects over the arm *o p*, being hammered down to lie flat upon the main plate A B. The edge *i k*, after this adjuſtment, will always move parallel to the edge *g h*; its inclination to the ſcrew D E being every where the ſame, provided the ſcrew be ſtraight, and the interval of the concave ſcrews behind *l m* be ſufficiently great and their motion ſteady. For this purpoſe about a quarter-round of a third concave ſcrew preſſes upon the long ſcrew D E at v, the block of it being fixed to the middle of a ſpringing plate $w\,v\,x$; whoſe extremities lying behind the blocks at l, m, not ſo near as to touch them, are preſſed towards them with ſcrews at w and x; which occaſions the block at v to ſpring upon the ſcrew D E, and to hold it tight to the oppoſite ſide of the concave ſcrews at l, m. To prevent any motion lengthways in the ſcrew D E, its tapering point D turns in a hollow point at the end of an oppoſite ſcrew y, which working through a fixed block at z, holds up the ſhoulder of the long ſcrew D E, againſt the back of the index-plate, where its neck is inſerted.

The two indexes upon the plate E F ſhew the number of revolutions and parts of a revolution of the ſcrew D E, anſwering to the interval of the ſights $g\,h$, $i\,k$. In the outward plate there is a circular ſlit $\alpha\beta\gamma$, which diſcovers part of the diviſions upon the circumference of an inner plate, turned about a centre by two wheels and pinions within: ſo that for every revolution of the ſcrew, an index E F, which ſhews the parts of it, one diviſion upon the plate $\alpha\beta\gamma$, paſſes by a fixed point at β; which ſhews the number of revolutions anſwering to the intervals of the ſights $g\,h$, $i\,k$.

This micrometer received a very great improvement by an ingenious contrivance of the reverend Dr. James Bradley, profeſſor of aſtronomy at Oxford, for turning it in its own plane about the interſection δ of the fixed ſight $g\,h$, and of the tranſverſe wire $b\,\delta\,e$, without ſtirring the teleſcope: which is thus executed. Upon the backſide of the main-plate turned upwards, and here repreſented by the parallelogram G H I K, (*fig.* 9.) there is laid ſuch another plate L M N O, of the ſame breadth and thickneſs but ſomewhat ſhorter; in the middle of which there is an oblong hole, anſwering to the other in the lower plate, but ſomewhat larger; being terminated at its ſides by the ſtraight lines $\varepsilon\,\zeta$, $\eta\,\theta$, and at its ends by the concave arches $\theta\,\iota\,\varepsilon$, $\zeta\,\kappa\,\eta$, whoſe common centre is the point δ above-mentioned. The concave arch $\varepsilon\,\iota\,\theta$ ſlides round this centre againſt a concentric convex arch of an annular plate $\lambda\,\mu\,\nu$; ſomewhat longer than the concave arch, of the ſame thickneſs as the upper parallelogram, and ſtrongly ſcrewed to the under one, round that end of the hole which is neareſt to the centre δ; and at the ſame time the other concave arch $\zeta\,\kappa\,\eta$ ſlides alſo againſt another concentric convex arch $o\,\varpi$, of another annular plate juſt as thick as the upper parallelogram, and ſtrongly ſcrewed to the under one. This convex arch $o\,\varpi$ is ſhorter than the contiguous concave one $\zeta\,\kappa\,\eta$, to give room for the circular motion of the plates; which are held together by two annular plates ſimilar to $\lambda\,\mu\,\nu$ and $o\,\varpi$, but ſomewhat broader, to cover the coincident arches when laid over them, and ſcrewed down to the reſpective annular plates underneath. The circular motion upon theſe arches about their centre δ, is gradually given to the upper parallelogram by an endleſs ſcrew at ϱ, having an axis $\sigma\,\tau$ laid croſs the end of the under parallelogram, and turning upon a point at one end, and in a collar at the other, both fixed to the under plate; while the ſpiral thread ϱ moves the teeth of a braſs arch fixed at v, to the end of the upper parallelogram.

To hold the micrometer in the tube of a teleſcope, along each ſide of the upper parallelogram there is fixed a long braſs plate about an inch broad; having its oppoſite ſides bent contrary ways, ſo as to form two oppoſite ledges, about one-eighth of an inch broad, at right angles to the intermediate part of the plate, as repreſented in the figure. One of the ledges of each plate is placed inwards along the ſides of the upper parallelogram, and is firmly fixed to it by ſeveral ſcrews. The figure $\varphi\,\chi\,\psi\,\omega$ repreſents one of the equal and oppoſite holes cut in the ſides of a ſquare tube, through which the micrometer is put; the notches $\varphi\,\chi$ being made to receive the ledges of the ſide-plates, to keep the plate of the micrometer perpendicular to the tube at a juſt diſtance from the object-glaſs. Which diſtance being once determined by trials, as above explained, muſt be kept invariable in all obſervations, by ſtops or pins, if the tube conſiſts of two or more joints that draw in and out.

The Meaſures of the Micrometer.

	Inches.
The length of the plate A B	8.0
Its breadth M N	3.6
Its thickneſs	$0.\frac{1}{2}$
Length of the hole $b\,e$	3.5
Its breadth $g\,b = \delta\,e$	2.2
Breadth of the hole in the other plate at $\zeta\,\eta$	2.6
Length of the ſcrew D E	5.5
Its thickneſs	0.3
The line A b	1.6
The interval $l\,m = w\,x$	3.0
Length of the ſide cheeks	4.5
Their breadth	0.8
Their ledges	0.2
Diameter of the index-plate	3.1
Its thickneſs (being double with two wheels within)	0.3
The greateſt opening of the ſights $g\,h$, $i\,k = \delta\,e$	2.2

Threads of the ſcrew in an inch, 40

The inch is divided by the index-plates into 40 times 40, or 1600 equal parts. Inſtead of the braſs ſights $g\,h$, $i\,k$, two others, with parallel wires a, may be ſcrewed on at pleaſure.

When the ſight-plates are made to coincide, the two indexes of the revolutions and their parts muſt be ſet to the beginning of the numerations upon the index-plates. Then as the ſights are opened, it is evident from the make of a ſcrew, that the numbers of revolutions will be as the intervals of the ſights, and conſequently as the angles ſubtended by them at the centre of the object-glaſs; the intervals being inſenſibly different from the arches that meaſure theſe ſmall angles. Therefore when any one angle correſponding to a given number of revolutions, is determined by experiment, an angle correſponding to any other number of revolutions may be found by the rule of three. And thus may tables be made to ſhew by inſpection the number of minutes and ſeconds in an angle anſwering to any given number of revolutions and parts.

To determine ſome one angle, the larger the better, becauſe the ſame error in the determination will be proportionably ſmaller in a given angle deduced from it; fix the teleſcope upon any known ſtar in the equator, or very near it, and open the ſights to their utmoſt limit and note the number of revolutions of the ſcrew. Then by a pendulum-clock obſerve the interval of time in the ſtar's tranſit over the given interval of the ſights, and having turned it into minutes and ſeconds of an arch, they are the meaſure of the angle required. But if the ſtar be remote from the equator, the number of minutes and ſeconds thus found, muſt be diminiſhed in the ratio of the radius of the ſine of the ſtar's diſtance from the pole. To this micrometer Dr. Bradley applied an ingenious contrivance, by which it is adapted for taking the difference of right aſcenſion and declination of ſuch objects as are at a greater diſtance than the teleſcope will take in at once, but which paſs through the aperture of it at different times. Let A B C (*fig.* 10.) repreſent a flat ring of braſs, fixed in the focus of the teleſcope; and $a\,b\,c$ a ſmaller concentric ring lodged in a circular groove turned within the larger, and kept in the groove by three ſmall plates of braſs fixed to the outward ring, and extended over the edge of the inner one. Upon the inner ring is fixed a concentric arch of a wheel *de*, having teeth cut in its convexity, which are driven round by the threads of an endleſs ſcrew, whoſe axis D E F turns in a collar at E, and upon a point at F, both fixed to the outward ring. The hairs *gh*, *ik*, croſs at right angles in *f*, the centre of the rings; and when the teleſcope is ſo fixed that the image of the ſtar falls upon *f*, let it move along any line *fq*, and by turning the ſcrew D E F, and by conſequence the hair *fk*, about the fixed point *f* till it touches the ſtar at *q*, it will then coincide with the tract of the ſtar's motion; and then all other ſtars will move parallel to it as was required. To find the difference of declination of two ſtars, he obſerves the times of their appulſes to the edges of two ſlender braſs bars *gio*, *gkp*, fixed to the inner ring, and equally inclined to its diameter *gh* in ſuch angles that the perpendiculars *fi*, *fk*, on each ſide of *fg*, ſhall be ſeverally equal to half *fg*; and conſequently that the whole baſe *ik*, of the equicrural triangle *igk*, ſhall be equal to its perpendicular height *fg*; and by conſequence that the difference of any two baſes *ifk*, *lmn*, ſhall be equal to *fm*, the difference of their heights; ſo that the difference of the times of the tranſits of two ſtars over theſe baſes, may give the difference of their declinations. Smith's Optics, art. 876, &c.

M. Caſſini firſt made uſe of four croſs hairs or threads, interſecting one another at half right angles, for determining the difference of right aſcenſions and declinations of objects near the ſame parallel: but the micrometer, according to its latter improvements, will anſwer this purpoſe with greater exactneſs. Dr. Maſkelyne has publiſhed directions for the uſe of it, extracted from Dr. Bradley's papers, in the Philoſ. Tranſ. vol. lxii. art. 6. p. 46, &c.

A conſiderable improvement with regard to the micrometer, was communicated to the Royal Society, in 1743, by Mr. Servington Savery, an account of which, extracted from the minutes by Mr. Short, was publiſhed in the Phil. Tranſ. for 1753, vol. xlviii. art. 26. The firſt hint of ſuch a micrometer was ſuggeſted by M. Roemer, in 1675; and M. Bouguer propoſed a ſimilar conſtruction to that of Mr. Savery, in 1748, for which ſee HELIOMETER. The late Mr. Dollond made a farther improvement in this kind of micrometer, an account of which was given to the Royal Society by Mr. Short, and publiſhed in the Phil. Tranſ. vol. xlviii. art. 27. Inſtead of two object glaſſes, he uſed only one, which (after having been truly ground and well centered) he neatly cut into two ſemi-circles, and fitted each ſemi-circle in a metal frame, ſo that their diameters ſliding in one another, by means of a ſcrew, may have their centres ſo brought together as to appear like one glaſs, and ſo form one image; or by their centres receding, may form two images of the ſame object: it being a property of ſuch glaſſes, for any ſegment to exhibit a perfect image of an object, although not ſo bright as the whole glaſs would give it. If proper ſcales are fitted to this inſtrument, ſhewing how far the centres recede, relative to the focal length of the glaſs, they will alſo ſhew how far the two parts of the ſame object are aſunder, relative to its diſtance from the object glaſs; and conſequently give the angle under which the diſtance of the parts of that object are ſeen. This divided object-glaſs micrometer, which was applied by the late Mr. Dollond to the object end of a reflecting teleſcope, has been with equal advantage adapted by his ſon to the end of an achromatic teleſcope, is ſo eaſy of uſe, and affords ſo large a ſcale, that it is generally looked upon by aſtronomers as the moſt convenient and exact inſtrument for meaſuring ſmall diſtances in the heavens. However, the common micrometer is peculiarly adapted for meaſuring differences of right aſcenſion, and declination of celeſtial objects, but leſs convenient and exact for meaſuring their abſolute diſtances; whereas the object-glaſs micrometer is peculiarly fitted for meaſuring diſtances, but has been generally ſuppoſed improper for meaſuring differences of right aſcenſion and declination. But Dr. Maſkelyne has found that the latter may be applied with very little trouble, and ſmall additional expence to this other purpoſe as well as the former; and he has furniſhed the directions neceſſary to be followed when it is uſed in this manner. The addition requiſite for this purpoſe is a cell, containing two wires, interſecting each other at right angles, placed in the focus of the eye-glaſs of the teleſcope, and moveable round about, by the turning of a button. For the deſcription of this apparatus, together with the method of applying and uſing it, we ſhall refer to Dr. Maſkelyne's paper on the ſubject, in the Phil. Tranſ. vol. lxi. part ii. art. 49. p. 536.

After all, the uſe of the object-glaſs micrometer is attended with difficulties, ariſing from the alterations in the focus of the eye, which are apt to cauſe it to give different meaſures of the ſame angle at different times. In order to obviate theſe difficulties, Dr. Maſkelyne, in 1776, contrived a priſmatic micrometer, or a micrometer conſiſting of two achromatic priſms, or wedges, applied between the object-glaſs and eye-glaſs of an achromatic teleſcope, by moving of which wedges nearer to, or farther from, the object-glaſs, the two images of an object produced by them appeared to approach to or recede from each other, ſo that the focal length of the object-glaſs becomes a ſcale for meaſuring the angular diſtance of the two images. The rationale and uſe of this micrometer are explained in the Phil. Tranſ. vol. lxvii. part ii. art. 36. p. 799, &c. A ſimilar invention by the abbé Rochon, and improved by the abbé Boſcovich, was alſo communicated to the Royal Society, and publiſhed in the ſame volume of the Tranſactions, art. 35. p. 789, &c.

Mr. Ramſden, an ingenious optician, has deſcribed two new micrometers, which he has contrived with a view of remedying the defects of the object-glaſs micrometer. One of theſe is a catoptric micrometer, which, beſide the advantage it derives from the principle of reflection, of not being diſturbed by the heterogeneity of light, avoids every defect of other micrometers, and can have no aberration, nor any defect ariſing from the imperfection of materials, or of execution; as the extreme ſimplicity of its conſtruction requires no additional mirrors or glaſſes to thoſe required for the teleſcope; and the ſeparation of the image being effected by the inclination of the two ſpecula, and not depending on the focus of any lens or mirror, any alteration in the eye of an obſerver cannot affect the angle meaſured. It has peculiar to itſelf the advantages of an adjuſtment, to make the images coincide in a direction perpendicular to that of their motion; and alſo of meaſuring the diameter of a planet on both ſides of the zero, which will appear no inconſiderable advantage to obſervers, who know how much eaſier it is to aſcertain the contact of the external edges of two images than their perfect coincidence. A (*fig.* 11.) repreſents the ſmall ſpeculum of a reflecting teleſcope of Caſſegrain's conſtruction, to which this micrometer is adapted, divided into two equal parts; one of which is fixed on the end of the arm B; the other end of the arm is fixed on a ſteel axis X, which croſſes the end of the teleſcope C. The other half of the mirror A is fixed on the arm D, which arm at the other end terminates in a ſocket *y*, that turns on the axis X; both arms are prevented from bending by the braces, *a*, *a*. G repreſents a double ſcrew, having one part, *e*, cut into double the number of threads in an inch to that of the part *g*; the part *e* having a hundred threads in one inch, and the part *g* fifty only. The ſcrew, *e*, works in a nut F, in the ſide of the teleſcope, while the part *g* turns in a nut H, which is attached to the arm B; the ends of the arms B and D, to which the mirrors are fixed, are ſeparated from each other by the point of the double ſcrew preſſing againſt the ſtud *h*, fixed to the arm D, and turning in the nut H on the arm B. The two arms, B and D, are preſſed againſt the direction of the double ſcrew, *e g*, by a ſpiral ſpring within the part *n*; by which means all ſhake or play in the nut H, on which the meaſure depends, is entirely prevented.

From the difference of the threads on the ſcrew at *e* and *g*, it is evident that the progreſſive motion of the ſcrew through the nut will be half the diſtance of the ſeparation of the two halves of the mirror, and conſequently the half mirrors will be moved equally in contrary directions from the axis of the teleſcope C.

The wheel V, fixed on the end of the double ſcrew, has its circumference divided into 100 equal parts, and numbered at every fifth diviſion with 5, 10, &c. to 100; and the index, I, ſhews the motion of the ſcrew with the wheel round its axis, while the number of revolutions of the ſcrew is ſhewn by the diviſions on the ſame index. The ſteel ſcrew, R, may be turned by the key S, and ſerves to incline the ſmall mirror at right angles to the direction of its motion.

The other micrometer, invented and deſcribed by Mr. Ramſden, is ſuited to the principle of refraction. This micrometer is applied to the erect eye-tube of a refracting teleſcope, and is placed in the conjugate focus of the firſt eye-glaſs; in which poſition, as the image is conſiderably magnified before it comes to the micrometer, any imperfection in its glaſs will be magnified only by the remaining eye-glaſſes, which in any teleſcope ſeldom exceeds five or ſix times; and beſides, the ſize of the micrometer glaſs will not be the $\frac{1}{100}$dth part of the area which would be required, if it were placed at the object-glaſs; and yet the ſame extent of ſcale is preſerved, and the images are uniformly bright in every part of the field of the teleſcope. This micrometer is repreſented in *Plate* XI. *Optics*, *fig.* 1. A is a convex or concave lens divided into two equal parts by a plane acroſs its centre; one of theſe ſemi-lenſes is fixed in a frame B, and the other in the frame E, which two frames ſlide on a plate H, and are preſſed againſt it by thin plates, *a*, *a*: the frames, B and E, are moved in contrary directions by turning the button D; L is a ſcale of equal parts on the frame B; it is numbered from each end towards the middle with 10, 20, &c. There are two verniers on the frame E, one at M, and the other at N, for the conveniency of meaſuring the diameter of a planet, &c. on both ſides of the zero. The firſt diviſion on both theſe verniers coincides at the ſame time with the two zeros on the ſcale L; and, if the frame is moved towards the right, the relative motion of the two frames is ſhewn on the ſcale L by the vernier M; but if the frame B be moved towards the left, the relative motion is ſhewn by the vernier N.

This micrometer has a motion round the axis of viſion, for the conveniency of meaſuring the diameter of a planet, &c. in any direction, by turning an endleſs ſcrew F, and the inclination of the diameter meaſured with the horizon is ſhewn on the circle, *g*, by a vernier on the plate V. The teleſcope may be adjuſted to diſtinct viſion by means of an adjuſting ſcrew, which moves the whole eye-tube with the micrometer nearer or farther from the object-glaſs, as teleſcopes are generally made; or the ſame effect may be produced in a better manner, without moving the micrometer, by ſliding the part of the eye-tube *m* on the part *n*, by help of a ſcrew or pinion. The micrometer is made to take off occaſionally from the eye-tube, that the teleſcope may be uſed without it. Phil. Tranſ. vol. lxix. part ii. art. 27.

Dr. Herſchel has applied a lamp micrometer to ſir Iſaac Newton's reflecting teleſcope. (See Phil. Tranſ. vol. lxxii. p. 165, &c. and vol. lxxiii. p. 5, &c.) Two moveable lamps, the light of which comes through two ſmall holes, are placed at a convenient diſtance from the teleſcope, in the direction at which you look at the image. Theſe points of light are looked at by the left eye, and brought, *e. g.* to the oppoſite ſides of a planet looked at by the right eye; and by meaſuring their diſtance from each other, and from the eye, the angle under which the magnified diameter appears will be known, which, divided by the magnifying power of the teleſcope, gives the apparent diameter required. The conſtruction of this micrometer is as follows: A B G C F E (*Plate* XI. *Optics*, *fig.* 5.) is a ſtand nine feet high, upon which a ſemi-circular board, *q h o g p*, is moveable upwards or downwards, in the manner of ſome fire-ſcreens, as occaſion may require, and is held in its ſituation by a peg, *p*, put into any one of the holes of the upright piece A B. This board is a ſegment of a circle of fourteen inches radius, and is about three inches broader than a ſemi-circle, to give room for the handles, *r* D, *e* P, to work. The uſe of this board is to carry an arm L, thirty inches long, which is made to move upon a pivot at the centre of the circle, by means of a ſtring, which paſſes in a groove upon the edge of the ſemicircle *p g o h q*; the ſtring is faſtened to a hook at *o*, (not expreſſed in the figure, being at the back of the arm L,) and paſſing along the groove from *o h* to *q*, is turned over a pulley at *q*, and goes down to a ſmall barrel *e*, within the plane of the circular board, where a double-jointed handle, *e* P, commands its motion. By this contrivance we ſee the arm, L, may be lifted up to any altitude from the horizontal poſition to the perpendicular, or be ſuffered to deſcend by its own weight below the horizontal to the reverſe perpendicular ſituation. The weight of the handle, P, is ſufficient to keep the arm in any given poſition; but if the motion ſhould be too eaſy, a friction ſpring applied to the barrel will moderate it at pleaſure.

In front of the arm, L, a ſmall ſlider, about three inches long, is moveable in a rabbet from the end L towards the centre backwards and forwards. A ſtring is faſtened to the left ſide of the little ſlider, and goes towards L, where it paſſes round a pulley at *m*, and returns under the arm from *m*, *n*, towards the centre, where it is led in a groove on the edge of the arm, which is of a circular form, upwards to a barrel (raiſed above the plane of the circular board) at *r*, to which the handle, *r* D, is faſtened. A ſecond ſtring is faſtened to the ſlider, at the right ſide, and goes towards the centre, where it paſſes over a pulley *n*, and the weight, *w*, which is ſuſpended by the end of this ſtring, returns the ſlider towards the centre, when a contrary turn of the handle permits it to act.

a and *b* are two ſmall lamps, two inches high, one inch and a half in breadth, by one inch and a quarter in depth. The ſides, back, and top, are made ſo as to permit no light to be ſeen, and the front conſiſts of a thin braſs ſliding door. The flame in the lamp, *a*, is placed three-tenths of an inch from the left ſide, three-tenths from the front, and half an inch from the bottom. In the lamp *b*, it is placed at the ſame height and diſtance, meaſuring from the right ſide. The wick of the flame conſiſts only of a ſingle very thin lamp-cotton thread; for the ſmalleſt flame being ſufficient, it is eaſier to keep it burning in ſo confined a place. In the top of each lamp muſt be a little ſlit, lengthways, and alſo a ſmall opening in one ſide near the upper part, to permit air enough to circulate to feed the flame. To prevent every reflection of light, the ſide opening of the lamp *a* ſhould be to the right, and that of the lamp *b* to the left. In the ſliding door of each lamp is made a ſmall hole, with the point of a very fine needle, juſt oppoſite the place where the wicks are burning, ſo that when the ſliders are ſhut down, and every thing dark, nothing ſhall be ſeen but two fine lucid points of the ſize of two ſtars of the third or fourth magnitude. The lamp, *a*, is placed ſo that its lucid point may be in the centre of the circular board, where it remains fixed. The lamp, *b*, is hung to the little ſlider, which moves in the rabbet of the arm, ſo that its lucid point, in a horizontal poſition of the arm, may be on a level with the lucid point in the centre. The moveable lamp is ſuſpended upon a piece of braſs, faſtened to the ſlider by a pin exactly behind the flame upon which it moves as a pivot. The lamp is balanced at the bottom by a leaden weight, ſo as always to remain upright, when the arm is either lifted above, or depreſſed below, the horizontal poſition. The double-jointed handles, *r* D, *e* P, conſiſt of light deal rods, ten feet long, and the loweſt of them may have diviſions, marked upon it near the end P, expreſſing exactly the diſtance from the central lucid point in feet, inches, and tenths.

From this conſtruction we ſee, that a perſon at a diſtance of ten feet may govern the two lucid points, ſo as to bring them into any required poſition ſouth or north preceding or following, from 0 to 90°, by uſing the handle P, and alſo to any diſtance from ſix-tenths of an inch to five or ſix and twenty inches, by means of the handle D. If any reflection or appearance of light ſhould be left from the top or ſides of the lamps, a temporary ſcreen, conſiſting of a long piece of paſte-board, or a wire-frame covered with black cloth, of the length of the whole arm, and of any required breadth, with a ſlit of half an inch broad in the middle, may be affixed to the arm by four bent wires, projecting an inch or two before the lamps, ſituated ſo that the moveable lucid point may paſs along the opening left for that purpoſe.

Fig. 6. repreſents part of the arm L, half the real ſize; S, the ſlider; *m*, the pulley, over which the cord, *x t y z*, is returned towards the centre; *v*, the other cord going to the pulley, *n*, of *fig.* 5; R, the braſs piece moveable upon the pin *r*, to keep the lamp upright. At R is a wire rivetted to the braſs piece, upon which is held the lamp by a nut and ſcrew. *Figs.* 7, and 8, repreſent the lamps, *a*, *b*, with the ſliding doors open, to ſhew the ſituation of the wicks. W is the leaden weight, with a hole, *d*, in it, through which the wire R, of *fig.* 6, is to be paſſed, when the lamp is to be faſtened to the ſlider S. *Fig.* 9. repreſents the lamp *a*, with the ſliding door ſhut; *l*, the lucid point; and *i k*, the openings at the top, and *s* at the ſides, for the admiſſion of air.

Every ingenious artiſt will ſoon perceive that the motions of this micrometer are capable of great improvement, by the application of wheels and pinions, and other well known mechanical reſources; but, as the principal object is only to be able to adjuſt the two lucid points to the required poſition and diſtance, and to keep them there for a few minutes, while the obſerver goes to meaſure their diſtance, it will not be neceſſary to ſay more upon the ſubject.

Mr. Smeaton's equatorial micrometer, together with its uſe in an obſervation of a tranſit of Mercury, is deſcribed and exhibited in the Phil. Tranſ. vol. lxxvii. art. 33. We have the deſcription of a micrometer for taking the angle of poſition, with drawings for illuſtrating its conſtruction, as it was executed by Meſſrs. Nairne and Blunt, in a paper by Dr. Herſchel, Phil. Tranſ. vol. lxxi. p. 500, and a further account of its uſe and the mode of improving it by Dr. Herſchel, Phil. Tranſ. vol. lxxv. p. 46. Mr. Troughton's micrometer is applied to the eye-piece of a teleſcope for meaſuring exceedingly ſmall angles, as the diameters of the heavenly bodies, &c. *Fig.* 2. is an orthography of this inſtrument projecting endways; *fig.* 3. is a ſection of the box containing the wires; and *fig.* 4. a ſection lengthways: the ſame letters, as far as they can, are uſed in all the figures. *Figs.* 2 and 4, A is an eye-tube containing a convex lens at each end; this ſlides in another tube, *d d*, ſo as to adjuſt the glaſs to diſtinct viſion of the wires; the tube, *d d*, is ſcrewed into another, *b b*, which is much larger, through this a thin long box, D D D, containing the wire ſlides. The micrometer is ſcrewed to the teleſcope by a male ſcrew, *e e*, (*fig.* 4.) in the ſame piece with which is a circular plate, *f f*, cut all round with fine teeth; this plate fits againſt the flat bottom of the box, *b*, and turns round concentrically with it by means of a ring, *l*, fitting into a conical hole in the centre of the plate, *f f*, and ſcrewed to the box; a ſmall endleſs ſcrew, *h*, (*fig.* 2.) turning in two braſs collars ſcrewed to the box, *b*, works in the teeth cut round the plate, *f*, and by that means when the milled head on the arbor of the endleſs ſcrew is turned, it turns the eye-tube and box, D D, round, to bring it to any convenient poſition for meaſuring the angles required; the box containing the wires is ſhewn open in *fig.* 3, it containing two frames, *h h h* and *l l l l*, one ſliding within another, which moves in the box, without lateral ſhake, yet fitted ſo as to ſlide eaſily backwards and forwards in the box, by the ſcrews *m* and *n*, in the ſame manner as the microſcope in the upper part of the ſame plate; *o* and *p* are ſprings to counteract the ſcrews and make the motion pleaſant. A wire is ſtretched acroſs the frame, *h h*, at right angles to its ſides, and another of the ſame ſize is fixed acroſs the ſlider, *l l l l*, exactly parallel to the former; a ſmall quantity of the under ſide of the latter is cut away, and its wire is fixed in another plane to the wire of *h h h*, ſo that the wires can paſs each other without touching, but as near as poſſible; when they are placed by their ſcrews over each other, and viewed through the eye-tube, they appear but as one wire: the divided circle, *x*, on the nuts of ſcrews are then ſlipped round, without the ſcrew, to bring the firſt diviſion on them to the index *l*; the inſtrument is now adjuſted for obſerving any angle, it is ſcrewed to the teleſcope, and by the endleſs ſcrew, *h*, (*fig.* 2.) the micrometer is turned round ſo as to bring a fixed wire *w*, which is perpendicular to the others, to cover the two objects; the two wires are then ſeparated by turning either of the nuts, F, until the wires include the angle to be meaſured: the whole box (*fig.* 3.) of the micrometer ſlides through the tube, in the direction of its length, to follow any moving object. When the obſervation is completed it is read off by a ſcale of notches in the box, (*fig.* 3.) determining the number of revolutions the ſcrew has made, and the diviſions pointed out on the circles, *x*; by the indexes, *l*, *l*, the number of aliquot parts is denoted; the circular plate, *f f*, is divided into degrees, as ſhewn in *fig.* 2, and it is by this that the angle line meaſured makes with the horizon is regiſtered.

The circles are divided in one hundred parts, and have no determinate value in angular meaſurement, but their value is determined experimentally by obſerving through the teleſcope, it is applied to the diameter of the ſun, or any other body whoſe angular meaſure has been previouſly and accurately determined by ſome other divided inſtrument, and from this the angle given by each obſervation is calculated.

Mr. Cavallo has contrived a micrometer of very ſimple and eaſy conſtruction. It conſiſts of a ſmall ſemi-tranſparent ſcale or ſlip of mother-of-pearl, about the 20th part of an inch broad, and of the thickneſs of common writing paper. It is divided into a number of equal parts by means of parallel lines, every fifth and tenth of which diviſions is a little longer than the reſt.

This micrometer, or divided ſcale, is ſituated within the tube at the focus of the eye-lens of the teleſcope, where the image of the object is formed, and with its divided edge paſſing through the centre of the field of view; though this is not abſolutely neceſſary. It is immaterial whether the teleſcope be a refractor or a reflector, provided the eye-lens be convex, and not concave, as in the Galilean teleſcope.

The ſimpleſt way of fixing it, is to ſtick it upon the diaphragm, which generally ſtands within the tube, at the focal diſtance of the eye-lens.

By looking through the teleſcope, the image of the object and the micrometer will appear to coincide: hence the obſerver may eaſily ſee how many diviſions of the latter meaſure the length or breadth of the former; and knowing the value of the diviſions of the micrometer, he may eaſily determine the angle which is ſubtended by the object.

There are ſeveral methods of aſcertaining the value of the diviſions of a micrometer in a given teleſcope. The following is one of the eaſieſt.

Direct the teleſcope to the ſun, and obſerve how many diviſions of the micrometer meaſure its diameter exactly; then take out of the Nautical Almanack the diameter of the ſun for the day in which the obſervation is made; divide it by the above-mentioned number of diviſions, and the quotient is the value of one diviſion of the micrometer. Thus, ſuppoſe that 26½ diviſions of the micrometer meaſure the diameter of the ſun, and the Nautical Almanack gives for the meaſure of the angle, which is ſubtended by the ſame diameter, 31′ 22″, or (by reducing it all into ſeconds) 1882″. Divide 1882″ by 26.5, and the quotient, neglecting a ſmall remainder, is 71″, or 1′ 11″; which is the value of one diviſion of the micrometer; the double of which is the value of two diviſions; the treble is the value of three diviſions; and ſo forth.

This mother-of-pearl micrometer may be applied to a microſcope; and it will thus ſerve to meaſure the lineal dimenſions of the object; and the value of its diviſions are aſcertained by placing an object of a known dimenſion before the microſcope, and by obſerving how many diviſions of the micrometer meaſure its magnified image; for inſtance, place a piece of paper, which is exactly one-tenth of an inch long, before the microſcope, and if you find that 50 diviſions of the micrometer meaſure its magnified image, you may conclude that each diviſion is equal to, or rather denotes an extenſion of the 500dth part of an inch in the object; for if 50 diviſions meaſure one-tenth, 500 diviſions muſt meaſure the whole inch; &c. Cavallo's Philoſophy, vol. iii. Phil. Tranſ. vol. lxxxi. art. 19.

The micrometer has not only been applied to teleſcopes, and employed for aſtronomical purpoſes; but there have been various contrivances for adapting it to microſcopical obſervations. M. Leeuwenhoek's method of eſtimating the ſize of ſmall objects was by comparing them with grains of ſand, of which a hundred in a line took up an inch. Theſe grains he laid upon the ſame plate with his objects, and viewed them at the ſame time. Dr. Jurin's method was ſimilar to this; for he found the diameter of a piece of fine ſilver wire, by wrapping it as cloſe as he could about a pin, and obſerving how many rings made an inch; and he uſed this wire in the ſame manner as Leeuwenhoek uſed his ſand. Dr. Hooke uſed to look upon the magnified object with one eye, while, at the ſame time, he viewed other objects, placed at the ſame diſtance, with the other eye. In this manner he was able, by the help of a ruler, divided into inches and ſmall parts, and laid on the pedeſtal of the microſcope, to caſt, as it were, the magnified appearance of the object upon the ruler, and thus exactly to meaſure the diameter which it appeared to have through the glaſs; which being compared with the diameter as it appeared to the naked eye, eaſily ſhewed the degree in which it was magnified. A little practice, ſays Mr. Baker, will render this method exceedingly eaſy and pleaſant.

Mr. Martin, in his Optics, recommends ſuch a micrometer for a microſcope as had been applied to teleſcopes; for he adviſes to draw a number of parallel lines on a piece of glaſs with the fine point of a diamond, at the diſtance of $\frac{1}{40}$th of an inch from one another, and to place it in the focus of the eye-glaſs. By this method, Dr. Smith contrived to take the exact draught of objects viewed by a double microſcope; for he adviſes to get a lattice, made with ſmall ſilver wires or ſquares, drawn upon a plain glaſs by the ſtrokes of a diamond, and to put it into the place of the image formed by the object-glaſs. Then by transferring the parts of the object, ſeen in the ſquares of the glaſs or lattice, upon ſimilar correſponding ſquares drawn on paper, the picture may be exactly taken. Mr. Martin alſo introduced into compound microſcopes another micrometer conſiſting of a ſcrew. See both theſe methods deſcribed in his Optics, p. 277.

The moſt minute and accurate diviſion of any ſcale which the editor has ever ſeen, was performed by Mr. Coventry of Southwark. The micrometers of his conſtruction are parallel lines drawn on glaſs, ivory, or metal, from the 10th to the 10,000dth of an inch. Theſe may be applied to microſcopes, for meaſuring the ſize of minute objects, and the magnifying power of the glaſſes; and to teleſcopes, for meaſuring the ſize and diſtance of objects, and the magnifying power of the inſtrument. For meaſuring the ſize of an object in a ſingle microſcope, lay it on a micrometer, whoſe lines are ſeen magnified in the ſame proportion with it, and give at one view the real ſize of the object. For meaſuring the magnifying power of the compound microſcope, the beſt and moſt ready method is the following. On the ſtage in the focus of the object-glaſs, lay a micrometer, conſiſting of an inch divided into one hundred equal parts; count how many diviſions of the micrometer are taken into the field of view; then lay a two-foot rule parallel to the micrometer: fix one eye on the edge of the field of light, and the other eye on the end of the rule, which move, till the edge of the field of light and the end of the rule correſpond; then the diſtance from the end of the rule to the middle of the ſtage will be the half of the diameter of the field: *e. gr.* if the diſtance be ten inches, the whole of the diameter will be twenty, and the number of the diviſions of the micrometer contained in the diameter of the field, is the magnifying power of the microſcope. Thus, ſuppoſe the number of diviſions ſeen in the micrometer to be $\frac{50}{100}$dths, and that the diameter of the field meaſures with the rule twenty inches; the $\frac{50}{100}$dth of 20 inches is 40, which is the diameter of the field; 40 × 40 = 1600 the ſuperficies, and 1600 × 40 = 64000, the magnified cube of the object: in like manner each object-glaſs or magnifier muſt be proved, and a table kept of their ſeveral magnifying powers. For meaſuring the height and diſtance of objects by a micrometer in the teleſcope, ſee Telescope. Mr. Adams has applied a micrometer, which inſtantly ſhews the magnifying power of any teleſcope.

MICROPHONES, inſtruments contrived to magnify ſmall ſounds, as microſcopes do ſmall objects.

MICROPUS, in *Botany*, derived from μικρος, *ſmall*, and πους, *a foot*; poſſibly from an aſſociation of ideas with *Leontopodium*, Lion's-foot, as this genus is nearly aſſimilated in habit to the *Filago Leontopodium* of Linnæus. It was even ſuppoſed by Dr. Sibthorp to be the real Λεοντοποδιον of Dioſcorides; (ſee Leontopodium.)—Linn. Gen. 451. Schreb. 588. Willd. Sp. Pl. v. 3. 2388. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 3. 280. Juſſ. 185. Lamarck Illuſtr. t. 694. Gærtn. t. 164. (Gnaphalodes; Tournef. t. 261.)—Claſs and order, *Syngeneſia Polygamia Neceſſaria*. Nat. Ord. *Compoſitæ Nucamentaceæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common calyx* double; the outer of five, ſlender, ſmall, obſolete leaves, at the baſe of the inner, which is very large, and compoſed of five, looſe, diſtinct, helmet-ſhaped, compreſſed leaves, conniving longitudinally at the margin. *Cor.* compound, with ten perfect florets in the diſk, and five female ones in the radius: the former of one petal, with five teeth, erect; the latter without any petal. *Stam.* (in the perfect florets) Filaments five, briſtle-ſhaped, very ſhort; anthers cylindrical, tubular, as long as the florets. *Piſt.* (in the ſame florets) Germen obſolete; ſtyle thread-ſhaped, longer than the ſtamens; ſtigma obſolete: (in the female ones) Germen obovate, compreſſed, concealed within each ſcale of the common inner calyx; ſtyle from the inner ſide of the germen, briſtle-ſhaped, turned towards the perfect florets, the length of the calyx; ſtigma cloven, ſlender, pointed. *Peric.* none, except the common inner calyx enlarged and hardened. *Seeds* (in the perfect flowers) none: (in the female ones) ſolitary, obovate, incloſed each in its appropriate leaflet of the inner calyx. *Recept.* furniſhed with acute, ſmall ſcales, which ſeparate the ſeeds of the females, but not the florets of the diſk.

Eſſ. Ch. Receptacle ſcaly. Down none. Calyx double. Radius without a corolla. Female florets incloſed by the ſcales of the common inner calyx.

1. M. *ſupinus*. Linn. Sp. Pl. 1313. Cavan. Ic. v. 22. t. 35.—Stems proſtrate. Leaves oppoſite, obovate-wedge-ſhaped.—A native of Portugal, Spain, Italy, and the Levant, flowering from May to September. Introduced into Chelſea garden in 1759, by Mr. Philip Miller.—*Root* annual, ſomewhat tapering, ſmall, fibrous. *Stems* trailing, numerous, three or four inches long, covered with a ſort of ſilvery nap, as indeed is the whole plant. *Leaves* in pairs, generally oppoſite, or nearly ſo, connate, plaited, three-nerved. *Flowers* axillary, ſeſſile, from the baſe to the top of the ſtem, minute, in ſmall tufts, white and very downy. *Seeds* ovate, brown.

2. M. *erectus*. Linn. Sp. Pl. 1313. Lœfl. It. Hiſp. 166. t. 1. f. 5.—Stems upright. Leaves alternate, lanceolate.—A native of the Eaſt, as well as of France, Italy, and Switzerland.—*Root* annual, fibrous. *Stems* erect, branched, extremely downy. *Leaves* alternate, narrower and more woolly than in the laſt, as is the whole plant, even the *flowers* which are ſeſſile, in axillary tufts.

MICROSCOPE, Μικροσκοπειον, formed of μικρος, *ſmall*, and σκεπτομαι, *I conſider*; an optical inſtrument, by means of which very minute objects are repreſented exceedingly large, and viewed very diſtinctly, according to the laws of refraction or reflection.

Microſcopes are properly diſtinguiſhed into ſimple, or *ſingle*; and compound, or *double*.

Microscopes, *Single*, are thoſe which conſiſt of a ſingle lens, or a ſingle ſpherule.

Microscopes, *Compound*, conſiſt of two or more lenſes duly combined. As optics have been improved, other varieties have been contrived, in the ſorts of microſcopes: hence we have *reflecting* microſcopes, *water* microſcopes, &c. Each of theſe two kinds has its peculiar advantage: for a ſingle glaſs ſhews the object nearer at hand, and rather more diſtinct: and a combination of glaſſes preſents a larger field, or, in other words, exhibits more of an object equally magnified, at the view. As each of theſe has its advantages, each of them has had its advocates, at leaſt in practice. M. Leeuwenhoek never uſed any but ſingle microſcopes; and, on the contrary, Dr. Hooke made all his obſervations with double ones.

When, and by whom, microſcopes were firſt invented, is not certainly known. Huygens tells us, that one Drebell, a Dutchman, had the firſt microſcope, in the year 1621, and that he was reputed the firſt inventor of it: though F. Fontana, a Neapolitan, in 1646, claims the invention to himſelf, but dates it from the year 1618. As a teleſcope inverted is a microſcope, the diſcovery might eaſily enough have ariſen from thence.

Nothing more is certain concerning microſcopes, than that they were firſt uſed in Germany about the year 1621. According to Borellus, they were invented by Zacharias Janſen, in conjunction with his ſon, who preſented the firſt microſcope they had conſtructed to prince Maurice, and Albert, archduke of Auſtria. William Borell, who gives this account in a letter to his brother Peter, ſays, that when he was ambaſſador in England, in 1619, Cornelius Drebell ſhewed him a microſcope, which he ſaid was the ſame that the archduke had given him, and had been made by Janſen himſelf. Borellus de vero Teleſcopii inventore, p. 35. See Lens.

Microscopes, *Foundation and Theory of Single*. If an object A B (*Plate* XII. *Optics*, *fig.* 1.) be placed in the focus of a ſmall convex lens, or a ſimple microſcope D E, and the eye be applied cloſe to the other ſide of the microſcope, *the object will be ſeen diſtinct, in an erect ſituation, and magnified in the ratio of the diſtance of the focus to the diſtance at which objects are to be placed to be ſeen diſtinctly by the naked eye.*

For the object A B being placed in the focus of the convex lens D E, the rays iſſuing from the ſeveral points of it, after refraction, will be parallel to each other: conſequently, the eye will ſee it *diſtinctly*, by virtue of what is proved under the word Telescope.

Further, ſince one of the rays A F, proceeding from the point A, after refraction, becomes parallel to the incident ray; and therefore, ſetting aſide the thickneſs of the lens, is found directly againſt it; and the ſame holds true of all the other rays carried to the eye; the rays A F and B F, to which the reſt coming from A and B are parallel, will enter the eye in the ſame manner as if they entered without paſſing through the lens; and will therefore appear erect, as if the lens were away.

Laſtly, it is manifeſt, that the object A B will be ſeen under the ſame angle as if viewed by the naked eye: but ſince it appears very diſtinct, whereas to the naked eye, at the ſame diſtance, it would appear extremely confuſed; it is the ſame thing as if the object ſhould ſeem removed to the diſtance F H, at which it is viewed with equal diſtinctneſs, and under the ſame angle: the diameter of the object A B, therefore, will be to the apparent diameter I K, as F C to F H, *i. e.* as the diſtance of the focus of the lens to the diſtance at which an object is to be placed, in order to view it diſtinctly. Since, therefore, the interpoſition of the glaſs has no other effect than to render the appearance diſtinct, by helping the eye to increaſe the refraction of the rays in each pencil, it is plain that the greater apparent magnitude is entirely owing to a nearer view than could be taken by the naked eye.

Huygens, in Dioptrics, prop. lix. p. 222, takes it for granted, that an object, ſeen with the naked eye, is then in its utmoſt diſtinctneſs when ſeen at the diſtance of eight digits, or tenths of a foot; which agrees pretty nearly with the obſervations of others; who make the neareſt limit of diſtinct viſion to be eight inches. So that if the glaſs be a ſmall round globule, whoſe focal diſtance is $\frac{1}{20}$th of an inch, this globule will magnify as 8 to $\frac{1}{20}$th, or as 160 to 1.

The diſtance of diſtinct viſion varies in different individuals. Some have ſtated it at ſix inches; others at ſeven; but it has been generally ſuppoſed to be eight inches. The medium of ſeven inches has been adopted by ſeveral optical writers. But whatever it be, if this leaſt diſtance be divided by the focal diſtance of the glaſs, the quotient will ſhew how much the glaſs magnifies the diameter of the object.

Microscopes, *Laws of Single.* 1. Simple microſcopes magnify the diameter of the object A B in the ratio of the diſtance of the focus F C to an interval of eight digits: *v. gr.* if the ſemi-diameter of a lens, equally convex on both ſides, be half a digit, and conſequently its focal diſtance the ſame; A B : I K :: $\frac{1}{2}$: 8 :: 1 : 16; that is, the diameter of the object will be increaſed in a ſedecuple proportion, or as ſixteen to one. 2. Since the diſtance F H is conſtant, *viz.* eight digits; by how much the diſtance of the focus F C is ſmaller, ſo much the ſmaller ratio will it have to F H; conſequently the diameter of the object will be ſo much the more magnified. 3. Since, in plano-convex lenſes, the diſtance of the focus is equal to the diameter; and, in lenſes equally convex on both ſides, to the ſemi-diameter: ſimple microſcopes will enlarge the diameter ſo much the more, as they are ſegments of ſmaller ſpheres. 4. If the diameter of the convexities of a plano-convex lens, and a lens convex on both ſides, be the ſame, *viz.* = 1: the diſtance of the focus of the firſt will be 1, of the ſecond $\frac{1}{2}$: conſequently, the ſemi-diameter of the object A B will be to the apparent one, in the firſt caſe, as 1 to 8; in the latter, as $\frac{1}{2}$ to 8; *i. e.* as 1 to 16. A lens, therefore, convex on both ſides, magnifies twice as much as a plano-convex lens.

As the whole depends on the juſt and ſteady ſituation of objects with regard to the lens, various methods have been contrived to that end; whence we have ſeveral different kinds of ſingle microſcopes. The moſt ſimple is as follows:

1. A B (*fig.* 2.) is a little tube, to one of whoſe baſes, B C, is fitted a plain glaſs, to which an object, *viz.* a gnat, wing of an inſect, down, or the like, is applied; to the other baſe, A D, at a proper diſtance from the object, is applied a lens convex on both ſides, whoſe ſemi-diameter is about half an inch; the plain glaſs is turned to the ſun, or the light of a candle, and the object is ſeen magnified; and, if the tube be made to draw out, lenſes of different ſpheres may be uſed.

Again, a lens, convex on both ſides, is incloſed in a cell A C (*fig.* 3.), and by a ſcrew H is there faſtened: through the pedeſtal C D paſſes a long ſcrew, by means of which, and the female ſcrew I, a ſtyle or needle, fixed perpendicular to its extreme, is kept firm at any diſtance from the lens: in E is a little tube, on which, and on the point G, the various objects are to be diſpoſed: thus there may be lenſes of various ſpheres applied.

2. But the microſcope which is found to anſwer the end beſt, is Mr. Wilſon's pocket microſcope, which has nine different magnifying glaſſes, eight of which may be uſed with two different inſtruments, for better applying them to various objects. One of theſe inſtruments is repreſented at A A B B (*fig.* 4.) and is made of ivory, braſs, or ſilver; it has three thin braſs plates at E, and a ſpiral ſpring of ſteel wire H within it; to one of the thin plates of braſs is fixed a piece of leather, wood, or ivory F, with a ſmall furrow, G, both in the leather and braſs to which it is fixed: in one end of this inſtrument there is a long ſcrew D, with a convex glaſs placed in the end of it at C: in the other end, A A, of the inſtrument there is a hollow ſcrew, in which any of the magnifying glaſſes, M, are ſcrewed when they are to be made uſe of. The nine different magnifying glaſſes are all ſet in ivory, eight of which are ſet in the manner expreſſed at M. The greateſt magnifier is marked upon the ivory, in which it is ſet, with N° 1, the next N° 2, and ſo on to N° 8; the ninth glaſs is not marked, but is ſet in the manner of a little barrel box of ivory, as at *b*, *fig.* 5. R is a flat piece of ivory, of which there are eight belonging to this ſet of microſcopes (though any one who has a mind to keep a regiſter of objects may have as many of them as he pleaſes); in each of them there are four holes *f, f, f,* in which four or more objects are placed between two thin glaſſes, or talcs, when they are to be uſed with the greater magnifiers.

The uſe of this inſtrument A A B B is this. Having taken the handle W from the inſtrument in *fig.* 5, and ſcrewed it upon the button S, take one of your flat pieces of ivory, R, or ſliders (if you pleaſe to call them ſo), and ſlide it betwixt the two thin plates of braſs at E, through the body of the microſcope, ſo that the object you intend to look upon be juſt in the middle; remarking that you put that ſide of the plate R, where the braſs rings are, fartheſt from the end A A; then you are to ſcrew into the hollow ſcrew in the end A A of the body of your microſcope M, the 3d, 4th, 5th, 6th, or 7th magnifying glaſs; which being done, put the end A A cloſe to your eye, and while you are looking through your magnifying glaſs upon the object, you are to ſcrew in or out the long ſcrew D, which moving round upon the leather F, held tight to it by the ſpiral wire H, will bring your object to the true diſtance; which you will know by ſeeing it clearly and diſtinctly: but ſince in the greater magnifiers you can ſee but a ſmall part of the object, *viz.* the legs or claws of a flea; while you are looking upon any part of the object, if you take hold of the end of the plate or ſlider R, on which the object lies, and move it gently, you may ſee the whole object ſucceſſively, or any part of the object you pleaſe; and if that part of the object you deſign to look upon be out of the true diſtance, remember your end ſcrew, D, can always bring it in, by ſcrewing it one way or the other. A ſimpler and more convenient method of mounting ſingle microſcopes is to fix the ſeveral magnifying lenſes in a flat circular piece of braſs, which can be moved round a point as a centre, by the action of an endleſs ſcrew upon the toothed circumference of the circular plate.

After this manner may be ſeen all tranſparent objects, duſts, liquids, cryſtals of ſalts, ſmall inſects, ſuch as fleas, mites, &c. If they be inſects that will creep away, or ſuch objects as one intends to keep, they may be placed between the two regiſter glaſſes *f, f.* For by taking out (with the point of a pen-knife or ſmall plyers) the ring that keeps in the glaſſes *f, f,* where the object lies, they will fall out of themſelves; ſo that you may lay the object between the two hollow ſides of them, and put the ring in as it was before: but if the objects be duſts or liquids, a ſmall drop of the liquid, or a little of the duſt laid on the outſide of the glaſs *ff*, and applied as before, will be ſeen very eaſily.

As to the firſt, ſecond, and third magnifying glaſſes, being marked with a + upon the ivory in which they are ſet, they are only to be uſed with thoſe plates or ſliders that are alſo marked with a +, in which the objects are placed between two thin talcs; becauſe the thickneſs of the glaſſes in the other plates or ſliders, hinders the object from approaching to the true diſtance from theſe greater magnifiers. But the manner of uſing them is the ſame with the former: only remember to be careful when you put in or pull out the plate or ſlider R, on which the object lies, or move it from one object to another, not to let it rub your magnifying glaſs; which is done by unſcrewing a little the end ſcrew D, when you put in or pull out your plate, or move it from one object to another.

For ſeeing the circulation of the blood at the extremities of the arteries and veins, in the tranſparent parts of fiſhes' tails, &c. there are two ſhort glaſs tubes, the one bigger and the other leſſer, in which the fiſh is to be put; when theſe tubes are to be uſed, you are to unſcrew the end ſcrew D in the body of the microſcope, until the glaſs tube can be received eaſily into that little cavity G of the braſs plate faſtened to the leather F, under the other two thin plates of braſs at E. When the tail of your fiſh lies flat to the glaſs tube, ſet it oppoſite to your magnifying-glaſs, and by ſcrewing in or out your end ſcrew D, as is ſaid before, you may eaſily bring it to the true diſtance, and ſee the blood circulate with great pleaſure.

If you would ſee the blood circulate in a frog's foot, chooſe ſuch a frog as will juſt go into your tube; then with a little ſtick expand the hinder foot of the frog, and apply it cloſe to the ſide of the tube, obſerving that no part of the frog hinders the light from coming on its foot; and when you have it at the juſt diſtance, by means of the ſcrew D, as above ſaid, you will ſee the rapid motion of the blood in its veſſels, which are very numerous, in the tranſparent thin membrane that is between the frog's toes. For this object the fourth and fifth magnifiers will do very well; but you may ſee the circulation in the tails of water-newts with the ſixth and ſeventh glaſſes, becauſe the globules of the blood of thoſe newts are as big again as the globules of the blood of frogs or ſmall fiſh, as has been taken notice of in N° 280 of the Philoſophical Tranſactions, p. 1184.

The circulation cannot ſo well be ſeen by the firſt, ſecond, and third magnifiers, becauſe the thickneſs of the glaſs tube in which the fiſh lies, hinders the approach of the object to the focus of the magnifying glaſs.

The other inſtrument (*fig.* 5.) is made of braſs or prince's metal, with joints P, P, P, to turn eaſily any way, and with a ſmall pair of tongs G G, which open at the points K, by preſſing together the two heads of the pins I, I, for taking up of objects. At the other end of theſe tongs G G, is ſcrewed on a round piece of black wood H, with a piece of ivory let into it, for placing opaque objects on, according to their difference of colour. Upon the end L there is a ſcrew, upon which the glaſs *b* ſet in the barrel-box may be ſcrewed. When the other glaſſes are to be uſed, there is a ring R of braſs to be ſcrewed on the end L, into which ring all the other glaſſes, M, (*fig.* 4.) may be ſcrewed. So when any object is taken up in the points of the tongs K, or laid upon the other end H, it may very eaſily (as one who ſees the inſtrument will perceive) be applied to the true focal diſtance of any of the glaſſes M, by the help of the joints P, P, P, and by means of the ſcrew C, with the nut D, which being regulated by a ſpring N, will bring the object to the exact diſtance for diſtinct viſion.

The glaſs placed in the manner of a barrel-box at *b*, is only to be uſed with the braſs inſtrument (or in your hand) being the leaſt magnifier for greater objects, ſuch as fleas and common inſects, &c. remembering to put the hole at *b* next to your eye.

In the viewing of objects, one ought to be careful not to hinder the light from falling on them, by the hat, peruke, or any other thing, eſpecially in looking at opaque objects; for nothing can be ſeen with the beſt of glaſſes, unleſs the object be at a due diſtance, with a ſufficient light. The beſt lights for the plates or ſliders, where the object lies between the two glaſſes, is a clear ſky-light, or where the ſun ſhines on any white thing, or the reflexion of the light from a looking-glaſs. The light of a candle is likewiſe good for the viewing of very ſmall objects, though it be a little uneaſy to thoſe who are not practiſed in microſcopes to find it out. The only uſe of the convex lens at C (*fig.* 4.) is to collect the light into a narrower compaſs where it falls upon the object, after it has paſſed through a moderate hole in the leather F.

For the convenience of thoſe who would draw, or make any ſketches or deſigns of microſcopical objects, they may alſo have a pedeſtal to fix the two inſtruments above deſcribed, and make them ſtationary to any convenient light. This pedeſtal may be placed on a table, and after the object and ſight are fixed, as many perſons as pleaſe may view the object without any trouble or difficulty in finding the light. (Phil. Tranſ. abr. vol. iv. p. 199, &c.) Mr. Baker in his treatiſe "Of Microſcopes," (vol. i.) has deſcribed an invention for fixing the pocket microſcope of Wilſon, and giving light to it by a ſpeculum. For this purpoſe a ſcroll of braſs is fixed upright and ſteady on a round pedeſtal of wood. A braſs ſcrew is made to paſs through a hole in the upper limb of the ſcroll into the ſide of the microſcope, ſo as to ſcrew it faſt to the ſcroll. On the pedeſtal is fixed an arch, in which a concave ſpeculum, ſet in a box of braſs, is ſuſpended by means of two ſmall ſcrews, that faſten to its oppoſite ſides. As the arch turns on the pin by which it is fixed to the pedeſtal, and the ſpeculum turns within the arch, it may, by this twofold motion, be eaſily adjuſted in ſuch a manner as to reflect the light of the ſky, the ſun, or a candle, directly upwards, through the microſcope that is fixed perpendicularly over it; and by ſo doing, may anſwer almoſt all the purpoſes of the large double reflecting microſcope. The body of the microſcope may alſo be fixed horizontally, and objects may be viewed from that poſition, by any light you chooſe; which is an advantage that does not belong to the reflecting microſcope. It may be alſo rendered further uſeful, by means of a ſlip of glaſs, one end of which being thruſt between the plates where the ſliders go, and the other extending to ſome diſtance, ſuch objects may be placed upon it as cannot be applied on the ſliders; and then, having a limb of braſs that may faſten to the body of the microſcope, and extend over the projecting glaſs a hollow ring on which to ſcrew the magnifiers, all ſorts of ſubjects may be examined with great convenience, if a hole be made in the pedeſtal to place the ſpeculum exactly underneath, and thereby throw up the rays of light. What has been ſaid hitherto, is to be underſtood of *lenticular* microſcopes; as for *ſpherical* ones, their doctrine will be underſtood from what follows.

If an object A B (*fig.* 6.) be placed in the focus of a glaſs ſpherule F, and the eye be behind it, *v. gr.* in the focus G; the object will be ſeen diſtinct, in an erect ſituation, and magnified, as to its diameter, in a ratio of ¾ths of the diameter E I, to the diſtance at which objects are to be placed to be ſeen diſtinctly with the naked eye.

The firſt part of the propoſition is proved in the ſame manner of ſpheres, as of lenſes. As, then, a good eye ſees an object diſtinctly at the diſtance of eight digits, a glaſs ſpherule will enlarge the diameter of an object in a ratio of $\frac{3}{4}$ths of the diameter to eight digits. Suppoſe, then, the diameter of the ſpherule E $\frac{1}{10}$th of a digit, C E will be $= \frac{1}{20}$, and F E $= \frac{1}{40}$; and therefore F C $= \frac{1}{20} + \frac{1}{40} = \frac{3}{40}$. Conſequently, the true diameter of an object to its apparent one is in the ratio of $\frac{3}{40}$ to 8; *i. e.* as 3 to 320, or as 1 to 106 nearly.

Now a lens, convex on both ſides, increaſes the diameter in a ratio of the ſemidiameter to the ſpace of eight digits; wherefore $\frac{1}{2}$ having a leſs ratio to eight than $\frac{3}{4}$ths, if a lens and a ſphere have the ſame diameter, the former will magnify more than the latter; and, pretty much after the ſame manner, it may be ſhewn, that a ſphere, of a leſs diameter, magnifies more than another of a large one.

As for the methods of caſting little glaſs ſpherules for microſcopes, they are various. The firſt perſon who improved ſingle microſcopes by uſing ſmall globules of glaſs, made by melting them in the flame of a candle, was Hartſocker, who thus diſcovered the animalcula in ſemine maſculino, and laid the foundation of a new ſyſtem of generation. Wolfius deſcribes the following method of making globules of this kind; a ſmall piece of very fine glaſs, ſticking to the wet point of a ſteel needle, is to be applied to the extreme blueiſh part of the flame of a lamp, or, which is better, to the flame of ſpirit of wine, to prevent its being blackened: being there melted and run into a little round drop, it is to be removed from the flame, upon which it inſtantly ceaſes to be fluid; folding, then, a thin plate of braſs, and making very ſmall ſmooth perforations, ſo as not to leave any roughneſs on the ſurfaces; and, farther, ſmooth them over, to prevent any glaring, fit the ſpherule between the plates againſt the apertures, and put the whole in a frame, with objects convenient for obſervation.

Mr. Adams gives another method, thus: take a piece of fine window-glaſs, and raiſe it, with a diamond, into as many lengths as you think needful, not exceeding an eighth of an inch in breadth; then holding one of thoſe lengths between the fore-finger and the thumb of each hand, over a very fine flame, till the glaſs begins to ſoften, draw it out till it be as fine as a hair, and break; then, applying each of the ends into the pureſt part of the flame, you have two ſpheres preſently, which you may make larger, or leſs, at pleaſure: if they ſtay long in the flame, they will have ſpots; ſo they muſt be drawn out immediately after they are turned round. As to the ſtem, break it off as near the ball as poſſible; and, lodging the remainder of the ſtem between the plates, by drilling the hole exactly round, all the protuberances are buried between the plates; and the microſcope performs to admiration.

Mr. Butterfield, in the Phil. Tranſ. N° 141, recommends, for making glaſs globules clear and without ſpecks, the flame of a lamp, made with rectified ſpirit of wine, and inſtead of a cotton wick, fine ſilver-wire, doubled like a ſkain of thread; then having beaten ſome fine glaſs to powder, and waſhed it clean, he directs to take a little of it upon the ſharp point of a ſilver needle, wetted with ſpittle, and to hold it in the flame, turning it about till it melts, and becomes quite round. When many globules are thus formed, he rubs them with ſoft leather; and having ſeveral ſmall pieces of thin braſs plates, twice as long as they are broad, he doubles them up into the form of a ſquare, and puſhes a fine hole through the middle of them, and having rubbed off the bur about the holes with a whetſtone, and blackened the inſide of the plates with the ſmoke of a candle, he places a globule between the two holes, and tacks the plates together with two or three rivets.

Dr. Hooke uſed to take a very clear piece of glaſs, and to draw it out into long threads in a lamp; then he held theſe threads in the flame, till they ran into round globules hanging to the end of the threads. Then having fixed the globules with ſealing-wax to the end of a ſtick, ſo that the threads ſtood upwards, he ground off the ends of the threads upon a whetſtone, and poliſhed them upon a ſmooth metal plate with a little putty. Mr. Stephen Gray tells us, (Phil. Tranſ. N° 221. 223.) that for want of a ſpirit-lamp, he laid a ſmall particle of glaſs, about the ſize of the intended globule, upon the end of a piece of charcoal; and by means of a blaſt-pipe, with the flame of a candle, he ſoon melted it into a globule. He thus made them indifferently clear, and the ſmalleſt very round; but the larger by reſting upon the coal were a little flattened, and became rough on that ſide. He therefore ground and poliſhed them upon a braſs plate, till he reduced them to hemiſpheres. But he found that the ſmall round globules not only magnified more, but ſhewed objects more diſtinct than the hemiſpheres.

By theſe methods may ſpheres be made much ſmaller than any lens; ſo that the beſt ſingle microſcopes, or thoſe which magnify the moſt, are made of them. For ſuppoſe the diameter of a ſpherule to be $\frac{1}{16}$ of a digit, the diſtance of its focus will be $\frac{1}{64}$; and therefore its real diameter to its apparent one, as $\frac{1}{32} + \frac{1}{64}$; that is, as $\frac{3}{64}$ to 8, or as 3 to 512; or, laſtly, as 1 to 170. The ſurface of an object, therefore, will be increaſed by it in the proportion of 1 to 28900, and its bulk in a ratio of 1 to 4913000.

Mr. Leeuwenhoek and M. Muſchenbroek have ſucceeded very well in ſpherical microſcopes; and the apparatus of the latter is much commended; but we forbear any deſcriptions of them; it being eaſy for any one who conſiders the ſtructure of thoſe conſiſting of lenſes, to conceive how thoſe of ſpheres may be contrived.

Mr. Leeuwenhoek's microſcopes were all ſingle ones; each of them conſiſting of a ſmall double convex glaſs ſet in a ſocket, between two ſilver plates, riveted together, and pierced with a ſmall hole; and the object was placed on the point of a needle, ſo contrived, as to be placed at any diſtance from the lens. If the objects were ſolid, he faſtened them with glue; and if they were fluid, or, on other accounts, required to be ſpread on glaſs, he placed them on a ſmall piece of Muſcovy talc, or glaſs blown very thin, which he afterwards glued to his needle. He had however a different apparatus for viewing the circulation of the blood, which he could fix to the ſame microſcopes. Thoſe which he bequeathed to the Royal Society were contained in a ſmall Indian cabinet, in the drawers of which were thirteen little boxes or caſes, in each of which were two microſcopes, neatly fitted up in ſilver; and both the glaſs and the apparatus were made with his own hands. The greateſt magnifier among theſe enlarged the diameter of an object about 160 times. Phil. Tranſ. Abr. vol. vi. p. 129, &c. Id. vol. viii. p. 121, &c.

Several writers, ſays Mr. Baker (ubi infra) have repreſented the glaſſes uſed by Mr. Leeuwenhoek in his microſcopes, to be little globules or ſpheres of glaſs; but he aſſures us, from an inſpection of his cabinet, that every one of the 26 microſcopes contained in it, was a double convex lens, and not a ſphere or globule.

The ſmalleſt globules, and conſequently the greateſt magnifiers for microſcopes that have yet been executed, were made by F. Di Torre of Naples, who, in 1765, ſent four of them to the Royal Society. The largeſt of them was only two Paris points in diameter, and is ſaid to magnify the diameter of an object 640 times; the ſecond was the ſize of one Paris point; magnifying the diameter 1280 times, and the third no more than one-half of a Paris point, or the 144th part of an inch in diameter, and was ſaid to magnify the diameter of an object 2560 times, and conſequently the ſquare of ſuch a diameter 6,553,600 times. But ſince the focus of a glaſs globule is at the diſtance of one-fourth of its diameter, and, therefore, that of the third globule of Di Torre, above mentioned, only the 576th part of an inch diſtant from the object, it muſt be with the utmoſt difficulty that globules ſo minute as theſe can be employed to any purpoſe; and Mr. Baker, to whoſe examination they were referred, conſiders them as matters of curioſity rather than of real uſe. (Phil. Tranſ. vol. lv. p. 246. vol. lvi. p. 67, &c.) For an account of obſervations made with theſe globules on the blood, ſee Blood.

Experience, ſays Mr. Baker, in his treatiſe "Of Microſcopes," has taught us, that thoſe globules which were at firſt highly extolled and much ſought after, admit ſo little light, can ſhew only ſuch an exceeding minute part of any object, are ſo difficult to be uſed, and ſtrain the eyes ſo much, that their power of magnifying, for want of due diſtinctneſs, is rather apt to produce error than to diſcover truth, and therefore now they are very rarely employed.

In order to ſtate clearly and diſtinctly the method of determining the magnifying powers of glaſſes employed in ſingle microſcopes, we ſhall obſerve, that if the focus of a convex lens (*e. g.*) be at one inch, and the natural ſight at eight inches, which is the common ſtandard, an object may be ſeen through that lens at one inch diſtant from the eye; and will appear, in its diameter, eight times larger than to the naked eye. But as the object is magnified every way equally, in length as well as breadth, we muſt ſquare this diameter, to know really how much it appears enlarged; and we ſhall then find, that its ſuperficies is indeed magnified ſixty-four times.

Again: ſuppoſe a convex lens whoſe focus is at one-tenth of an inch diſtant from its centre: in eight inches there are eighty ſuch tenths of an inch; and therefore an object may be ſeen through this lens eighty times nearer than it can diſtinctly by the naked eye. It will conſequently appear eighty times longer, and eighty times broader, than it does to common ſight; and as eighty multiplied by eighty makes ſix thouſand and four hundred, ſo many times it really appears magnified.

To go one ſtep farther: if a convex glaſs be ſo ſmall, that its focus is no more than one-twentieth of an inch diſtant; we ſhall find that eight inches, the common diſtance of ſight, contains an hundred and ſixty of theſe twentieth parts; and, in conſequence, the length and breadth of an object, when ſeen through ſuch lens, will each be magnified an hundred and ſixty times; which multiplied by an hundred and ſixty, to give the ſquare, will amount to twenty-five thouſand ſix hundred; and ſo many times, it is plain, the ſuperficies of the object muſt appear larger than it does to the naked eye at the diſtance of eight inches.

Therefore, in a ſingle microſcope, to learn the magnifying power of any glaſs, no more is neceſſary than to bring it to its true focus; the exact place of which will be known, by an object's appearing perfectly diſtinct and ſharp when placed there. Then, with a pair of ſmall compaſſes, meaſure, as nearly as you can, the diſtance from the centre of the glaſs to the object you were viewing, and afterwards applying the compaſſes to any ruler with a diagonal ſcale of the parts of an inch marked on it, you will eaſily find how many parts of an inch the ſaid diſtance is. When that is known, compute how many times thoſe parts of an inch are contained in eight inches, the common ſtandard of ſight, and that will give you the number of times the diameter is magnified: ſquaring the diameter will give you the ſuperficies; and if it be an object whoſe depth or whole contents you would learn, multiplying the ſuperficies by the diameter will ſhew the cube or bulk.

A Table of the Magnifying Powers of Convex Glaſſes, employed in Single Microſcopes, according to the Diſtance of their Focus: Calculated by the Scale of an Inch divided into an Hundred Parts: Shewing how many Times the Diameter, the Superficies, and the Cube of an Object is magnified, when viewed through ſuch Glaſſes, to an Eye whoſe natural Sight is at Eight Inches, or Eight Hundred of the Hundredth Parts of an Inch.

			Magnifies the Diameter.	Magnifies the Superficies.	Magnifies the Cube of an Object.	
The focus of a glaſs at	½ or 50	Hundred parts of an inch:	16	256	4,096	Times.
	4/10 or 40		20	400	8,000	
	3/10 or 30		26	676	17,576	
	1/5 or 20		40	1,600	64,000	
	15		53	2,806	148,877	
	14		57	3,249	185,193	
	13		61	3,721	226,981	
	12		66	4,356	287,496	
	11		72	5,184	373,248	
	1/10 or 10		80	6,400	512,000	
	9		88	7,744	681,472	
	8		100	10,000	1,000,000	
	7		114	12,996	1,481,544	
	6		133	17,689	2,352,637	
	1/20 or 5		160	25,600	4,096,000	
	4		200	40,000	8,000,000	
	3		266	70,756	18,821,096	
	1/50 or 2		400	160,000	64,000,000	
	1		800	640,000	512,000,000	

N.B. The greateſt magnifier in Mr. Leeuwenhoek's Cabinet of Microſcopes, preſented to the Royal Society, has its focus, as nearly as can well be meaſured, at 1/20th of an inch diſtance from its centre, and conſequently magnifies the diameter of an object 160 times, and the ſuperficies 25,600. But the greateſt magnifier in Mr. Wilſon's ſingle microſcopes, as they are now made, has uſually its focus at no farther diſtance than about the fiftieth part of an inch; whereby it has the power of enlarging the diameter of an object 400, and its ſuperficies 160,000 times.

The following Table is calculated on the ſuppoſition that the neareſt diſtance at which we can ſee diſtinctly is ſeven inches; and ſhews the magnifying power of ſmall convex lenſes or ſingle microſcopes, not exceeding an inch in focal length.

Focal Diſtance of the Lens or Microſcope.		Number of Times that the Diameter of an Object is magnified.	Number of Times that the Surface of an Object is magnified.	Number of Times that the Cube of an Object is magnified.
100dths of an Inch.		Times. Dec. of a Time.	Times.	Times.
1	100	7.00	49	343
3/4	75	9.33	87	810
1/2	50	14.00	196	2744
2/5	40	17.50	306	5360
3/10	30	23.33	544	12698
2/10	20	35.00	1225	42875
	19	36.84	1354	49836
	18	38.89	1513	58864
	17	41.18	1697	69935
	16	43.75	1910	83453
	15	46.66	2181	101848
	14	50.00	2500	125000
	13	53.85	2894	155721
	12	58.33	3399	198156
	11	63.67	4045	257259
1/10	10	70.00	4900	343000
	9	77.78	6053	470911
	8	87.50	7656	669922
	7	100.00	10000	1000000
	6	116.66	13689	1601613
1/20	5	140.00	19600	2744000
1/25	4	175.00	30625	5359375
	3	233.33	54289	12649337
1/50	2	350.00	122500	42875000
	1	700.00	490000	343000000

Ferguſon's Mechanics by Brewſter, vol. ii. p 449.

Microscope, *Water*. Mr. S. Gray, and, after him, Wolfius, and others, have contrived water microſcopes, conſiſting of ſpherules, or lenſes of water, inſtead of glaſs, fitted up ſomewhat after the manner of thoſe above mentioned (as ſpheres of water may be likewiſe uſed inſtead of glaſs in any of the common microſcopes.) But ſince the diſtance of the focus of a lens or ſphere of water is greater than that of one of glaſs (the ſpheres whereof they are ſegments being the ſame), water microſcopes magnify leſs, and are therefore leſs eſteemed than thoſe of glaſs. The ſame Mr. Gray firſt obſerved, that a ſmall drop or hemiſpherule of water, held to the eye by candlelight or moonlight, without any other apparatus, magnified the animalcula contained in it vaſtly more than any other microſcope. The reaſon is, that the rays, coming from the interior ſurface of the firſt hemiſphere, are reflected ſo as to fall under the ſame angle on the ſurface of the hind hemiſphere, to which the eye is applied, as if they came from the focus of the ſpherule; whence they are propagated to the eye in the ſame manner as if the objects were placed without the ſpherule in its focus. Phil. Tranſ. N° 221. 223. Smith's Optics, vol. ii. p. 334, &c.

Hollow glaſs ſpheres, of the diameter of about half a digit, filled with ſpirit of wine, are frequently uſed for microſcopes: but they do not magnify near ſo much.

Dr. Brewſter, in the Appendix to his edition of Ferguſon's Mechanics, &c., deſcribes a microſcope totally different from that of Mr. Gray, though founded upon the ſame general principle. Inſtead of water, he makes uſe of very pure and viſcid turpentine, which he takes up by the point of a piece of wood, and drops ſucceſſively upon a thin and well poliſhed glaſs: different quantities being thus taken up and dropped in a ſimilar manner form four or more plano-convex lenſes of turpentine varniſh, which may be made of any focal length, by taking up a greater or leſs quantity of the fluid. The lower ſurface of the glaſs having been firſt ſmoaked with a candle, the black pigment below the lenſes is then to be removed, ſo that no light may paſs by their circumference. The piece of glaſs is then to be perforated, and ſurrounded with a toothed wheel, which can be moved round the hole as a centre by an endleſs ſcrew. The apparatus is then placed in a circular caſe, and this caſe fixed to an horizontal arm by means of a braſs pin, which paſſes through its upper and under ſurfaces, and through the hole already mentioned, which does not embrace the pin very tightly, in order that the toothed wheel may revolve with facility. On the upper ſurface of the circular caſe is an aperture directly above the line deſcribed by the centres of the fluid lenſes, when moving round the central hole; and in this aperture is inſerted a ſmall cap, with a little hole at its top, to which the eye is applied. A moveable ſtage carries the ſlider, on which microſcopic objects are laid, and is brought nearer or removed from the lenſes by a vertical ſcrew. The objects on the ſlider are illuminated by a plain mirror, which has both a vertical and horizontal motion for this purpoſe. When the microſcope is thus conſtructed, the object to be viewed is placed upon the ſlider, and the endleſs ſcrew is turned till one of the lenſes be directly under the aperture; and the ſlider is thus raiſed or depreſſed by the vertical ſcrew, till the object be brought into the focus of the lens. In this manner, by turning the endleſs ſcrew, and bringing all the lenſes, one after another, directly below the aperture, the object may be ſucceſſively examined with a variety of magnifying powers. Theſe fluid lenſes have been employed as the object-glaſſes of compound microſcopes.

The *ſingle aquatic microſcope* of Mr. Ellis has the advantage of being ſimple in its conſtruction, portable, and very commodious for the purpoſes of practical botaniſts, the obſervers of animalcula, &c. K (*fig.* 7.) repreſents the box containing the whole apparatus: it is generally made of fiſh-ſkin; and on the top there is a female ſcrew, for receiving the ſcrew that is at the bottom of the pillar A: this is a pillar of braſs, and is ſcrewed on the top of the box. D is a braſs pin which fits into the pillar; on the top of this pin is a hollow ſocket to receive the arm which carries the magnifiers; the pin is to be moved up and down, in order to adjuſt the lenſes to their focal or proper diſtance from the object. [N. B. In the repreſentations of this microſcope, the pin D is delineated as paſſing through a ſocket at one ſide of the pillar A; whereas it is uſual at preſent to make it paſs down a hole bored through the middle of the pillar.] E, the bar which carries the magnifying lens; it fits into the ſocket X, which is at the top of the pin or pillar D. This arm may be moved backwards and forwards in the ſocket X, and ſideways by the pin D; ſo that the magnifier, which is ſcrewed into the ring at the end E of this bar, may be eaſily made to traverſe over any part of the object that lies on the ſtage or plate B. F F is a poliſhed ſilver ſpeculum, with a magnifying lens placed at the centre thereof, which is perforated for this purpoſe. The ſilver ſpeculum ſcrews into the arm E, as at F. G, another ſpeculum, with its lens, which is of a different magnifying power from the former. H, the ſemicircle which ſupports the mirror I; the pin R, affixed to the ſemicircle H, paſſes through the hole which is towards the bottom of the pillar A. B, the ſtage, or the plane, on which the objects are to be placed; it fits into the ſmall dove-tailed arm which is at the upper end of the pillar D A. A plane round glaſs, with a ſmall piece of black ſilk ſtuck on it, is uſed to lie in a circular groove made in the ſtage B. A hollow watch glaſs is to be laid occaſionally on the ſtage inſtead of the plane glaſs. L, a pair of nippers. Theſe are fixed to the ſtage by the pin at bottom; the ſteel wire of theſe nippers ſlides backwards and forwards in the ſocket, and this ſocket is moveable upwards and downwards by means of the joint, ſo that the poſition of the object may be varied at pleaſure. The object may be fixed in the nippers, ſtuck on the point, or affixed, by a little gum-water, &c. to the ivory cylinder N, which occaſionally ſcrews to the point of the nippers.

To uſe this microſcope: take all the parts of the apparatus out of the box; then begin by ſcrewing the pillar A to the cover of it; paſs the pin R of the ſemicircle which carries the mirror through the hole that is near the bottom of the pillar A; puſh the ſtage into the dove-tail at B, ſlide the pin into the pillar (ſee the N.B. above); then paſs the bar E through the ſocket which is at the top of the pin D, and ſcrew one of the magnifying lenſes into the ring at F. The microſcope is now ready for uſe: and though the enumeration of the articles may lead the reader to imagine the inſtrument to be of a complex nature, we can ſafely affirm that he will find it otherwiſe. The inſtrument has this peculiar advantage, that it is difficult to put any of the pieces in a place which is appropriated to another. Let the object be now placed either on the glaſſes of the ſtage, or in the nippers L, and in ſuch manner that it may be as nearly as poſſible over the centre of the ſtage: bring the ſpeculum F over the part you mean to obſerve; then throw as much light on the ſpeculum as you can, by means of the mirror I, and the double motion of which it is capable; the light received on the ſpeculum is reflected by it on the object. The diſtance of the lens F from the object is regulated by moving the pin D up and down, until a diſtinct view of it is obtained. The beſt rule is, to place the lens beyond its focal diſtance from the object, and then gradually to ſlide it down till the object appears ſharp and well defined. The adjuſtment of the lenſes to their focus, and the diſtribution of the light on the object, are what require the greateſt attention: on the firſt the diſtinctneſs of the viſion depends; the pleaſure ariſing from a clear view of the parts under obſervation is due to the modification of the light. No preciſe rule can be given for attaining accurately theſe points; it is from practice alone that ready habits of obtaining theſe neceſſary properties can be acquired, and with the aſſiſtance of this no difficulty will be found.

Mr. B. Martin has alſo contrived a microſcope for ſimilar purpoſes with thoſe to which that of Mr. Ellis is adapted. A B (*fig.* 8.) repreſents a ſmall arm ſupporting two or more magnifiers, one fixed to the upper part as at B, the other to the lower part of the arm at C; theſe may be uſed ſeparately or combined together. The arm A B is ſupported by the ſquare pillar I K, the lower end of which fits into the ſocket E of the foot F G; the ſtage D L is made to ſlide up and down the ſquare pillar; H, a concave mirror for reflecting light on the object.—To uſe this microſcope, place the object on the ſtage, reflect the light on it from the concave mirror, and regulate it to the focus, by moving the ſtage nearer to or farther from the lens at B. The ivory ſliders paſs through the ſtage; other objects may be fixed in the nippers M, N, and then brought under the eye-glaſſes; or they may be laid on one of the glaſſes which fit the ſtage. The apparatus to this inſtrument conſiſts of three ivory ſliders; a pair of nippers; a pair of forceps; a flat glaſs and a concave ditto, both fitted to the ſtage.

The two laſt microſcopes are frequently fitted up with a toothed rack and pinion, for the more ready adjuſtment of the glaſſes to their proper focus.

Dr. Withering, in his "Botanical Arrangements," deſcribes a portable botanic microſcope. It conſiſts of three braſs plates, A, B, C, (*fig.* 9.) which are parallel to each other; the wires D and E are rivetted into the upper and lower plates, which are by this means united to each other; the middle plate or ſtage is moveable on the aforeſaid wires by two little ſockets which are fixed to it. The two upper plates each contain a magnifying lens, but of different powers; one of theſe confines and keeps in their places the fine point F, the forceps G, and the ſmall knife H.—To uſe this inſtrument, unſcrew the upper lens, and take out the point, the knife, and the forceps; then ſcrew the lens on again, place the object on the ſtage, and then move it up or down till you have gained a diſtinct view of the object, as one lens is made of a ſhorter focus than the other; and ſpare lenſes of a ſtill deeper focus may be had if required. This little microſcope is the moſt portable of any. Its principal merit is its ſimplicity.

Mr. B. Martin has contrived to mount ſeveral lenſes in one frame, which are convenient for various purpoſes, and are carried in the pocket. He calls this apparatus a "Hand Megalaſcope," from its uſe in viewing the larger ſort of ſmall objects expeditiouſly. The caſe with its three frames and lenſes, is repreſented in *fig.* 10. The lenſes are commonly of 1, 1½ and 2 inches focus; they are contrived ſo as to turn over each other, and that into the caſe. The three lenſes ſingly afford three magnifying powers; and by combining two and two, we obtain three more; *d* with *e* making one, *d* with *f* another, and *e* with *f* a third; and all three combined together make another; ſo that by this ſimple apparatus we have ſeven different magnifying powers. When the three lenſes are combined, it is better to turn them in, and look through them by the ſmall apertures in the ſides of the caſe. The eye in this caſe is not incommoded by external light; the aberration of the ſuperfluous rays through the glaſſes is precluded; and the eye coincides more exactly with the common axes of the lenſes.

M. Lyonet has invented a curious and uſeful microſcope, for the purpoſe of minute diſſections and microſcopic preparations. A B (*fig.* 11.) is the anatomical table, which is ſupported by a pillar N O; this is ſcrewed on the foot C D. The table A B is prevented from turning round by means of two ſteady pins. In this table or board there is a hole G, which is exactly over the centre of the mirror E F, that is to reflect the light on the object; the hole G is deſigned to receive a flat or concave glaſs, on which the objects for examination are to be placed.

R X Z is an arm formed of ſeveral balls and ſockets, by which means it may be moved in every poſſible ſituation; it is fixed to the board by means of the ſcrew H. The laſt arm I Z has a female ſcrew, into which a magnifier may be ſcrewed as at Z. By means of the ſcrew H, a ſmall motion may be occaſionally given to the arm I Z, for adjuſting the lens with accuracy to its focal diſtance from the object.

Another chain of balls is ſometimes uſed, carrying a lens to throw light upon the object; the mirror is likewiſe ſo mounted, as to be taken from its place at K, and fitted on a clamp, by which it may be fixed to any part of the table A B.

To uſe the Diſſecting Table.—Let the operator ſit with his left ſide near a light window; the inſtrument being placed on a firm table, the ſide D H towards the ſtomach, the obſervations ſhould be made with the left eye. In diſſecting, the two elbows are to be ſupported by the table on which the inſtrument reſts, the hands reſting againſt the board A B; and in order to give it greater ſtability (as a ſmall ſhake, though imperceptible to the naked eye, is very viſible in the microſcope), the diſſecting inſtruments are to be held one in each hand, between the thumb and two fore-fingers.

Microscopes, *Theory of Compound, or Double.* Suppoſe an object-glaſs E D, (*Plate* XII. *Optics, fig.* 1.) the ſegment of a very ſmall ſphere, and the object A B placed without the focus F.

Suppoſe an eye-glaſs G H, convex on both ſides, and the ſegment of a ſphere greater (though not too great) than that of D E; and let it be ſo diſpoſed behind the object, as that if C F : C L :: C L : C K; the focus of the eye-glaſs may be in K.

Laſtly, ſuppoſe L K : L M :: L M : L I.

If, then, O be the place in which an object is ſeen diſtinct with the naked eye; the eye, in this caſe, being placed in I, will ſee the object A B diſtinctly, in an inverted ſituation, and magnified in a compound ratio of M K to L K, and L C to C O; as is proved from the laws of dioptrics; *i. e.* the image itſelf is larger than the object, and we are able to view it diſtinctly at a leſs diſtance. *E. G.* If the image be twenty times larger than the object, and by the help of the eye-glaſs we are able to view it five times nearer than we could have done with the naked eye, it will, on both theſe accounts, be magnified 5 times 20, or 100 times.

Microscopes, *Laws of Double.* 1. The more an object is magnified by the microſcope, the leſs is its *field, i. e.* the leſs of it is taken in at one view.

2. To the ſame eye-glaſs may be ſucceſſively applied object-glaſſes of various ſpheres, ſo as that both the entire objects, but leſs magnified, and their ſeveral parts, much more magnified, may be viewed through the ſame microſcope. In which caſe, on account of the different diſtances of the image, the tube L K, in which the lenſes are fitted, ſhould be made to draw out. For the proportion of the object-glaſs to the eye-glaſs, ſome commend the ſubduple ratio, and ſome the ſubſeſquiſextile. De Chales will have the ſemidiameter of the convexity of the object-glaſs to be ⅓ of a digit, or, at moſt, ½; in the eye-glaſs an entire digit, or even 1½. Cherubin makes the ſemidiameter of the object-glaſs ¼, ⅓, or ½ of a digit; the ſemidiameter of the eye-glaſs 1⅓, or 1½ of a digit.

3. Since it is proved that the diſtance of the image L K from the object-glaſs D E will be greater, if another lens, concave on both ſides, be placed before its focus; it follows, that the object will be magnified the more, if ſuch a lens be here placed between the object-glaſs D E, and the eye-glaſs G H. Such a microſcope is much commended by Conradi, who uſed an object-lens, convex on both ſides, whoſe ſemidiameter was two digits, its aperture equal to a muſtard-ſeed; a lens, concave on both ſides, 12, or at moſt 16 digits; and an eye-glaſs, convex on both ſides, of ſix digits.

4. Since the image is projected to the greater diſtance, the nearer another lens, of a ſegment of a larger ſphere, is brought to the object-glaſs; a microſcope may be compoſed of three lenſes which will magnify prodigiouſly.

5. From theſe conſiderations it follows, that the object will be magnified the more, as the eye-glaſs is the ſegment of a ſmaller ſphere; but the field of viſion will be the greater, as the ſame is a ſegment of a larger ſphere. If, then, two eye-glaſſes, the one a ſegment of a larger, the other of a ſmaller ſphere, be ſo combined, as that the object appearing very near through them, *i. e.* not farther diſtant than the focus of the firſt, be yet diſtinct; the object, at the ſame time, will be exceedingly magnified, and the field of viſion much greater than if only one lens was uſed; and the object will be ſtill more magnified, and the field enlarged, if both the object and eye-glaſs be double. But in regard an object appears dim, when viewed through ſo many glaſſes, part of the rays being reflected in paſſing through each, the multiplying of lenſes is not adviſable; and the beſt, among compound microſcopes, are thoſe which conſiſt of one object-glaſs and two eye-glaſſes. Theſe eye-glaſſes are placed ſometimes cloſe together, and ſometimes an inch aſunder; by which means, although the object appears leſs magnified, yet the viſible area is much enlarged by the interpoſition of a ſecond eye-glaſs, and thus a much pleaſanter view is obtained. This additional lens is called the amplifying glaſs, and is generally about 1½ inch in diameter, and 2½ inches in focal length.

Dr. Hooke tells us, in the preface to his Micrography, that in moſt of his obſervations he uſed a microſcope of this kind, with a middle eye-glaſs of a conſiderable diameter, when he wanted to ſee much of the object at one view, and took it out when he would examine the ſmall parts of an object more accurately; for the fewer refractions there are, the more light and clear the object appears.

For a microſcope of three lenſes, De Chales commends an object glaſs of ⅕ or ¼ of a digit; and the firſt eye-glaſs he makes 2 or 2½ digits; the diſtance between the object-glaſs and eye-glaſs about twenty lines. Conradi had an excellent microſcope, the object-glaſs of which was half a digit, and the two eye-glaſſes (which were placed very near) four digits; but it anſwered beſt, when, in lieu of the object-glaſs, he uſed two glaſſes, convex on both ſides, their ſphere about a digit and a half, or at moſt two, and their convexities touching each other within the ſpace of half a line. Euſtachius de Divinis, inſtead of an object-glaſs convex on both ſides, uſed two plano-convex lenſes, whoſe convexities touched; Grindelius did the ſame, only that the convexities did not quite touch. Zahnius made a binocular microſcope, in which both eyes were uſed.

It is obſerved that compound microſcopes ſometimes exhibit a fallacious appearance, by repreſenting convex objects concave, and *vice verſâ.* See Phil. Tranſ. N° 476. p. 387.

The magnifying power of a microſcope with more than two lenſes, muſt be computed from the effect of all the lenſes (ſee Lens); or it may be aſcertained experimentally in the following manner. Place part of a divided ruler before the microſcope, ſo that, looking through the inſtrument, you may ſee one of its diviſions magnified; then open the other eye alſo, and looking with it at the ruler out of the microſcope, you will perceive the image of the magnified diviſion as it were projected upon the ruler; and you may eaſily ſee how many diviſions of the unmagnified ruler meaſure, or are equal to, the ſingle magnified diviſion, and that number is the magnifying power of that microſcope. Thus, if the ruler be divided after the common way into inches and tenths, and if you find that one magnified tenth is equal to three inches, you may conclude that the microſcope magnifies 30 times.

Microscope, *Structure or Mechaniſm of a Double.* The induſtry and addreſs of our countryman, Mr. Marſhal, here deſerve to be remembered: the conſtruction of the original double microſcope being of his contrivance. In this the eye-glaſs is at W (*Plate* XIII. *fig.* 1.) the object-glaſs at C, the middle glaſs at A 1: B is the cover or lid, to keep out the duſt from the eye-glaſs W; X is the place of the eye, W a ſcrew where the eye-glaſs lies; A 1 a ſcrew where the middle glaſs lies; A 2 the drawer, where the outermoſt tube A 1 A 2 is disjoined from the inner one, of the ſame length; Z the frame or baſis on which the microſcope ſtands firm; T a ſmall drawer in the frame or baſis, with a ledge or till in it, having ſix partitions to hold ſo many ſeveral object-glaſſes, one magnifying more than another, and fixed in braſs cells ready to ſcrew on at C, and marked 1, 2, 3, 4, 5, 6; theſe partitions are alſo marked 1, 2, 3, 4, 5, 6; the other part of the drawer ſerves to hold the object-plate; a pair of ſmall nippers, to take up, or handle any object conveniently; another object-plate, having one ſide white and the other black, to fix your objects upon, as black upon white, and white objects on black. L M is a braſs ball and ſocket, on which the whole body of the microſcope is moveable, ſo as to lie in any poſition for the light. L K, a ſquare braſs pillar, on which the microſcope is moveable up and down, by means of the collar E, into which the arm D (holding the microſcope) is continued. G, another braſs collar ſliding up and down on the pillar L K, having a ſmall ſcrew H, by which it is, as occaſion ſerves, fixed faſt to the ſaid pillar, at any height. I, a large braſs nut, in whoſe centre is a female ſcrew, fitted to the male ſcrew F, which is fixed in the collar E; by the turning of which nut I (the collar G being firſt fixed to the pillar by the ſcrew H) the microſcope is raiſed up or down on the pillar, and made to come nearer or go farther from the object P *c*; and, which is alſo a very great advantage, the axis of the microſcope is always kept perpendicular to that point of the object, over which it was firſt placed; ſo that here is not the inconvenience which occurs in other glaſſes of often loſing the ſight of the object, by ſcrewing the glaſs C higher or lower. P Q is a glaſs object-plate fixed in a braſs frame, whoſe arm N N is fixed to the pillar by means of the nut O. The arm N N hath in it a ſlit, by which it is eaſily put on, or taken off the pillar, and by which it may be fixed upon it at any diſtance. P, a ſmall fiſh lying on the glaſs-plate, that the circulation of the blood may be ſeen in the end of the tail-fin. R, a convex glaſs, by whoſe help a bright ſpot of light is brought from a candle at S, ſtanding on the ground, while the microſcope ſtands on the edge of a table or ſtool, which ſpot of light, *c*, ſerves to render the circulation more conſpicuous. V, a leaden coffin to be put on the fiſh, to hinder it from ſpringing away, and moving his tail out of the light. 1, 2, 3, 4, 5, 6, are marked on the pillar L K, to ſhew the reſpective diſtances of the object-glaſſes from the object you look upon according as the object-glaſſes you make uſe of magnify more or leſs. Thus, for inſtance, if you uſe the object-glaſs 5 or 6 (either of which will ſhew the circulation of the blood) you muſt fix the upper edge of the collar E, at the mark 5 or 6 on the pillar. And then the microſcope will be very near its exact diſtance from the object; ſo that by a ſmall turn or two of the nut I one way or the other, to be found by trial, you may ſoon fit it exactly to your own eye.

By this microſcope liquors alſo may be very commodiouſly examined; for if you place a ſmall drop of any liquor on the glaſs-plate, juſt in the middle of the ſpot of light *c*, the parts of it will become very viſible, and its animalcula, if it have any, will be diſcovered. And thus may the eels in vinegar, the ſmall creatures in black-pepper water, or in water where wheat, barley, &c. has been infuſed, the eels and other ſmall living creatures in puddle-water, be as plainly ſeen as by almoſt any other microſcope.

In the microſcope, in which the objects are illuminated by reflection, made by Mr. Culpeper and Mr. Scarlet, as an improvement of Mr. Marſhal's, the inner tube, *ab*, (*fig.* 2.) which ſlides in the outer, *cd*, holds all the glaſſes. The eye-glaſs is at *aa*, the broad middle glaſs at *bb*, and the object-glaſs, being ſet in a button at *e*, is ſcrewed upon the end of a narrower tube *fg*; which being fixed in the baſe of the inner tube, paſſes freely through a hole in the baſe of the outer. The buttons that contain ſeveral object-glaſſes are marked 1, 2, 3, &c. and the convexity of the inner tube is alſo marked with dotted circles, numbered 1, 2, 3, &c. in order to bring that circle to coincide with the mouth *cc* of the outer tube, whoſe number is the ſame as that of the object-glaſs then made uſe of. But if the object does not yet appear quite diſtinct, the pinion R muſt be turned, which, by a rack on the tube of the microſcope, brings it nearer to the object placed below it. Of theſe glaſſes the greater magnifiers are known by their having ſmaller apertures.

The baſe *dd* of the outer tube is ſupported by three braſs pillars, fixed into a wooden pedeſtal *h*; and a little below the object-glaſs *f*, a circular plate *ik* is fixed like a ſtage between the pillars, having a circular hole in the centre to receive glaſſes, &c. to place objects upon. Three ſmall braſs circles *mn*, with holes through the middle of them, are to be placed over the hole in the middle of the ſtage; and then the ivory ſliders with objects may be put between the two uppermoſt of theſe circles, which are preſſed together by a ſpiral ſpringing wire lodged between the two undermoſt; the two outermoſt being held together by two ſmall pillars paſſing through two holes in the circumference of the middle circle. For viewing the circulation of the blood, the button *p*, on the under ſide of the frame of a broad plane glaſs *qr*, being put through a ſlit made in the ſtage, a ſmall braſs bolt *s*, under the ſtage, muſt be ſhoved inwards, till a ſmaller ſlit in it embraces the neck of the ſaid button; and then the fiſh being laid upon this glaſs, and covered with the leaden coffin V, (*fig.* 1.) its tail may be brought exactly under the object-glaſs by turning the glaſs *pq* about the button, or by ſhoving it inwards or outwards along the ſlit in the ſtage. The circular object-plate *vx* has a like button in its centre, to be put into the ſame ſlit as before; and then the different objects, placed between two talcs in the holes made round the circumference of the plate, may be viewed ſucceſſively by turning the plate about its centre.

All theſe tranſparent objects are illuminated extremely well in this microſcope, either by candle-light or ſky-light reflected upwards from a concave looking-glaſs *yz*, placed in a frame from the centre *h* of the pedeſtal. While you are viewing the object through the microſcope, turn this concave upon its horizontal poles *y*, *z*, and you will ſoon find out that poſition of it in which it reflects the moſt light through the hole in the ſtage upon the object; and this happens when it reflects the rays very obliquely. Opaque objects, when laid upon a black ebony or a white ivory plate, put into the hole upon the ſtage, may be illuminated by candle-light tranſmitted through a double convex lens $\alpha\beta$; the ſtem of the frame $\alpha\beta$, in which it turns, being put into the hole in the ſtage. The candle muſt be placed in a line drawn from the object through the middle of this lens, at ſuch a diſtance from it as ſhall cauſe the ſpot of light upon the object-plate to be the narroweſt. By day-light this lens gives little or no advantage to the direct ſky-light.

Mr. Adams, in his "Eſſays," has deſcribed an improvement of this kind of microſcope, which is as follows: A B (*Plate* XIV. *fig.* 1.) repreſents the body of the microſcope, containing a double eye-glaſs and a body-glaſs: it is here ſhewn as ſcrewed to the arm C D, from whence it may be occaſionally removed, either for the convenience of packing, or when the inſtrument is to be uſed as a ſingle microſcope.

The eye-glaſſes and the body-glaſſes are contained in a tube which fits into the exterior tube A B; by pulling out a little this tube when the microſcope is in uſe, the magnifying power of each lens is increaſed.

The body A B of the microſcope is ſupported by the arm C D; this arm is fixed to the main pillar C F, which is ſcrewed firmly to the mahogany pedeſtal G H; there is ſometimes a drawer to this pedeſtal, which holds the apparatus.

N I S, the plate or ſtage which carries the ſlider-holder K L: this ſtage is moved up or down the pillar C F, by turning the milled nut M; this nut is fixed to a pinion, that works in a toothed rack cut on one ſide of the pillar. By means of this pinion, the ſtage may be gradually raiſed or depreſſed, and the object adjuſted to the focus of the different lenſes.

K L is a ſlider-holder, which fits into a hole that is in the middle ſtage N I S; it is uſed to confine and guide either the motion of the ſliders which contain the objects, or the glaſs tubes that are deſigned to confine ſmall fiſhes for viewing the circulation of the blood. The ſliders are to be paſſed between the two upper plates, the tubes through the bent plates.

L is a braſs tube, to the lower part of which is fixed the condenſing lens for concentrating the light reflected up from the mirror O; it fits into the under part of the ſlider-holder K L, and may be ſet at different diſtances from the object, according to its diſtance from the mirror or the candle.

O is the frame which holds the two reflecting mirrors, one of which is plane, the other concave. Theſe mirrors may be moved in various directions, in order to reflect the light properly, by means of the pivots on which they move, in the ſemicircle Q S R, and the motion of the ſemicircle itſelf on the pin S: the concave mirror generally anſwers beſt in the day-time; the plane mirror combines better with the condenſing lens, and a lamp or candle. At D there is a ſocket for receiving the pin of the arm Q (*fig.* 2.) to which the concave ſpeculum R, for reflecting light on opaque objects, is ſcrewed. At S is a hole and ſlit for receiving either the nippers *a b c* (*fig.* 7.), or the fiſh pan (*fig.* 8.); when theſe are uſed, the ſlider-holder muſt be removed. A hole is made in the oppoſite ſide of the ſtage to receive the pin *g* of the convex lens S, *fig.* 3.

To uſe this microſcope: Take it out of the box. Screw the body into the round end of the upper part of the arm C D. Place the braſs ſliders, which contain the magnifiers, into the dove-tailed ſlit which is on the under ſide of the aforeſaid arm, as ſeen at E, and ſlide it forwards until the magnifier you mean to uſe is under the centre of the body: oppoſite to each magnifier in this ſlit there is a notch, and in the dove-tailed part of the arm C D there is a ſpring, which falls into the above-mentioned notch, and thus makes each magnifier coincide with the centre of the body. Paſs the ivory ſlider you intend to uſe between the upper plates of the ſlider-holder K L, and then reflect as ſtrong a light as you can on the object by means of one of the mirrors; after this, adjuſt the object to the focus of the magnifier and your eye, by turning the milled ſcrew M, the motion of which raiſes and depreſſes the ſtage N I S. The degree of light neceſſary for each object, and the accuracy required in the adjuſtment of the lenſes to their proper focal diſtance from the object, will be eaſily attained by a little practice.

When *opaque* objects are to be examined, remove the ſlider-holder, and place the object on a flat glaſs, or fix it in the nippers (*fig.* 7.); the pin *c* of theſe fits into the hole on the ſtage; ſcrew the concave ſpeculum R into the arm Q (*fig.* 2.) and then paſs the pin of this arm through the ſocket D, (*fig.* 1.) the light is now to be reflected from the concave mirror to the ſilver ſpeculum, and from this down on the object. No exact rule can be given for reflecting the light on the object; we muſt therefore refer the reader to the mother of all aptneſs, practice. The ſpeculum muſt be moved lower or higher, to ſuit the focus of the different magnifiers and the nature of the object.

The foregoing directions apply equally to the uſing of this inſtrument as a *ſingle* microſcope; with this difference only, that the body A B is then removed, and the eye is applied to the upper ſurface of the arm C D, exactly over the magnifiers.

This microſcope is ſometimes made with the following *alterations*, which are ſuppoſed to render it ſtill more convenient and uſeful. The arm C D that carries the body and magnifiers is made both to turn on a pin, and to ſlide backwards and forwards in a ſocket at C; ſo that, inſtead of moving the objects below on the ſtage, and diſturbing them, the magnifiers are more conveniently brought over any part of the objects as deſired. The condenſing glaſs is made larger, and ſlides upon the ſquare bar C F quite diſtinct from the ſtage, like the mirrors below; and it is thereby made uſeful for any other objects that may be applied on glaſſes fitted to the ſtage, as well as thoſe put into the ſlider-holder K. It is thereby not confined to this ſtage alone, as in the preceding. When the body A B is taken away, the arm C D may be ſlipt away from its bar, with the magnifiers, and the forceps, wire, and joint, applied to it as at *fig.* 7.; and it thereby ſerves the purpoſe of a ſmall hand ſingle or opaque microſcope, for any object occaſionally applied to this wire. The magnifiers in the ſlider E are mounted in a wheel caſe, which perhaps prevents its being in the way ſo much as the long ſlider E before deſcribed. This contrivance is repreſented in *fig.* 5, and ſeparated in *fig.* 4.

Mr. Martin's new univerſal compound microſcope, which combines the uſes and advantages of the ſingle, compound, opaque, and aquatic microſcopes, as now conſtructed by the opticians of London, is repreſented in *fig.* 5. A, B, D, is the body of the microſcope; which conſiſts of four parts, *viz.* A B the eye-piece, or that containing the eye-glaſſes, and is ſcrewed into the top of a moveable or ſliding tube which contains the body-glaſs ſcrewed into its lower part. D is the exterior tube or caſe, in which the other ſlides up and down in an eaſy and ſteady manner. This motion of the interior tube is uſeful to increaſe or decreaſe the magnifying power of the body-glaſs when thought neceſſary, as before-mentioned. E is a pipe or ſnout ſcrewed on to the body of the microſcope D, and at its lower part, over the ſeveral magnifying lenſes hereafter deſcribed. F G H I is the ſquare ſtem of the microſcope, upon which the ſtage R moves in an horizontal poſition, upward or downward, by means of the fine rack-work of teeth and pinion. K L is a ſtrong ſolid joint and pillar, by which the poſition of the inſtrument is readily altered from a vertical one to an oblique or to a perfectly horizontal one, as may be required: it is thus well adapted to the eaſe of the obſerver either ſitting or ſtanding; and as it is very often convenient to view objects by direct unreflected light, when the ſquare ſtem F I is placed in an horizontal poſition for this purpoſe, the mirror T is then to be taken off in order to prevent the obſtruction of the rays. N O P, the tripod or foot by which the whole body of the microſcope is ſteadily ſupported; theſe three arms fold up under each other at N, when packed into the caſe. W is a braſs frame, that contains the condenſing lens, and acts in conjunction with the large concave and plane mirrors below at T; the reflected rays from which, either of the common light or of that of a candle or lamp, it agreeably modifies, and makes ſteady in the field of view.

The particulars of the apparatus to this microſcope are as follow: Q (ſee alſo *fig.* 4.) is a circular braſs box, containing ſix magnifiers or object lenſes, numbered 1, 2, 3, 4, 5, 6; the digits of which appear ſeverally through a ſmall round hole *y*, (*fig.* 4.) in the upper plate of it. To the upper ſide is fixed a ſmall circle of braſs *z*, by which it is connected with, and ſcrewed into, the round end of the arm *a b c d*; which is a long piece of braſs, and moves through either by teeth or pinion, or not, as may be deſired, in *e f*; which is a ſocket on the upper part of the pillar, and admits, with a motion both eaſy and ſteady, the braſs arm. R is a fixed ſtage, upon which the objects to be viewed are to be placed: it is firmly faſtened to the ſquare pillar, which is moved by the rack-work. In the middle is a large circular hole, for receiving concave glaſſes, with fluids, &c. it has alſo a ſliding ſpring-frame to faſten down ſlips of glaſs or other things: at *q t x* are three ſmall ſockets or holes, intended to receive ſeveral parts of the apparatus. S is the refractor, or illuminating lens, for converging the ſun's rays upon opaque objects laid upon the ſtage R. Or it may be fixed, as in *fig.* 3, to move in a ſemicircle, fixing its long ſhank *g*, in a ſpring ſocket *h*, in the arm *i*; this arm moving every way by a ſtout pin *k* in the ſocket *t* of the ſtage. In this manner it is eaſily adjuſted to any poſition of the ſun, candle, &c.—T, the reflecting-glaſs frame, containing a concave and plane ſpeculum, which is moved upon the ſquare pillar by the hand. The uſe of it is to illuminate all tranſparent objects that are applied to the ſtage above.

Beſides the apparatus repreſented, there is an auxiliary moveable ſtage; which by means of a pin is placed in the hole *t* of the ſtage R, and can be moved in an horizontal direction over the whole field of the ſtage. In this ſtage, there are three circular holes with ſhouldered bottoms; a large one in the middle, and on each ſide a ſmall one, for the reception of the three following neceſſary articles: a watch-glaſs to be placed in the large hole, to hold fluids containing animalcules, &c.; a circular piece of ivory, one ſide of which is black, the other white, to ſupport opaque objects of different contraſted colours; and circular plane and concave glaſſes, for extemporaneous tranſparent objects.—The ſame uſe is made of the two ſmall holes as of the large one, only in a leſſer degree, to receive ſmall concave glaſſes, plates, &c.

L (*fig.* 6.) is the ſilvered ſpeculum, called a *Lieberkhun*, which makes the ſingle opaque microſcope, by being ſcrewed to the ſlider *a b c* (*fig.* 5.) in room of the box of lenſes Q, and the body A E above it. The chief uſe of this is to view very ſmall objects ſtrongly illuminated near the compounded focus of the mirror T (*fig.* 5.) In *fig.* 7. are the forceps or pliers, for holding ſuch kind of objects, and by which they can be applied very readily to the focus of the lens in the Lieberkhun. They have a motion all ways by means of the ſpring ſocket *a*, the joint *b*, and the ſhank *c*: they are placed with the pin *c* in the ſocket *t* of the fixed ſtage R (*fig.* 5.) and 7 is a ſmall piece of ivory, to be placed upon the pointed end of the pliers: it is black upon one ſide, and white upon the other, to receive opaque objects.

R (*fig.* 2.) is a Lieberkhun of a larger ſize than that firſt mentioned, with a hole in its centre: this is ſcrewed into the hole Q of a braſs ring, faſtened to a long wire *d*; which moves up and down in the ſpring ſocket *x* of the ſtage R, (*fig.* 5.) in which it alſo moves ſideways; and thus, with the body A E above, forms an *aquatic compound* microſcope for ſhewing all ſorts of objects in water and other fluids placed under it in a watch-glaſs on the ſtage.

Sometimes a cone is uſed, with a proper aperture to exclude ſuperfluous light, that would diſturb a critical obſervation of a curious object; it is ſcrewed to the under ſide of the fixed ſtage R.

There is what is uſually called a bug-box, conſiſting of a concave glaſs with a plane one ſcrewed over it; by means of which a bug, louſe, flea, &c. may be ſecured and viewed alive. It is to be placed on the ſtage. R

Fig. 8. is the fiſh-pan. In the long concave body *a b*, a fiſh may be ſo confined by the ribband *c*, that the tranſparent tail may be in part over the ſlit or hole at *d*. In this ſtate, it is placed on the ſtage R, with the pin *d* in the hole *t* of the ſtage, and moves freely and horizontally for viewing the circulation of the blood, &c.

A ſlider-holder may be placed on the ſtage R: it receives the ſliders and tubes when filled with tranſparent objects, to be viewed either by the compound or ſingle microſcope.

Fig. 9. repreſents the ivory ſlider, to hold the objects between the talcs as uſual.

Fig. 10. is a uſeful auxiliary ſlider framed in braſs. In this ſlider ſmall concave glaſſes are cemented; and a ſlip of plane glaſs ſlides over them; by which any ſmall living object, as mites, &c. may be confined without injury, and deliberately viewed.

The inſtrument has a ſet of glaſs tubes, three in number, one within another; they are uſeful for ſmall tadpoles, water-newts, eels, &c. when the circulation of the blood is to be viewed. There is a ſmall hole at one end of each tube, that ſerves to admit the air; for when they are filled with water, the other end is ſtopped with a cork.

A ſmall ivory box, containing ſpare talcs and wires, to ſupply the ſliders with occaſionally.

X, (*fig.* 6.) is a braſs cell or button, containing a very ſmall lens, properly ſet between two ſmall plates of braſs, that it may be brought very near to the object when viewed with it as a ſingle microſcope. This magnifier is ſcrewed into the ſame hole as the wheel of ſix magnifiers Q are in *fig.* 5.

There is a lens, adapted to view and examine objects, by magnifying them ſufficiently, ſo as to be able to apply them to the microſcope for inſpection: on this account it is called the *explorator*.

The preceding are the chief articles of the apparatus; which, on account of their being ſomewhat different from what is applied to other microſcopes, we have been thus particular in deſcribing. In uſing the microſcope, and while viewing objects by either the ſingle or compound inſtrument, the focal diſtances of the magnifiers are made perfectly exact by turning of the pinion at the nut *w*, in one way or the other, very gently in the teeth of the rack-work at the front of the bar F I.

It is neceſſary that the centres of the object lenſes or magnifiers, the ſtage, and the mirrors at bottom, ſhould all be in a right line in the axis of the microſcope, when opaque objects are to be viewed, that are placed upon the ivory plate 7, or the forceps, and all other ſuch ſorts of objects which are placed in the centre of the ſtage R, or the ſlider-holder: but when aquatic or living objects, which require a great ſpace to move in, are to be viewed, then the horizontal motion at *e f* (*fig.* 5.) is made uſe of, and the view may be extended laterally over the whole of the diameter of the object or field of view; and by putting the arm *a b c* forward or backward in its ſocket *e f*, the view is extended in the contrary direction equally well; and in this manner the whole of the objects may be viewed without the leaſt diſturbance.

As the braſs arm *a b c* may be brought to the height of three or four inches above the ſtage R; ſo, by means of the rack-work motion of the ſtage, a lens of a greater focal diſtance than the greateſt in the wheel Q may be occaſionally applied in place of the wheel, and thereby the larger kind of objects be viewed; the inſtrument becoming, in this caſe, what is called a *megalaſcope*. Two ſizes of theſe lenſes, furniſhed with Lieberkhuns, are ſhewn at L M, *fig.* 6.

In viewing moving living objects, or even fixed ones, when nice motions are requiſite, a rack-work and pinion is often applied to the arm *a b c*: the arm is cut out with teeth; and the pinion, as ſhewn at Y, is applied to work it. This acts but in one direction; and, in order to produce an equally neceſſary motion perpendicular to this, rack-work and pinion is applied tangent-wiſe to the ſtage, which is then jointed.

To fit microſcopes, as well as teleſcopes, to ſhort-ſighted eyes, the object-glaſs and the eye-glaſs muſt be placed a little nearer together, ſo that the rays of each pencil may not emerge parallel, but may fall diverging upon the eye.

Microscope, *Reflecting*, is properly that which magnifies by reflection, as the above-mentioned ones do by refraction.

The ſtructure of ſuch a microſcope may be conceived thus: near the focus of a concave ſpeculum, AB (*Plate* XIII. *fig.* 3.) place a minute object C, that its image may be formed larger than itſelf in D; to the ſpeculum join a lens, convex on both ſides, E F, ſo as the image D may be in its focus.

The eye will here ſee the image inverted, but diſtinct, and enlarged; conſequently, the object will be larger than if viewed through the lens alone.

The inventor of this microſcope is the great ſir I. Newton; but the objects appear dim in it.

Any teleſcope is converted into a microſcope, by removing the object-glaſs to a greater diſtance from the eye-glaſs. And ſince the diſtance of the image is various, according to the diſtance of the object from the focus; and it is magnified the more, as its diſtance from the object-glaſs is greater; the ſame teleſcope may be ſucceſſively converted into microſcopes, which magnify the object in different degrees.

The conſtruction of this microſcope is more particularly explained in *fig.* 4. in which, inſtead of the lens d e f, there is placed a ſmall ſpeculum *d e f*; ſo that the object *a c b* being placed above it, at a little greater diſtance from the focus *g*, has its image A C B, formed by reflection, as in the other caſe it was by refraction, through the lens d f. Now if we ſuppoſe the focal diſtance of the object ſpeculum *d e f*, and lens d e f the ſame, the effect of the microſcope in other reſpects will be the ſame alſo.

For the diſtance of the object *a b* above the ſpeculum, will be equal to the diſtance of the object a b below the lens, in order that the image may be formed at the ſame diſtance C *e*. The poſition of the object will be inverted; for all the rays flowing from the point *a*, will be reflected by the ſpeculum to the point A, in the ſame manner as if they came by refraction through the lens from the point a. Thus the part *b* in the object will be reflected to the focus B in the image, which, therefore, is inverted. The power of magnifying will alſo be the ſame in this and in the reflecting teleſcope of a ſimilar conſtruction. For ſince the image A B and the object *a b* are ſeen under equal angles from the vertex *e* of the ſpeculum, the triangles *a e b*, and A *e* B will be ſimilar, and therefore AB : *a b* :: C *e* : *c e*; but in the other it is A B : a b :: C e : c e. But the latter ratio of theſe analogies is the ſame in both, and conſequently the firſt is ſo too, This microſcope is not ſo eaſy to manage as the common ſort. For viſion by reflection, as it is much more perfect, ſo it is far more difficult than that by refraction. Nor is this microſcope ſo uſeful for any but very ſmall or tranſparent objects. For the object, being between the ſpeculum and image, would, if it were large and opaque, prevent a due reflection.

In Dr. Smith's reflecting microſcope there are two reflecting mirrors, one concave and the other convex, and the image is viewed by a lens. To explain it, let A D (*fig.* 5.) be a large concave ſpeculum, and *a d* a ſmall convex one, each perforated in the middle with the holes B C, *b c*. Both theſe are ſegments of the ſame ſphere, or ground on tools of an equal radius, *viz.* of two inches, that ſo the focal diſtance of each ſpeculum may be juſt one inch.

Theſe two ſpeculums are placed at the diſtance of about 1½ inch from each other, that ſo an object O P Q, being placed a little below the ſmaller ſpeculum, might be between the focus F and centre E of the larger ſpeculum. Things thus circumſtanced, the rays P A, P D, which flow from the point P in the object, on the ſpeculum A D, will be reflected towards a focus *p*, where an image *o p q* would be formed, if the rays were not intercepted by the convex ſpeculum *a d*; and the point *p* being nearer than its focus *f*, the rays A *a*, D *d*, which tend or converge towards it, will be reflected to a focus *P*, where the laſt image, *O P Q*, will be formed, to be viewed through the eye-glaſs G, by the eye at I.

This microſcope, though far from being executed in the beſt manner, performed, Dr. Smith ſays, nearly as well as the very beſt refracting microſcopes; ſo that he did not doubt, but that it would have excelled them, if it had been executed properly. Dr. Smith's own account of this inſtrument may be ſeen in his Optics, Remarks, p. 94.

Microscope, *Solar*, called alſo the *camera obſcura* microſcope, was invented by Mr. Lieberkuhn in 1738 or 1739, and is compoſed of a tube, a looking-glaſs, a convex lens, and a Wilſon's microſcope. The tube *c* (*fig.* 6.) is braſs near two inches in diameter, fixed in a circular collar of mahogany, with a groove on its periphery on the outſide, denoted by 2, 3, and connected by a cat-gut to the pulley 4 on the upper part; which turning round at pleaſure, by the pin 5 within, in a ſquare frame, may be adjuſted eaſily to a hole in the ſhutter of a window, by the ſcrews 1, 1, in ſuch a manner that no light can paſs into the room, but through the aforeſaid tube *c*. Faſtened to the frame by hinges, on the ſide that goes without the window, is a looking-glaſs G, which, by means of a jointed braſs-wire, 6, 7, and the ſcrew H 8, coming through the frame, may be moved either vertically or horizontally, to throw the ſun's rays through the braſs tube into the darkened room. The end of the braſs tube without the ſhutter has a convex lens, 5, to collect the rays, thrown on it by the glaſs G, and bring them to a focus in the other part, where D is a tube ſliding in and out, to adjuſt the object to a due diſtance from the focus; and to the end G of another tube F, is ſcrewed one of Wilſon's ſimple pocket microſcopes, containing the object to be magnified in a ſlider; and by the tube F, ſliding on the ſmall end E of the other tube D, it is brought to a true focal diſtance.

The ſolar microſcope has been introduced into the ſmall and portable, as well as the large camera obſcura; and if the image be received upon a piece of half-ground glaſs, ſhaded from the light of the ſun, it will be ſufficiently viſible. M. Lieberkuhn made conſiderable improvements in his ſolar microſcope, particularly in adapting it to the view of opaque objects; and M. Æpinus, Nov. Com. Petrop. vol. ix. p. 326, has contrived, by throwing the light upon the foreſide of any object, before it is tranſmitted through the object lens, to repreſent with equal advantage all kinds of objects by it. In this improvement, the body of the common ſolar microſcope is retained, and only an addition made of two braſs plates, C A and B A (*fig.* 7.) joined by a hinge, and kept at a proper diſtance by a ſcrew. A ſection of theſe plates, and of all the neceſſary parts of the inſtrument, may be ſeen in *fig.* 8, where *c, a,* repreſent rays of the ſun converging from the illuminating lens, and falling upon the mirror *d b,* which is fixed to the nearer of the braſs plates. From this they are thrown upon the object at *e f,* and thence are tranſmitted through the object lens at K, and a perforation in the farther plate, upon a ſcreen, as uſual. The uſe of the ſcrew *n* is to vary the diſtance of the two plates, and thereby to adjuſt the mirror to the object with the greateſt exactneſs. A very conſiderable improvement may be made in the ſolar microſcope, by ſubſtituting Ramſden's achromatic eye-piece inſtead of the convex object-lens. For M. Euler's method of introducing viſion by reflected light into this microſcope, ſee Magic *lantern.*

An improved *ſolar* microſcope, as uſed with the improved ſingle microſcope, with teeth and pinions, is exhibited in *Plate* XV. *figs.* 1, 2, and 3. The former figure repreſents the whole form of the ſingle microſcope; the parts of which are as follows: A B C D the external tube; G H I K the internal moveable one; Q M part of another tube within the laſt, at one end of which is fixed a plate of braſs hollowed in the middle, for receiving the glaſs tubes: there is alſo a moveable flat plate, between which, and the fixed end of the ſecond tube, the ivory ſliders are to be placed. L, a part of the microſcope, containing a wire ſpiral ſpring, keeping the tube Q M with its plates firm againſt the fixed part I K of the ſecond tube.

E F is the ſmall rack-work of teeth and pinion, by which the tube I G is moved gradually to or from the end A B, for adjuſting the objects exactly to the focus of different lengths. N O is a braſs ſlider, with ſix magnifiers; any one of which may eaſily be placed before the object. It is known when either of the glaſſes is in the centre of the eye-hole, by a ſmall ſpring falling into a notch in the ſide of the ſlider, made againſt each of the glaſſes. Thoſe parts of the apparatus before deſcribed, *viz.* iron-ſliders, with holder, glaſs tubes, forceps, Lieberkhuns, buttons, &c. &c. are made uſe of to this microſcope. G H is a braſs cell, which holds an illuminating glaſs for converging the ſun's beams, or the light of a candle ſtrongly upon the objects. The aperture of the glaſs is made greater or leſs. by two circular pieces of braſs, with holes of different ſizes, that are ſcrewed ſeparately over the ſaid lens. But at times, objects appear beſt, when the microſcope is held up to the common light only, without this glaſs. It is alſo taken away when the microſcope is applied to the apparatus now to be deſcribed.

Fig. 2. repreſents the apparatus, with the ſingle microſcope ſcrewed to it, which conſtitutes the *ſolar* microſcope. A B is the inner moveable tube, to which the ſingle microſcope is ſcrewed. C D is the external tube, containing a condenſing convex glaſs at the end D, and is ſcrewed into the plate E F, which is cut with teeth at its circumference, and moved by the pinion I, that is fixed with the plate G H. This plate is ſcrewed faſt againſt the window-ſhutter, or board fitted to a convenient window of a darkened room, when the inſtrument is uſed. K L is a long frame, fixed to the circular plate E F; containing a looking-glaſs or mirror for reflecting the ſolar rays through the lens in the body of the tube D. O is a braſs milled head, faſtened to a worm or endleſs ſcrew; which on the outſide turns a ſmall wheel, by which the reflecting mirror M is moved upwards or downwards.

In uſing this microſcope, the ſquare frame G H is firſt to be ſcrewed to the window-ſhutter, and the room well darkened: which is beſt done by cutting a round hole of the ſize of the moveable plate E F, that carries the reflector, in the window-ſhutter or board; and by means of two braſs nuts *a, a,* let into the ſhutter to receive the ſcrews P, P, when placed through the holes in the ſquare frame G H, at the two holes Q, Q; which will firmly faſten the microſcope to the ſhutter, and is eaſily taken away by only unſcrewing the ſcrews P, P.

A white paper ſcreen, or white cloth to receive the images, is to be placed ſeveral feet diſtant from the window: which will make the repreſentations the larger in proportion to the diſtance. The uſual diſtances are from ſix to 16 feet.

The frame K L, with its mirror M, is to be moved by turning the pinion I, one way or the other, till the beams of the ſun's light come through the hole into the room: then, by turning of the worm at O, the mirror muſt be raiſed or depreſſed, till the rays become perfectly horizontal, and go ſtraight acroſs the room to the ſcreen. The tube C D, with its lens at D, is now to be ſcrewed into the hole of the circular plate E F: by this glaſs the rays will be converged to a focus; and from thence proceed diverging to the ſcreen, and there make a large circle of light. The ſingle microſcope, (*fig.* 1.) is to be ſcrewed on to the end A B (*fig.* 2.) of the inner tube; and the ſlider N O, with either of the lenſes marked 1, 2, 3, 4, 5, or 6, in the centre of the hole at the end A B. This will occaſion a circle of light upon the ſcreen much larger than before. The ſlider or glaſs tube, with the objects to be viewed, is to be placed between the plates at I K againſt the ſmall magnifier, and moved at pleaſure. By ſhifting the tube A B in or out, you may place the object in ſuch a part of the condenſed rays as ſhall be ſufficient to illuminate it, and not ſcorch or burn it; which will generally require the glaſs to be about one inch diſtant from the focus. It now remains only to adjuſt the object, or to bring it ſo near to the magnifier that its image formed upon the ſcreen ſhall be the moſt diſtinct or perfect: and it is effected by gently turning the pinion F, (*fig.* 1.) a ſmall matter one way or the other. If the object be rather large in ſize, the leaſt magnifiers are generally uſed, and *vice verſâ.*

N° 1. is the greateſt magnifier, and N° 6. the leaſt, in the braſs ſlider N O. But, if deſired, ſingle lenſes of greater magnifying powers are made: and they are applied, by being ſcrewed to the end A B, (*fig.* 1.) and the braſs ſlider N O is then taken away.

The ſame object may be variouſly magnified, by the lenſes ſeverally applied to it; and the degree of magnifying power is eaſily known by this rule: *As the diſtance of the object is to that of its image from the magnifier; ſo is the length or breadth of the object to that of the image.*

Inſtead of the braſs ſliders with the lenſes N, O, there is ſometimes ſcrewed a lens of a large ſize, and longer focal diſtance: the inſtrument is then converted into a *megalaſcope*; and is adapted for viewing the larger kind of objects contained in larger ſliders, ſuch as is repreſented at R (*fig.* 3.) And, in the ſame manner, ſmall objects of entertainment, painted upon glaſs like the ſliders of a magic lanthorn, are much magnified, and repreſented upon the ſame ſcreen.

The *lucernal* microſcope of Mr. Adams, as mounted to view opaque objects, is repreſented in *fig.* 4. A B C D is a large mahogany pyramidal box, which forms the body of the microſcope; it is ſupported firmly on the braſs pillar F G, F G, by means of the ſocket H and the curved piece I K.

L M N is a guide for the eye, in order to direct it in the axis of the lenſes; it conſiſts of two braſs tubes, one ſliding within the other, and a vertical flat piece, at the top of which is the hole for the eye. The outer tube is ſeen at M N, the vertical piece is repreſented at L M. The inner tube may be pulled out or puſhed in, to adjuſt it to the focus of the glaſſes. The vertical piece may be raiſed or depreſſed, that the hole, through which the object is to be viewed, may coincide with the centre of the field of view; it is fixed by a milled ſcrew at M, which could not be ſhewn in this figure.

At N is a dove-tailed piece of braſs, made to receive the dove-tail at the end of the tubes M, N, by which it is affixed to the wooden box A B C D E. The tubes M, N, may be removed from this box occaſionally, for the convenience of packing it up in a leſs compaſs.

O P, a ſmall tube which carries the magnifiers.

O, one of the magnifiers; it is ſcrewed into the end of a tube, which ſlides within the tube P; the tube P may be unſcrewed occaſionally from the wooden body.

Q R S T V X, a long ſquare bar, which paſſes through the ſockets Y, Z, and carries the ſtage or frame that holds the objects; this bar may be moved backward or forward, in order to adjuſt it to the focus by means of the pinion which is at *a*.

b, a handle furniſhed with an univerſal joint, for more conveniently turning the pinion. When the handle is removed, the nut (*fig.* 5.) may be uſed in its ſtead.

de, a braſs bar, to ſupport the curved piece K I, and keep the body A B firm and ſteady.

fghi, the ſtage for opaque objects: it fits upon the bar Q R S T by means of the ſocket *hi*, and is brought nearer to or removed farther from the magnifying lens by turning the pinion *a*: the objects are placed in the front ſide of the ſtage (which cannot be ſeen in this figure) between four ſmall braſs plates: the edges of two of theſe are ſeen at *kl*. The two upper pieces of braſs are moveable; they are fixed to a plate, which is acted on by a ſpiral ſpring, that preſſes them down, and confines the ſlider with the objects: this plate, and the two upper pieces of braſs, are lifted up by the ſmall nut *m*.

At the lower part of the ſtage, there is a ſemicircular lump of glaſs *n*, which is deſigned to receive the light from the lamp (*fig.* 29.), and to collect and throw it on the concave mirror *o*, whence it is to be reflected on the object.

The upper part *fgrs* (*fig.* 4.) of the opaque ſtage takes out, that the ſtage for tranſparent objects may be inſerted in its place.

Fig. 6. repreſents the ſtage for tranſparent objects; the two legs 5 and 6 fit into the top of the under part *rshi* of the ſtage for opaque objects; 7 is the part which confines or holds the ſliders, and through which they are to be moved; 9 and 10 a braſs tube, which contains the lenſes for condenſing the light, and throwing it upon the object: there is a ſecond tube within that, marked 9 and 10, which may be placed at different diſtances from the object by the pin 11.

When this ſtage is uſed as a ſingle microſcope, without any reference to the lucernal, the magnifiers, or object lenſes, are to be ſcrewed into the hole 12, and to be adjuſted to a proper focus by the nut 13.

N. B. At the end A B (*fig.* 4.) of the wooden body there is a ſlider, which is repreſented as partly drawn out at A: when quite taken out, three grooves will be perceived; one of which contains a board that forms the end of the box; the next contains a frame with a greyed glaſs; and the third, or that fartheſt from the end A B, two large convex lenſes.

In the uſe of this microſcope for examining opaque objects, take out the wooden ſlider A (*fig.* 4.), then lift out the cover and the grey glaſs from their reſpective grooves under the ſlider A.

Put the end N of the guide for the eye L M N into its place, ſo that it may ſtand in the poſition which is repreſented in this figure.

Place the ſocket, which is at the bottom of the opaque ſtage, on the bar Q X T, ſo that the concave mirror *o* may be next the end D E of the wooden body.

Screw the tubes P, O, into the end D E. The magnifier you intend to uſe is to be ſcrewed on the end O of theſe tubes.

The handle G *b*, or the milled nut (*fig.* 5.), muſt be placed on the ſquare end of the pinion *a*.

Place the lamp lighted before the glaſs lump *n*, and the object you intend to examine between the ſpring-plates of the ſtage; and the inſtrument is ready for uſe.

In all microſcopes there are two circumſtances, which muſt be particularly attended to: firſt, the modification of the light, or the proper quantity to illuminate the object; ſecondly, the adjuſtment of the inſtrument to the focus of the glaſſes and eye of the obſerver. In the uſe of the lucernal microſcope there is a third circumſtance, which is, the regulation of the guide for the eye.

1. To throw the light upon the object. The flame of the lamp is to be placed rather below the centre of the glaſs lump *n*, and as near it as poſſible; the concave mirror *o* muſt be ſo inclined and turned as to receive the light from the glaſs lump, and reflect it thence upon the object: the beſt ſituation of the concave mirror and the flame of the lamp depends on a combination of circumſtances, which a little practice will diſcover.

2. To regulate the guide for the eye, or to place the centre of the eye-piece L ſo that it may coincide with the focal point of the lenſes and the axis of viſion: Lengthen and ſhorten the tubes M, N, by drawing out or puſhing in the inner tube, and raiſing or depreſſing the eye-piece M L, till you find the large lens (which is placed at the end A B of the wooden body) filled by an uniform field of light, without any priſmatic colours round the edge; for till this piece is properly fixed, the circle of light will be very ſmall, and only occupy a part of the lens: the eye muſt be kept at the centre of the eye-piece L, during the whole of the operation; which may be rendered ſomewhat eaſier to the obſerver, on the firſt uſe of the inſtrument, if he hold a piece of white paper parallel to the large lens, removing it from or bringing it nearer to them till he find the place, where a lucid circle, which he will perceive on the paper, is brighteſt and moſt diſtinct; then he is to fix the centre of the eye-piece to coincide with that ſpot; after which a very ſmall adjuſtment will ſet it perfectly right.

3. To adjuſt the lenſes to their focal diſtance. This is effected by turning the pinion *a*, the eye being at the ſame time at the eye-piece L. The grey glaſs is often placed before the large lenſes, while regulating the guide for the eye, and adjuſting for the focal diſtance.

If the obſerver in the proceſs of his examination of an object, advance rapidly from a ſhallow to a deep magnifier, he will ſave himſelf ſome labour by pulling out the internal tube at O.

The upper part *fgrs* of the ſtage is to be raiſed or lowered occaſionally, in order to make the centre of the object coincide with the centre of the lens at O.

To delineate objects, the grey glaſs muſt be placed before the large lenſes; the picture of the object will be formed on this glaſs, and the outline may be accurately taken by going over the picture with a pencil.

The opaque part may be uſed in the day-time without a lamp, provided the large lenſes at A B are ſcreened from the light.

To uſe the Lucernal Microſcope in the Examination of tranſparent Objects.—The inſtrument is to remain as before: the upper part *f g s* of the opaque ſtage muſt be removed, and the ſtage for tranſparent objects, repreſented at *fig.* 6, put in its place; the end 9 10 to be next the lamp.

Place the greyed glaſs in its groove at the end A B, and the objects in the ſlider-holder at the front of the ſtage; then tranſmit as ſtrong a light as you are able on the object, which you will eaſily do by raiſing or lowering the lamp.

The object will be beautifully depicted on the grey glaſs: it muſt be regulated to the focus of the magnifier, by turning the pinion *a*.

The object may be viewed either with or without the guide for the eye. A ſingle obſerver will ſee an object to the greateſt advantage by uſing this guide, which is to be adjuſted, as we have deſcribed above. If two or three wiſh to examine the object at the ſame time, the guide for the eye muſt be laid aſide.

Take the large lens out of the groove, and receive the image on the grey glaſs; in this caſe, the guide for the eye is of no uſe: if the grey glaſs be taken away, the image of the object may be received on a paper ſcreen.

Take out the grey glaſs, replace the large lenſes, and uſe the guide for the eye; attend to the foregoing directions, and adjuſt the object to its proper focus. You will then ſee the object in a blaze of light almoſt too great for the eye, a circumſtance that will be found very uſeful in the examination of particular objects. The edges of the object in this mode will be ſomewhat coloured: but as it is only uſed in this full light for occaſional purpoſes, it has been thought better to leave this ſmall imperfection, than, by remedying it, to ſacrifice greater advantages; the more ſo, as this fault is eaſily corrected, and a new and intereſting view of the object is obtained, by turning the inſtrument out of the direct rays of light, and permitting them to paſs through only in an oblique direction, by which the upper ſurface is in ſome degree illuminated, and the object is ſeen partly as opaque, partly as tranſparent. It has been already obſerved, that the tranſparent objects might be placed between the ſlider-holders of the ſtage for opaque objects, and then be examined as if opaque.

Some tranſparent objects appear to the greateſt advantage when the lens at 9 10 is taken away; as, by giving too great a quantity of light, it renders the edges leſs ſharp.

The variety of views which may be taken of every object, by means of the improved lucernal microſcope, will be found to be of great uſe to an accurate obſerver: it will give him an opportunity of correcting or confirming his diſcoveries, and inveſtigating thoſe parts in one mode which are inviſible in another.

To throw the Image of tranſparent Objects on a Screen, as in the Solar Microſcope.—It has been long a microſcopical deſideratum, to have an inſtrument by which the image of tranſparent objects might be thrown on a ſcreen, as in the common ſolar microſcope: and this not only becauſe the ſun is ſo uncertain in this climate, and the uſe of the ſolar microſcope requires confinement in the fineſt part of the day, when time ſeldom hangs heavy on the mind; but as it alſo affords an increaſe of pleaſure, by diſplaying its wonders to ſeveral perſons at the ſame inſtant, without the leaſt fatigue to the eye. This purpoſe is now effectually anſwered, by affixing the tranſparent ſtage of the lucernal to a lanthorn, with one of Argand's lamps.—The lamp is placed within the lanthorn, and the end 9 10 of the tranſparent ſtage is ſcrewed into a female ſcrew, which is rivetted in the ſliding part of the front of the lanthorn; the magnifying lenſes are to be ſcrewed into the hole repreſented at 12, and they are adjuſted by turning the milled nut. The quantity of light is to be regulated by raiſing and lowering the ſliding plate or the lamp.

Apparatus which uſually accompanies the improved Lucernal Microſcope.—The ſtage for opaque objects, with its ſemicircular lump of glaſs, and concave mirror. The ſtage for tranſparent objects, which fits on the upper part of the foregoing ſtage. The ſliding tube, to which the magnifiers are to be affixed: one end of theſe is to be ſcrewed on the end D of the wooden body; the magnifier in uſe is to be ſcrewed to the other end of the inner tube. There are eight magnifying lenſes, ſo conſtructed, that they may be combined together, and thus produce a very great variety of magnifying powers. A fiſh-pan, ſuch as is repreſented at *Plate* XIV, *fig.* 8. A ſteel wire, with a pair of nippers at one end, and a ſmall cylinder of ivory at the other. (*Plate* XIV. *fig.* 7.) A ſlider of braſs, containing a flat glaſs ſlider, and a braſs ſlider, into which are fitted ſome ſmall concave glaſſes. A pair of forceps. Six large, and ſix ſmall ivory ſliders, with tranſparent objects. Fourteen wooden ſliders, with four opaque objects in each ſlider; and two ſpare ſliders. Some capillary tubes for viewing ſmall animalcula. One of the improved Argand lamps, which are the moſt ſuitable for microſcopic purpoſes, either with this or any other inſtrument, on account of the clearneſs, intenſity, and ſteadineſs of the light. A deſcription of its ſtructure will be found under the article Lamp.

The Microſcope for opaque objects was alſo invented by M. Lieberkuhn about the ſame time with the former, and remedies the inconvenience of having the dark ſide of an object next the eye; for by means of a concave ſpeculum of ſilver, highly poliſhed, in whoſe centre a magnifying lens is placed, the object is ſo ſtrongly illuminated, that it may be examined with eaſe. A convenient apparatus of this kind, with four different ſpeculums and magnifiers of different powers, was brought to perfection by Mr. Cuff. Phil. Tranſ. N 458. § 9.

The ſeveral parts of this inſtrument, made either of braſs or ſilver, are as follows:

Through the firſt ſide A (*Plate* XV. *fig.* 7.) paſſes a fine ſcrew B, the other end of which is faſtened to the moveable ſide C.—D is a nut adapted to the ſaid ſcrew, by the turning of which the two ſides A, C, are gradually brought together.—E is a ſpring of ſteel, that ſeparates the ſaid two ſides when the nut is unſcrewed.—F, a piece of braſs turning round in a ſocket, whence proceeds a ſmall ſpring tube moving upon a rivet, through which tube there runs a ſteel wire, one end of which terminates in a ſharp point G, and the other hath a pair of plyers, H, faſtened to it.—The point and plyers are to thruſt into or take up and hold any inſect or object: and either of them may be turned upwards, as ſuits your purpoſe beſt. –I, a ring of braſs with a female ſcrew within it, mounted on an upright piece of the ſame metal, which turns round on a rivet, that it may be ſet at a due diſtance when the leaſt magnifiers are employed.—This ring receives the ſcrews of all the magnifiers.—K, a concave ſpeculum of ſilver, poliſhed as bright as poſſible, in the centre of which a double convex lens is placed, with a proper aperture to look through it. On the back of this ſpeculum a male ſcrew, L, is made fit to the braſs ring I to ſcrew into the ſaid ring at pleaſure.

There are four of theſe concave ſpecula, of different depths, adapted to four glaſſes of different magnifying powers, to be uſed as objects to be examined may require. The greateſt magnifiers are known by having the leaſt apertures. M, a round object-plate, one ſide white and the other black, intended to render objects the more viſible, by placing them, if black upon the white, and if white on the black ſide. A ſteel ſpring N turns down on each ſide to make any object faſt; and iſſuing from the object-plate is a hollow pipe, to ſcrew it on the needle's point G.—O, a ſmall box of braſs, with a glaſs on each ſide, contrived to confine any living object, in order to examine it: this alſo has a pipe to ſcrew upon the end of the needle G.—P, a turned handle of wood, to ſcrew into the inſtrument when it is made uſe of.—A pair of braſs plyers accompanies this inſtrument to take up any object, or manage it with conveniency: and a ſoft hair bruſh, to clean the glaſſes or ſpecula, or apply a drop of any liquid to the iſinglaſs of the box O, in order to view the animalcules.—Alſo, a ſmall ivory box for iſinglaſſes, to be placed, when wanted, in the ſmall braſs box O.

When you would view any object, ſcrew the ſpeculum, with the magnifier you think beſt to uſe, into the braſs ring I. Place your object either on the needle G, in the plyers H, on the object-plate M, or in the braſs hollow box O, as may be moſt convenient, according to the nature and condition of it: then holding up your inſtrument by the handle P, look againſt the light, through the magnifying lens, and by means of the nut D, together with the motion of the needle, by managing its lower end the object may be turned about, raiſed, or depreſſed, brought nearer the glaſs, or put farther from it, till you hit the true focal diſtance, and the light be ſeen reflected from the ſpeculum ſtrongly upon the object: by which means it will be ſhewn in a manner ſurpriſingly diſtinct and clear. And for this purpoſe the light of the ſky, or of a candle, will anſwer to your ſatiſfaction.

This microſcope is principally intended for opaque objects, but tranſparent ones may alſo be viewed by it: obſerving only, that when ſuch come under examination, it will not always be proper to throw on them the light reflected from the ſpeculum: for the light tranſmitted through them, meeting the reflected light, may, together, produce too great a glare. A little practice will teach how to regulate both theſe lights to good advantage. For an account of microſcopes attached to aſtronomical inſtruments, and deſigned for aſſiſting the obſerver to read off minute diviſions; ſee Circle.

MICROSCOPIC Objects. All things too minute to be viewed diſtinctly by the naked eye, are proper objects for the microſcope. Dr. Hooke has diſtinguiſhed them to be exceeding ſmall bodies, exceeding ſmall pores, or exceeding ſmall motions.

Exceeding ſmall bodies muſt either be the parts of larger bodies, or things, the whole of which is exceedingly minute, ſuch as ſmall ſeeds, inſects, ſalts, ſands, &c.

Exceeding ſmall pores are the interſtices between the ſolid parts of bodies, as in ſtones, minerals, ſhells, &c. or the mouths of minute veſſels in vegetables, or the pores in the ſkin, bones, and other parts of animals.

Exceeding ſmall motions are the movements of the ſeveral parts or members of minute animals, or the motion of the fluids, contained in either animal or vegetable bodies. Under one or other of theſe three heads, almoſt every thing about us affords us matter of obſervation, and may conduce both to our amuſement and inſtruction.

An examination of theſe objects, however, ſo as to diſcover truth, requires a great deal of attention, care, and patience, with ſome ſkill and dexterity, to be acquired chiefly by practice, in the preparing, managing, and applying them to the microſcope.

Whatever object offers itſelf as the ſubject of our examination, the ſize, contexture, and nature of it, are firſt to be conſidered, in order to apply it to ſuch glaſſes, and in ſuch a manner as may ſhew it beſt. The firſt ſtep ſhould always be to view the whole together, with ſuch a magnifier as can take it in all at once, and after this the ſeveral parts of it may the more fitly be examined, whether remaining on the object, or ſeparated from it. The ſmaller the parts are which are to be examined, the more powerful ſhould be the magnifiers employed; the tranſparency or opacity of the object muſt alſo be conſidered, and the glaſſes employed accordingly ſuited to it; for a tranſparent object will bear a much greater magnifier than one which is opaque, ſince the nearneſs that a glaſs muſt be placed at, unavoidably darkens an object if in its own nature opaque, and renders it very difficult to be ſeen, unleſs by the help of the apparatus contrived for that purpoſe, which has a ſilver ſpeculum. Moſt objects, however, become tranſparent by being divided into extremely thin parts.

The nature of the object alſo, whether it be alive or dead, a ſolid or a fluid, an animal, a vegetable, or a mineral ſubſtance, muſt likewiſe be conſidered, and all the circumſtances of it attended to, that we may apply it in the moſt advantageous manner. If it be a living object, care muſt be taken not to ſqueeze or injure it, that we may ſee it in its natural ſtate and full perfection. If it be a fluid, and that too thick, it muſt be diluted with water; and if too thin, we ſhould let ſome of its watery parts evaporate. Some ſubſtances are fitteſt for obſervation when dry, others when moiſtened; ſome when freſh, and others after they have been kept ſome time.

Light is the next thing to be taken care of; for on this the truth of all our obſervations depends; and a very little obſervation will ſhew how very different objects appear in one degree of it to what they do in another: ſo that every new object ſhould be viewed in all degrees of light, from the greateſt glare of brightneſs to perfect obſcurity, and that in all poſitions to each degree, till we hit upon the certain form and figure of it. In many objects it is very difficult to diſtinguiſh between a prominency and a depreſſion, a black ſhadow, and a black ſtain, and in colour between a bright reflection and whiteneſs. The eye of a fly, in one kind of light, appears like a lattice drilled full of holes; in the ſunſhine like a ſolid ſubſtance, covered with golden nails; in one poſition like a ſurface covered with pyramids, in another with cones, and in others with ſtill different ſhapes.

The degree of light muſt always be ſuited to the object; if that be dark, it muſt be ſeen in a full and ſtrong light, but if tranſparent, the light ſhould be proportionably weak: for which reaſon there is a contrivance both in the ſingle and double microſcope to cut off abundance of the rays, when ſuch tranſparent objects are to be examined by the largeſt magnifiers. The light of a candle for many objects; and eſpecially for ſuch as are very bright and tranſparent, and very minute, is preferable to day-light; for others a ſerene day-light is beſt; but ſun-ſhine is the worſt light of all, for it is reflected from objects with ſo much glare, and exhibits ſuch gaudy colours, that nothing can be determined from it with any certainty. This, however, is not to be extended to the ſolar, or camera obſcura microſcope; for in that nothing but ſun-ſhine can do, and the brighter that is, the better; but in that way we do not ſee the object itſelf on which the ſun-ſhine is caſt, but only the image or ſhadow of it exhibited on a ſcreen; and therefore no confuſion can ariſe from the glaring reflection of the ſun's rays from the object to the eye, which is the caſe in other microſcopes. But then in that ſolar way we muſt reſt contented with viewing the true form and ſhape of an object, without expecting to find its natural colour; ſince no ſhadow can poſſibly wear the colour of the body it repreſents.

Moſt objects require alſo ſome management. in order to bring them properly before the glaſſes. If they are flat and tranſparent, and ſuch as will not be injured by preſſure, the beſt way is to encloſe them in ſliders between two Muſcovy talcs or iſinglaſs. In this way the feathers of butterflies, the ſcales of fiſhes, and the farinæ of flowers, may be very conveniently preſerved, as alſo the parts of inſects, the whole bodies of minute ones, and a great number of other things. Theſe are to be kept in ſliders, each containing three, four, or more holes, and theſe muſt not be filled promiſcuouſly; but all the things preſerved in one ſlider ſhould be ſuch as require one and the ſame magnifying power to view them, that there may not be a neceſſity of changing the glaſſes for every object; and the ſliders ſhould be marked with the number of the magnifier it is proper to be viewed with. In placing the objects in the ſliders, it is always proper to have a ſmall magnifier, of about an inch focus, in your hand, to examine and adjuſt them by, before they are fixed down with the rings.

Small living objects, ſuch as lice, fleas, bugs, mites, minute ſpiders, &c. may be placed between theſe talcs without injuring them, if care be taken to lay on the braſs rings without preſſing them down, and they will remain alive many weeks in this manner; but if they are too large to be treated thus, they ſhould be either preſerved between two concave glaſſes, or elſe viewed immediately, by holding them in the pliers, or ſticking them on the point at the other end of that inſtrument.

If fluids come under examination, to diſcover the animalcules in them, a ſmall drop is to be taken with a hair-pencil; or on the nib of a clean pen, and placed on a plate of glaſs; and if they are too numerous to be thus ſeen diſtinctly, ſome water warmed, by holding it in the mouth, muſt be added to the drop, and they will then ſeparate, and be ſeen diſtinctly. This is particularly neceſſary in viewing the animalcules in the *ſemen maſculinum* of all creatures; which, though extremely minute, are always ſo numerous, that without this caution their true form can ſeldom be ſeen. But if we are to ſee the ſalts in a fluid, the contrary method muſt be obſerved, and the plate of glaſs muſt be held gently over the fire, till part of the liquor is evaporated.

The diſſection of minute animals, as lice, fleas, &c. requires patience and care; but it may be done very accurately by means of a needle and a fine lancet, placing the creature in a drop of water, for then the parts will readily unfold themſelves, and the ſtomach, guts, &c. be very diſtinctly ſeen.

Theſe ſeem the beſt ways of preſerving tranſparent objects; but the opaque ones, ſuch as ſeeds, woods, &c. require a very different treatment, and are beſt preſerved and viewed in the following manner.

Cut cards into ſmall ſlips about half an inch long, and a tenth of an inch broad; wet theſe half way of their length in gum-water, and with that faſten on ſeveral pieces of the object, and as the ſpots of cards are of different colours, ſuch ſhould be choſen for every object as are the moſt different from its own colours. Theſe are very convenient for viewing by the microſcope made for opaque objects with the ſilvered ſpeculum; but they are proper for any microſcope that can view opaque bodies.

A ſmall box ſhould be contrived for theſe ſlips, with little ſhallow holes for the reception of each; and this is conveniently done, by cutting pieces of paſte-board, ſuch as the covers of books are made of, to the ſize of the box, ſo that they will juſt go into it, and then cutting holes through them with a ſmall chiſſel, of the ſhape of the ſlips of card, theſe paſte-boards having then a paper paſted over their bottom, are cells very proper for the reception of theſe ſlips, which may be taken out by means of a pair of plyers, and will always be ready for uſe.

Great caution is to be uſed in forming a judgment on what is ſeen by the microſcope, if the objects are extended or contracted by force or dryneſs.

Nothing can be determined about them, without making the proper allowances; and different lights and poſitions will often ſhew the ſame object as very different from itſelf. There is no advantage in any greater magnifier than ſuch as is capable of ſhewing the object in view diſtinctly; and the leſs the glaſs magnifies, the more pleaſantly the object is always ſeen.

The colours of objects are very little to be depended on, as ſeen by the microſcope; for their ſeveral component particles being by this means removed to great diſtances from one another, may give reflections very different from what they would, if ſeen by the naked eye.

The motions of living creatures alſo, or of the fluids contained in their bodies, are by no means to be haſtily judged of, from what we ſee by the microſcope, without due conſideration; for as the moving body, and the ſpace in which it moves, are magnified, the motion muſt be ſo too; and therefore that rapidity with which the blood ſeems to paſs through the veſſels of ſmall animals muſt be judged of accordingly. Suppoſe, for inſtance, that a horſe and a mouſe move their limbs exactly at the ſame time, if the horſe runs a mile while the mouſe runs fifty yards; though the number of ſteps are the ſame in both, the motion of the horſe muſt notwithſtanding be allowed the ſwifteſt; and the motion of a mite, as viewed by the naked eye, or through the microſcope, is perhaps not leſs different. Baker's Microſcope, p. 52. 62. Adams on the Microſcope. See ANIMALCULES and *Plates of* MICROSCOPIC *Objects*.

MICROSTEMMA, in *Botany*, from μικρος, *ſmall*, and στεμμα, *a crown*, alluding to the ſort of coronet which accompanies the anthers.—Brown Tr. of the Wern. Soc. v. 1. 25. Prodr. Nov. Holl. v. 1. 459.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Eſſ. Ch. Corolla wheel-ſhaped, five-cleft. Crown of the ſtamens of one leaf, fleſhy, with five lobes, alternate with the anthers, which are without any membranous point. Maſſes of pollen attached laterally by the middle, lying over the ſtigma, which is pointleſs. Follicles ſlender, ſmooth. Seeds comoſe.

1. M. *tuberoſum*. Br.—Native of New Holland, within the tropic. A ſmooth upright perennial herbaceous plant, with a tuberous *root*. *Stem* ſimple in the lower part, and furniſhed with minute leaves; branched above. *Leaves* oppoſite, linear. *Umbels* lateral and terminal, nearly ſeſſile. *Corolla* blackiſh-purple, bearded at the inſide.

MICROTEA, named by Profeſſor Swartz, from μικροτης, *ſmallneſs*, on account of the parts of fructification being extremely minute, compared with others of its natural order. —Swartz Prod. 53. Ind. Occ. 542. Schreb. 797. Willd. Sp. Pl. v. 1. 1309. Mart. Mill. Dict. v. 3. Lamarck

Illuſtr. t. 182. Claſs and order, *Pentandria Digynia.* Nat. Ord. *Holeraceæ*, Linn. *Atriplices*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five, oblong, permanent leaves. *Cor.* none. *Stam.* Filaments five, thread-ſhaped, the length of the calyx, inſerted into the receptacle; anthers rather globoſe. *Piſt.* Germen ſuperior, roundiſh, echinated; ſtyles two, very ſhort, divaricated; ſtigmas ſimple. *Peric.* a dry, leathery, ſlender drupa, beſet with prickles. *Seed*, a roundiſh, ſmooth nut, with a ſingle kernel.

Eſſ. Ch. Calyx of five leaves, ſpreading. Corolla none. Drupa dry and prickly. Seed roundiſh, covered with a leathery, echinated bark.

1. M. *debilis.* Willd. n. 1. Swartz Ind. Occ. t. 12.—(Schollera; Rohr Act. Soc. Hafn. v. 2. p. 1. 210.)—A native of ſeveral of the Weſt India iſlands.—The whole plant is ſmooth, and about a foot in height. *Stem* herbaceous, branched, diffuſe, nearly erect, ſtriated. *Branches* irregular, diverging, weak, ſpreading. *Leaves* alternate, on ſtalks, ovato-lanceolate, pointed, entire, nerved, veinleſs, rather ſucculent, and of a dark green colour. *Flower-ſtalks* terminal or lateral, oppoſite to the leaves, each bearing two, ſlender, rather cloſe. *Cluſters* of numerous, nearly upright *flowers*, moſtly directed one way, on ſeparate, ſhort ſtalks, very minute, greeniſh-white. Bracteas lanceolate, pellucid. *Drupa* the ſize of muſtard-ſeed, with very minute, prickly-edged cells all over the ſurface. *Nut* black and ſhining; or it may be conſidered as a *ſeed* covered with a leathery, prickly, or muricated bark.

Mr. Van Rohr, in the Copenhagen Tranſactions, named this plant which was communicated to him by Jacquin, *Schollera*, in honour of the author of *Flora Barbienſis.*

MICROTIS, ſo named by Mr. Brown, from μικρος, *ſmall*, and ως, ωτος, *an ear*, alluding to a pair of minute ear-like appendages to the anther. Brown Prodr. Nov. Holl. v. 1. 320.—Claſs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Gen. Ch. *Cal.* Perianth three-leaved, ringent; its two ſide-leaves ſeſſile, nearly oppoſite to the lip. *Cor.* Petals two, much like the calyx, aſcending. Nectary a lip proceeding from the lower part of the ſtyle, oblong, obtuſe, ſpreading, callous at the baſe. *Stam.* Anther an hemiſpherical, moveable, terminal lid, of two cells, attached to the poſterior edge of the top of the ſtyle, permanent, accompanied by a membranous auricle at each ſide; maſſes of pollen two in each cell, powdery, affixed by their baſe to the ſtigma. *Piſt.* Germen inferior, obovate, erect, furrowed; ſtyle erect, funnel-ſhaped; ſtigma in front. *Peric.* Capſule of one cell. *Seeds* numerous, minute.

Eſſ. Ch. Calyx ringent, its ſide-leaves nearly oppoſite to the lip. Petals aſcending. Lip without a ſpur, obtuſe, callous at the baſe. Anther a lid, terminating the ſtyle behind. Pollen powdery.

Five ſpecies of this new genus were found by Mr. Brown in New Holland, chiefly in the colder parts, and a fifth is our *Epipactis unifolia.* (See Epipactis.) The *bulbs* are undivided and naked. *Herbage* ſmooth. *Leaf* ſolitary, cylindrical, fiſtulous, embracing the ſtem with its long ſheathing baſe. *Spike* of many ſmall, greeniſh or white, *flowers*, the *lip* of ſome of which is undivided, in others two-lobed. The leaves of the *calyx*, as well as the petals, are more or leſs linear, the former frequently revolute. The *lip* differs greatly in form in the different ſpecies, and its margin is in ſome even and naked, in others wavy, warty, or tuberculated. The appearance of the whole is obſerved by Mr. Brown to be very different from *Epipactis*, and moſt like another genus of his own, named *Praſophyllum.*

MICTUS Cruentus. See *Bloody* Urine.

MID, or Middle, in *Philoſophy* and *Mathematics.* See Mean and Medium.

MIDA, in *Natural Hiſtory*, the name of a worm or maggot, of which is produced the purple fly, found on bean-flowers, and thence called the bean-fly.

MIDAD Alhendi, in the *Materia Medica of the Arabians*, a name given to the common indigo blue.

The expreſs meaning of the words is India ink; but this is an erroneous name, founded on Pliny's miſunderſtanding the words of Dioſcorides.

MIDAS, in *Fabulous Hiſtory* and *Mythology*, was, according to Pauſanias, the ſon of Gordius and Cybele, and reigned in the Greater Phrygia, as we learn from Strabo. According to the former of the two authors, he built the city of Ancyra, and that of Peſſinus, upon mount Agdiſtis, famed for the tomb of Atys; but the latter merely ſays, that he and Gordius his father fixed their reſidence near the river Sangar, in cities, which in his time were mean villages: as he was rich, and a great economiſt, it was fabled that he turned into gold whatever he touched. It is ſuggeſted that this fable took its riſe from his having been the firſt who diſcovered gold in the Pactolus. From his infancy it was foreſeen, that he would be very rich and very frugal, becauſe the ants, approaching his cradle, had put grains of corn into his mouth. However, his talent for accumulation did not extend to the acquirement of taſte and knowledge in the fine arts; and, perhaps, his dulneſs and inattention to theſe, provoked ſome muſical poet to invent the fable of his deciſion in favour of Pan againſt Apollo.

Pan, who thought he excelled in playing the flute, offered to prove that it was an inſtrument ſuperior to the lyre of Apollo. The challenge was accepted, and Midas, who was appointed the umpire in this conteſt, deciding in favour of Pan, was rewarded by Apollo, according to the poets, with the ears of an aſs, for his ſtupidity.

The ſcholiaſt upon Ariſtophanes, for explaining the fiction of the aſſes' ears, which Apollo had preſented to Midas, ſays that it was deſigned to intimate that he had a very fine ear, like that animal, or becauſe he kept ſpies through all his dominions, or becauſe he commonly dwelt in a place named ωτα ονȣ, the aſſes' ears. The fable reports, that his power of converting whatever he touched into gold was given him by Bacchus; but the preſent ſoon became injurious to him; for it is ſaid, that whilſt he was waiting for his dinner, the water in which he waſhed his hands, and alſo the bread, wine, and meat that were ſerved up to him, were converted into gold, when he was ready to ſtarve amidſt all his riches: but applying to Bacchus, with a requeſt that he would revoke the grant, Bacchus ordered him to waſh his hands in the Pactolus, by which act he transferred the virtue which he poſſeſſed to the river, which, from that time, rolled a golden ſand. This fable is thus explained. Midas, frugal to avarice, reigned over a very rich country, and made conſiderable ſums by the ſale of his corn, wine, and cattle. His avarice afterwards changed its object, and having learned that the Pactolus furniſhed gold duſt, he abandoned the care of the country, and employed his ſubjects in gathering the gold of that river, which brought him a new and ample ſupply. On account of his attention to religion among the Lydians, he was reckoned, according to Juſtin, a ſecond Numa.

Midas's *Ear-ſhell*, in *Conchology.* See Trumpet-*Fiſh.*

MIDDATOOR, in *Geography*, a town of Hindooſtan, in Golconda; 15 miles S.E. of Canoul.

MIDDELBURG, a ſea-port town of Holland, in the ſtate of Zealand, ſituated in the centre of Walcheren, of which it is the capital. The town-houſe is a magnificent building; and the fortifications are ſtrong and regular, with eight gates, and twelve baſtions for defending the walls and ramparts, beſides large and deep ditches filled with water; and ſuch alſo is its ſituation, that the inhabitants may lay the country under water whenever they pleaſe. The number of inhabitants has been eſtimated at about 26,000. N. lat. 51° 34′. E. long. 3° 29′.

MIDDING, in *Agriculture*, a provincial term applied to a dunghill.

MIDDLE BANK, in *Geography*, one of the fiſhing banks of Newfoundland; S.E. of Cape Breton. N. lat. 45°. See FISHERY.

MIDDLE *Cape*, lies to the ſouth-weſt of cape Anthony, in Staten Land, on the ſtrait Le Maire, and the moſt weſterly point of that iſland; at the extremity of South America.

MIDDLE *Iſland*, a ſmall iſland in the ſtraits of Salayer, near the ſouth coaſt of Celebes. S. lat. 5° 40. E. long. 120° 52′.—Alſo, a ſmall iſland in the Eaſt Indian ſea, near the ſouth-weſt coaſt of Boulton. S. lat. 5° 38′. E. long. 123° 50′.—Alſo, an iſland in the ſtraits of Sunda, in the Indian ſea. N. lat. 5° 57′. E. long. 104° 53′.—Alſo, a ſmall iſland in Upper Canada, eaſt of the Baſs iſlands, and north of Ship iſland and Cunningham's iſland, in lake Erie.

MIDDLE *Iſlands*, a cluſter of ſmall iſlands in lake Huron. N. lat. 45° 1′. W. long. 83° 33′.—Alſo, a cluſter of ſmall iſlands in the Pacific ocean, near the coaſt of Mexico. N. lat. 9° 30′.

MIDDLE *Iſland Creek*, a river of Virginia, which runs into the Ohio, N. lat. 39° 16′. W. long. 81° 22′.

MIDDLE *Lake*, a lake of Canada; 300 miles N. of Quebec. N. lat. 51° 44′. W. long. 69° 35′.

MIDDLE *Latitude*, in *Navigation*, is half the ſum of two given latitudes.

MIDDLE *Latitude ſailing*, is uſed for a method of working the ſeveral caſes in ſailing, nearly agreeing with Mercator's way, but without the help of meridional parts. See SAILING.

MIDDLE *Point*, in *Geography*, a cape on the eaſt coaſt of Labrador. N. lat. 59°. W. long. 63°.

MIDDLE *Region*. See REGION.

MIDDLE *Siſter*, in *Geography*, a ſmall iſland at the weſt end of lake Erie, in Upper Canada, ſituated between the Eaſt and Weſt Siſter.

MIDDLE *States*, one of the grand diviſions of the United States of America, comprehending New York, New Jerſey, Pennſylvania, Delaware, Ohio, and Indiana.

MIDDLE *Teint*, in *Painting*. See HALF-TEINT.

MIDDLE *Voice*, in the *Greek Language*, holds an intermediate rank between the Active and the Paſſive, being ſuppoſed to have a middle ſignification between them. Its tenſes are formed partly on the model of the Active, and partly on that of the Paſſive tenſes. The tenſes peculiar to the middle voice are the two futures, the two aoriſts, the perfect, and the pluperfect. The two futures and the two aoriſts borrow the terminations of the Paſſive, while the two perfect tenſes borrow thoſe of the Active voice. For the manner in which theſe tenſes are formed, we refer to the valuable Grammar of the Greek Tongue, on a new and improved plan, by Mr. John Jones. This excellent grammarian alſo obſerves, that as the middle voice derives its origin and explanation from the Paſſive, it is frequently uſed, like a Paſſive verb, in a ſenſe purely active, and has after it an accuſative noun; and this uſage abounds in all writers of proſe as well as poetry. It is further obſerved, than when an accuſative noun is not annexed, the perſonal pronoun, combined with the verb in the oblique caſe, is the object of the verb. Hence it is that the middle verb expreſſes a reciprocal or reflex ſenſe. Our author infers from this ſtatement, that the middle verb is in the ſtricteſt ſenſe an Active verb; but whether or not it conveys a reflex ſignification, depends on the circumſtance whether an accuſative noun be annexed or not. The preſence of a noun in the accuſative, cauſes, as it were, the combined pronoun to diſappear, and the verb becomes purely active; while its abſence gives room for the objective pronoun to diſplay itſelf, which conſequently aſſigns to the verb the character of "reflex." Although the middle verb contains an objective pronoun in itſelf, yet it is ſometimes diſtinctly annexed, in order to render the meaning more emphatic or prominent. Sometimes a noun equivalent to the reflex pronoun is annexed to a middle verb. For the illuſtration of theſe remarks by appoſite examples, we refer to the author himſelf, *ubi ſupra*.

MIDDLE *Wales*, in a *Ship*, two or three thick ſtrakes wrought fore and aft, between the lower and middle deck-ports, in three-deck ſhips

MIDDLEBOROUGH, in *Geography*, the Namaſkett of the ancient Indians, a poſt-town in Plymouth county, Maſſachuſetts, incorporated in 1669, and containing 4458 inhabitants; 40 miles S. by E. of Boſton. This town is remarkable for a large range of ponds, which produce ſeveral ſorts of fiſh, and large quantities of iron ore.

MIDDLEBOURG KEY, a ſmall iſlet, ſeparated from St. Martin's in the Weſt Indies, on the north-eaſt.

MIDDLEBROOK, a poſt-town of America, in Auguſta county, Virginia; 186 miles from Waſhington.

MIDDLEBURG, a poſt-town of America, in Lowden county, Virginia; 47 miles from Waſhington.—Alſo, a poſt-town of Nelſon county, Kentucky; 603 miles from Waſhington.

MIDDLEBURG, a town of Flanders, which derived its name from an abbey called "Middleburg," to which it belonged. In this town the free exerciſe of the Roman Catholic religion is allowed; 7 miles N.E. of Bruges. N. lat. 51° 16′. E. long. 3° 15′.

MIDDLEBURG. See EA-OO-WEE.

MIDDLEBURG, *New*, a town of Dutch Guiana, at the extremity of the colony.

MIDDLEBURG, a ſmall iſland near the weſt coaſt of New Guinea. S. lat. 0° 18′. E. long. 132° 32′.—Alſo, a ſmall iſland in the gulf of Manar, near the weſt coaſt of Ceylon; 18 miles N. of Manar.

MIDDLEBURY, a poſt-town of America, in Vermont, capital of Addiſon county. Here are a brewery on a large ſcale, three griſt mills, four ſaw mills, a forge, a gun and card manufactory, gaol, court-houſe, college, and about 400 dwelling-houſes. The townſhip lies on the eaſt ſide of Otter creek, and contains 1263 inhabitants; 511 miles N.E. of Waſhington.

MIDDLEFAHRT, a town of Denmark, on the weſt coaſt of the iſland of Funen, in the Little Belt, which is here ſcarcely one mile wide, and called "Middlefahrt ſound." Here is a ferry to Snogboy in Jutland; 34 miles W. of Odenſee. N. lat. 55° 32′. E. long. 9° 39′.

MIDDLEFIELD, a townſhip of America, in Hampſhire county, Maſſachuſetts; 30 miles N.W. of Springfield; incorporated in 1783, and containing 817 inhabitants.—Alſo, a thriving town in Trumbul county, ſtate of Ohio; 15 miles N. of Warren.

MIDDLEHAM, a ſmall market-town and pariſh in the wapentake of Hang-Weſt, in the North Riding of the county of York, England, is ſituated on the ſouthern bank of the river Ure, 10 miles from Richmond, 44 from York, and 229 from London. Leland ſays, "The toun is ſet on a hille ſide. The greate hil above hit more then a mile of hit is cawllid Penhil, and is countid the hieſt hille of Richemontſhire. Middleham caſtle joynith harde to the toun ſide, and is the faireſt caſtel of Richemontſhire next Bolton, and the caſtel hathe a parke by hit caullid Sonſkue, and another cawllid Weſtpark, and the third caullid Gauneleſſe, half a mile of. Weſtparke and Gaunleſſe be well woddid. There is at the eſt ende of Midleham a little hoſpital, with a chapel of Jeſus." The pariſh church is a handſome ſtructure. In the year 1476, Richard duke of Glouceſter (afterwards king Richard III.) obtained a licence from his brother, Edward IV., to make it collegiate, with proviſion for a dean, ſix chaplains, four clerks, and ſix choriſters; but the eſtabliſhment was never completed. The miniſter of the pariſh hath yet the title of dean of Middleham, and enjoys ſeveral privileges; but there probably never were any chaplains, clerks, or choriſters. The caſtle, now in ruins, was the birth-place of king Richard III.; and in it Edward IV. was confined, after having been taken priſoner in his camp by Nevill, earl of Warwick. Middleham contained, according to the return in the year 1801, under the population act, 154 houſes, and 728 inhabitants, of whom a conſiderable number are employed in the woollen manufacture. A weekly market is held on Monday, and here are three annual fairs.

MIDDLE-HORNED, in *Agriculture*, a term applied to an uſeful breed of neat cattle. This breed, which are often employed in team labour, is diſtinguiſhed by different characteriſtic marks in the different varieties; which, in the Devonſhire ſort, is by a high red colour without white ſpots, by a light dun ring round the eye, by the muzzle having the ſame colour, by being fine in the bone and clean in the neck, by the medium length of the horns, and their being turned upwards, by being thin-faced, fine in the chops, wide in the hips, with a tolerable barrel, rather flat on the ſides, by the tail being ſmall and ſet on high, by being thin-ſkinned and ſilky in handling, and by the property of fattening at an early age, or arriving quickly at maturity. They are admirably fitted for the purpoſe of draught in hardineſs, quick movement, and the form of the ſhoulder.

The principal varieties of this breed are the Devonſhire, the Suſſex, and the Herefordſhire; all of which are highly uſeful ſorts, and differ in ſome ſlight particulars from each other, as is ſeen under the head *Cattle*, where a full deſcription of each kind is given. See Cattle.

MIDDLESEX, *Earl of*, in *Biography*. This nobleman is often mentioned in opera annals, from the year 1741, when Handel retired from the Haymarket theatre as manager, or *impreſario;* his lordſhip having taken upon himſelf that perilous and troubleſome office, perſevered in his love of dramatic muſic, and of rule, to his great loſs, till 1748. See Opera *Hiſtory in England.*

Middlesex, in *Geography*, an inland county of England, is bounded on the north by Hertfordſhire, on the ſouth by the river Thames, which divides it from Surrey, on the weſt by the river Colne, which ſeparates it from Buckinghamſhire, and on the eaſt by the river Lea, which divides it from Eſſex. Its ſhape is extremely irregular, but, on the whole, approaches to that of the quadrangle. The greateſt extent of the ſhire, from eaſt to weſt, meaſures about 20 miles; and its greateſt breadth, from north to ſouth, about 17 miles. The ſuperficial area of the whole county is eſtimated by Mr. Middleton, in his Agricultural Survey, at 280 ſquare miles, or 179,200 acres. Some other writers, however, ſtate its contents at 218,000 acres. According to the parliamentary returns of 1801, it contained 118,083 houſes, inhabited by 818,129 perſons, *viz.* 373,655 males, and 444,474 females, of whom 162,260 were ſtated to be employed in different branches of trade and manufactures, and in agriculture.

This county, before the Roman invaſion, formed part of the territories of the Trinobantes, or Trinovantes, a tribe of Britons, who are ſuppoſed to have derived their name from the peculiar nature of the country they occupied; being a broad valley on the banks of a wide ſpreading river. This tribe poſſeſſed two conſiderable cities, or fortified places; of which the eminence between the Thames and Moorfields, nearly the centre of modern London, was the ſcite of one; the other, and moſt important at that early period, was Camalodunum, now Colcheſter in Eſſex. Being torn by internal diſſentions, the Trinobantes were the firſt who found themſelves compelled to ſubmit to the Roman arms. After the complete ſubjugation of the iſland, their territories, and conſequently Middleſex, were included in the diviſion called Flavia Cæſarienſis; and Londinum or Auguſta, now London, became a principal Roman ſtation, though, from ſome cauſe unknown, it never was dignified with the name of a colony. See an intereſting account of the Roman ſtation and antiquities of London, by J. Moſer, eſq., in European Magazine for September 1812.

After the retreat of thoſe illuſtrious conquerors, and the eſtabliſhment of the Saxon heptarchy, this county appears for ſome time to have conſtituted a kingdom of itſelf; for which, however, its kings were obliged to do homage to thoſe of Kent or Mercia. It was ultimately incorporated with the kingdom of the Eaſt Saxons, and remained in that condition till the diſſolution of their monarchy, by the ſubjugation of the ſeveral kingdoms of the heptarchy to one monarch. Subſequent to this event, the hiſtory of London is intimately connected with the hiſtory of Middleſex. See Turner's Hiſtory of the Anglo-Saxons, 2 vols. 4to.

The ſurface of this county, though moſtly flat, preſents a variety of hills, near its union with Hertfordſhire, many of which riſe almoſt imperceptibly to their ſummits, and are, on that account, admirably adapted for the purpoſes of agriculture; being ſufficiently ſloping to ſecure a proper drainage, and, at the ſame time, free from abrupt elevations. This inequality of ſurface, moreover, contributes in no ſmall degree to health, ornament, and beauty; though only a few ſpots can be conſidered as eminently pictureſque. The ground, for the moſt part, aſcends from the banks of the Thames towards the north; and, within four miles of London, appears a range of gentle eminences, which ſhelters the metropolis from the northern blaſts, and agreeably breaks the uniformity of the horizon. Of theſe heights the chief are Hampſtead, Highgate, and Muſwell Hill; all of which afford many pleaſing and extenſive proſpects. So likewiſe does Harrow Hill, which, from riſing in a ſort of iſolated manner, forms a prominent object for many miles around. This eminence approaches a higher and more extenſive ridge, ſtretching north-eaſtward in interrupted ſwells from Pinner, Stanmore, Elſtree, Totteridge, and Barnet, to the foreſt ſcenery of Enfield Chace. The average elevation of theſe hills is about 400 feet above the ſtream of the Thames. Such land as lies contiguous to that river, and to the Colne and Lea, is in general perfectly level, and exhibits a ſtate of the higheſt cultivation.

The mineralogy of this county affords fewer objects of intereſt than perhaps any other in England. According to

Mr. Middleton, the diſpoſition of the ſtrata is, "firſt, cultivated ſurface; ſecondly, ſiliceous gravel, from five to ten feet in thickneſs; thirdly, a ſtrong leaden coloured earth, generally called clay, varying from one to three hundred feet in thickneſs; fourthly, marine ſediment, ſometimes cockle ſhells, but principally oyſters, agglutinated together, and hardened into a ſort of ſtony ſtratum, three, four, or five feet deep; fifthly, looſe ſand and gravel, from which the water is found to riſe in ſuch quantity, as to preclude the poſſibility of digging further. No metallic ſtrata have yet been diſcovered in any part of the county; and appearances indicate, that if there really are any ſuch, they lie at too great a depth to be made ſubject to the operations of the miner." A thin ſtratum of fullers' earth, however, was found, in 1802, about a mile from Paddington, on the Edgeware road; and in 1798, a quantity of looſe coal, twelve inches in thickneſs, was diſcovered at Chelſea, nearly fifty feet from the ſurface. Foſſil ſhells, principally bivalves, together with other marine exuviæ, have occurred in different parts.

The ſoils in Middleſex are various, but loam and clay, or ſand and gravel, more or leſs intermixed with loamy clay, are the moſt prevalent. The latter ſort of ſurface predominates on the ſummits of moſt of the hills. Hampſtead Hill conſiſts chiefly of yellow iron-ſtained ſand, with ſome loam and rounded flints placed on a pure white ſand, many feet in depth. A loamy ſand is the prevailing ſoil in that diſtrict of the county which forms its ſouth-weſternmoſt angle, and lies beeween the river Thames, and the road ſtretching from Hounſlow to Colnbrook. From Tottenham to Enfield Waſh the ſuper-ſtratum is of a ſimilar deſcription, and reſts upon the ſame under ſtrata. Weſtward from Hanwell and Hounſlow, the loam exiſting in much greater quantity than the ſand, agriculturiſts diſtinguiſh the ſoil here by the appellation of a ſandy loam. The ſame ſoil is found in the pariſhes of Twickenham, Iſleworth, Ealing, Chiſwick, Kenſington, Fulham, Brompton, and Chelſea, as likewiſe in the ſouth diviſion of the pariſh of Harefield. All the land from Ruiſlip and Ickenham on the weſt, to Gneeford, Apperton, and Harrow on the eaſt, and between Pinner on the north, and Northcote on the ſouth, is compoſed of ſtrong loam; the land about Mims is of the ſame kind, and the level between Iſlington, Hampſtead, and Hornſey, is a ſtrong but very unproductive loam. The loamy clay predominates on the north ſide of a hill between Uxbridge Common and Harefield, to the north-weſt of Ruiſlip, and between the river Brent and Hampſtead on the Hendon road. From Nightingale Hall by Colney Hatch to Whetſtone, the ſoil is a loamy clay mixed with pebbles of flint, and alſo from Potters'-Bar for about two miles towards South Mims. The north ſide of Highwood Hill has a thin layer of loamy clay on a ſubſoil of yellow clay, every where abounding with rounded flints. In the Iſle of Dogs, and in all the lands on the flat borders of the rivers Lea and Colne, together with ſome ſpots immediately adjacent to the Brent and the Thames, the ſoil is of that peculiarly rich kind which is formed by the collection of the various ſubſtances that may be waſhed down by the rivers from the high grounds, villages, towns, and cities. The moors extending from Rickmanſworth to Staines conſiſt chiefly of peat on a ſubſoil of ſiliceous gravel, which in various parts ſhews itſelf at the ſurface. Some peat has likewiſe been found in the Iſle of Dogs.

Middleſex, from its ſituation with regard to London, preſents more variety in its agriculture than any county in Great Britain. To give the reader, therefore, a proper idea of this ſubject, it will be neceſſary to enter at greater length into detail than might otherwiſe be requiſite. In general, however, it may be premiſed that the eaſtern diviſion of the county, with the exception of the gardens in the vicinity of the metropolis, are appropriated to meadow, paſture, and potatoe-grounds; and that the weſtern diviſion, excepting Hounſlow Heath, Sunbury, and Ruiſlip commons, and ſome other ſpots, conſiſts chiefly of arable lands.

The greater part of the upland, meadow, and paſture-grounds in this county has, no doubt, been at one time under cultivation, as they ſtill exhibit unequivocal marks of the plough. Theſe grounds are kept in the higheſt ſtate of order, and are plentifully furniſhed with manure, ſo that they afford the moſt luxuriant crops. The manner and period of applying the manure are ſtudied by the farmers with great attention. They obſerve, ſays Mr. Middleton, the ſtate of the atmoſphere, and ſhould it indicate rain after the hay is removed from the ground, they put the dung of neat cattle upon it. Should the barometer, however, not promiſe rain in conſiderable quantities, the decompoſed manure is allowed to remain on the dunghills till the end of September, at which time it is put on while the ground is dry enough to bear the loaded carts without injury. Meadow land in the occupation of cow-keepers is uſually mown two or three times during ſummer, the great number of cows kept by them enabling them to dreſs it every year. As their chief object is to obtain their hay of a ſoft graſſy nature, they cut it young, conceiving it to be better provender for milk cows in that ſtate than after the ſeedling ſtems have riſen.

The paſturage or graſs-lands lie principally, if not entirely, on the banks of the ſeveral rivers with which this county is ſupplied. Thoſe adjoining to the river Lea contain about 2000 acres, of which upwards of 1200 are incloſed, and the remainder divided by land-marks among a great number of proprietors. The ſeveral tracts of graſs-lands on the banks of the Colne include about 2500 acres, and ſuch of them as are incloſed are extremely fertile. By far the greater proportion of them, however, are Lammas Meads; and one of the neceſſary conſequences of this condition is, that the ditches are ſo much neglected as to be grown up. The richeſt graſs-land in the whole county is that of the Iſle of Dogs, which, ſince the formation of the Eaſt India Docks, has been reduced from 1000 to leſs than 500 acres.

Before concluding the ſubject of meadow and graſs-lands, it may not be improper to notice ſhortly the method of hay-making practiſed in this county, the decided ſuperiority of the farmers in that art being acknowledged by all who have any pretenſions to agricultural ſkill. Here it is reduced to a regular ſyſtem, unknown in other parts of the kingdom. When the graſs is about to be mown, the farmer engages a certain number of perſons for that work, according to the extent of his lands. At the ſame time he provides five haymakers to each mower, who are paid by the day. On the firſt day all the graſs mown before nine o'clock is tedded, in which operation great care is taken to ſhake it out well, and ſtrew it evenly over the ground. After this, it is turned once or twice with ſimilar care; and in the courſe of the afternoon is raked into what are called ſingle wind rows, and towards the evening is put into graſs cocks. On the ſecond day the buſineſs commences by tedding all the graſs mown on the firſt day after nine o'clock, and all that has been mown this day before nine o'clock. Next the graſs cocks are well ſhaken out into ſeparate plats, called ſtaddles, of five or ſix yards diameter. The ſtaddles are next turned, and after that is done, the graſs tedded in the morning is turned once or twice in the ſame manner as deſcribed for the firſt day. After dinner the ſtaddles are formed into double wind rows; the graſs is next raked into ſingle wind rows; then the double wind rows are put into baſtard cocks; and laſtly, the ſingle wind rows are put into graſs cocks. On the third day the graſs mown and not ſpread on the ſecond day, and alſo that mown in the early part of this day, is firſt tedded in the morning, and the graſs cocks are ſpread into ſtaddles, as before, and the baſtard cocks into ſtaddles of leſs extent. Theſe leſſer ſtaddles, though laſt ſpread, are firſt turned, then thoſe that were in the graſs cocks, and laſtly, the graſs, once or twice; after which, the people go to dinner. Should the weather prove fine, the hay which was in baſtard cocks the preceding night, will, this afternoon, be in a proper ſtate to be carried, but not ſo if the weather has been cloudy and cool. In the latter caſe, the firſt operation after dinner is to rake the graſs cocks of the laſt night into double wind rows, and the graſs which was this morning ſpread from the ſwaths into ſingle wind rows. Afterwards, the baſtard cocks of the laſt night are made up into full ſized cocks, and care taken to rake the hay up clean, and alſo to put the rakings upon the top of each cock. Next, the double wind rows are put into baſtard cocks, and the ſingle wind rows into graſs cocks, as on the preceding days. On the fourth day the great cocks are uſually carried before dinner. The other operations of the day are conducted in the ſame routine as on thoſe already deſcribed, and ſo on daily till the harveſt is finiſhed.

The fruit gardens of Middleſex, ſolely intended for the ſupply of the public market, are ſuppoſed to occupy about 3000 acres. They extend, principally, on each ſide of the high road, from Kenſington through the pariſhes of Hammerſmith, Brentworth, Iſleworth, and Twickenham. Theſe gardens, on an average, furniſh conſtant employment to about ten perſons *per* acre, men, women, and children; but during the fruit ſeaſon, this number is increaſed from thirty-five to forty. The annual produce of the labour of theſe individuals collectively is eſtimated at 300,000*l.*, about three-fourths of the whole ſupply of London. In theſe gardens it is uſual to have two crops, one called an *upper*, and the other an *under* crop. The former conſiſts of the larger ſpecies of fruits, and the latter of the ſmaller, ſuch as raſpberries, gooſeberries, currants, and others which are known to ſuffer little injury by excluſion from the influence of the ſun. Some gardens are incloſed by very high walls, againſt which grow a vaſt variety of wall fruits; and artificial banks are alſo frequently formed, by means of which the gardeners are enabled to raiſe certain crops many weeks earlier than they could otherwiſe effect.

The nurſery gardens lie moſtly in the neighbourhoods of Chelſea, Brompton, Kenſington, Hackney, Dalſton, Bow, and Mile-End, and are computed to compriſe upwards of 1500 acres. In theſe gardens are to be found almoſt every variety of fruit trees, ornamental ſhrubs, and rare plants, known in any quarter of the world. Indeed, ſo celebrated are the nurſery-men of Middleſex for the cultivation of exotics, that, in times of peace, a great exportation of theſe articles takes place to France, Spain, Portugal, Italy, Ruſſia, and other countries.

The extent of ground ſituated in Middleſex appropriated to kitchen gardens for the ſupply of the London markets, is eſtimated at nearly 3000 acres, or about one-fourth of the whole lands ſo employed in the neighbourhood of the metropolis. About a tenth part of theſe gardens is entirely prepared by the ſpade, and the remainder partly by the ſpade, and partly by the plough. The average produce of theſe gardens, which are kept in a ſtate of high fertility by an abundant ſupply of manure, is ſuppoſed to amount to 200*l.* *per* acre annually, the profit upon which may be about 120*l.* Willows for the uſe of the baſket-makers are much cultivated in the iſlands and on the banks of the Thames, particularly in the vicinity of Brentford, Twickenham, and Sunbury. The profits ariſing from this ſpecies of cultivation are ſaid to be immenſe, but they are carefully concealed from public ſcrutiny.

Farms in this county, from the manifold diviſion of its landed property, are uſually of ſmall extent. The rents vary extremely, according to local and other circumſtances, being in ſome places averaged ſo low as ten ſhillings, and in others at above twelve pounds. They are, without exception, paid in money, with the addition, in ſome few inſtances, of ſupplying the landlord's family in town with freſh butter at 8*d.* or 9*d.* *per* pound, of 16 ounces to the pound, and with cream at 6*d.* *per* pint. Tithes, from which only a very few farms are free, are chiefly taken in kind, though in ſome caſes an annual compoſition is preferred. The wages of labourers in huſbandry here in winter vary from ten to twelve ſhillings *per* week, and in ſummer from twelve to fifteen. Thoſe employed only in hay-time and harveſt have from fifteen to eighteen ſhillings, with beer occaſionally, and ſometimes a dinner. A great part of the agricultural buſineſs, however, is done by the piece, the prices varying according to the ſeaſon. Farm-houſes, built within the laſt hundred years, are moſtly conſtructed of brick, and well adapted for the accommodation of a reſpectable family. The offices erected within the ſame period are likewiſe laid out upon a good plan. If of older date, however, than the 18th century, both houſes and offices are of wood, lathed and plaiſtered, with the roofs thatched; and from the many repairs, additions, and alterations they have undergone, have the appearance of being built by piece-meal, to ſuit the immediate wants of the farmers, who may properly be divided into various claſſes or deſcriptions of perſons. Thoſe who rent land in the immediate neighbourhood of the metropolis are chiefly cow-keepers, gardeners, and nurſery-men. The lands lying immediately behind their's are occupied by the villas of wealthy citizens and others; and theſe are ſucceeded by farmers, who may be again divided, firſt, into perſons with whom farming is but a ſecondary occupation; and, ſecondly, ſuch as, having acquired an eaſy fortune by other purſuits, retire to farming, with the idea of uniting profit and amuſement in their agricultural labours. The third claſs is leſs numerous than either of the former, and conſiſts likewiſe of perſons who have abandoned ſome former purſuit entirely, and directed their attention excluſively to farming as a profeſſion: this claſs forms the moſt intelligent and moſt accurate of huſbandmen. The fourth and laſt claſs is equal in number nearly to all the other claſſes conjoined, and is compoſed of perſons who have been originally bred to farming, and have continued to employ themſelves in the ſame occupation.

The arable lands in Middleſex are chiefly ſpread out in common fields, not above one-fourth of the whole being incloſed. This department of huſbandry is much leſs underſtood than thoſe diviſions of it already noticed. Ploughing is, for the moſt part, conducted upon an injurious and expenſive plan. The ploughs, as well as the carts, are much too clumſy, requiring an unneceſſary number of cattle to drag them. Fallowing is ſeldom practiſed, becauſe the farmers regard the introduction of green crops, at certain intervals in the rotation of crops, as rendering this mode of recruiting the ground altogether unneceſſary; and it muſt be confeſſed, the idea derives ſome confirmation from experience, for in the pariſh of Heſton, where the beſt wheat in the county is grown, that practice is wholly excluded. The corn chiefly raiſed here is wheat and barley, rye and oats being cultivated only in very ſmall quantities. The whole extent of land cropped with wheat in Middleſex is about 10,000 acres, and new grain recently threſhed is moſtly preferred for ſeed. About 4000 acres are laid down in barley; 3000 acres are appropriated to beans; and nearly the ſame amount to peas. The remainder of the arable lands is occupied by a variety of other green crops, as turnips, cabbages, white and red clover, ray-graſs, (uſually cut green,) and tares for the food of cattle; together with turnips, potatoes, carrots, parſnips, &c. for the uſe of man. Liquorice and hops are likewiſe among the ſaleable commodities cultivated in a few fields in the vicinity of London.

The number of live ſtock kept in this county is ſmaller, even in proportion to its extent, than in any other in England, with the exception of the cows appropriated for the ſupply of London with milk. Theſe cows, which are of a large ſize, are commonly diſtinguiſhed by the appellation of the Holderneſs breed, from a diſtrict of that name in Yorkſhire; but they have long ſince ceaſed to be confined to that particular kind. The total number kept in Middleſex, for the purpoſe above-mentioned, is ſtated by Mr. Foot, in his Agricultural Report, at 7200. The mode of treating theſe cattle is as follows. During the night they are confined to their ſtalls, and about three o'clock in the morning each is provided with half a buſhel of grains. From four to half paſt ſix they are milked by the retail dealers, and as ſoon as that operation is finiſhed, each cow receives a buſhel of turnips, and not long afterwards a ſmall portion of ſoft meadow hay. Theſe ſeveral feedings are commonly finiſhed by eight o'clock in the morning, when the cattle are turned into the cow-yard. At twelve, they are again confined to their ſtalls, and are ſerved with the ſame quantity of grains which they had in the morning. The milking recommences about half paſt one, after which follows again the turnips and hay. This mode of feeding continues from the month of September to May. During the other months they are fed with grains, cabbages, tares, and ſecond cut graſs, except when the weather is peculiarly fine, and then they are turned out to graze; but even in this caſe they ſtill receive a portion of grains. One bull is the uſual proportion to a ſtock of thirty cows. The net profit of the cow-keeper, upon every cow, is eſtimated at 6*l.* annually. Calves are generally diſpoſed of at one, two, or three days old. Many, however, are likewiſe ſuckled for eight or ten weeks, when they become fat, and are thought to furniſh the beſt veal.

The Middleſex ſheep are not of any particular breed, the farmers either directly or indirectly purchaſing their ſtock from almoſt every county in England. Such ewes, however, as are kept for the ſupply of the London markets with houſe-lambs, are all of the Dorſetſhire breed. This laſt branch of farming is, perhaps, the moſt profitable of any in the county. Early-lambing ewes, of which thoſe of a large ſize with white noſes are preferred, are ſought for with great diligence, the prices varying from forty to fifty ſhillings. Early graſs-lambs are likewiſe an object of importance with the farmers of Middleſex; and for ſupplying theſe, the Dorſet ewes are chiefly ſelected, but the Southdown breed is occaſionally preferred. The feed both of the ewes and lambs is principally turnips and ſecond crop hay. The lambs are uſually ſold fat in the months of April, May, and June, at from thirty ſhillings to two guineas each.

The number of horſes kept in this county amounts to between thirty and forty thouſand, but very few of them are bred in it. Such as are employed in agricultural operations, as well as thoſe uſed by the brewers, diſtillers, and carmen of London, are moſtly bred in Leiceſterſhire and the adjoining counties. The coach and ſaddle-horſes are principally brought from Yorkſhire. No horſes can ſurpaſs the draught horſes of the brewers, coal-maſters, &c. in ſtrength and figure. Hogs are kept in conſiderable numbers, but chiefly by the malt-diſtillers, for whom they are purchaſed lean at a large market held on Finchley Common, to which there are vaſt numbers brought from Shropſhire and other diſtant counties. The fattened hogs are bought for the hog-butcheries about London; and the bacon cured here is reckoned very little inferior to that of Wiltſhire and Yorkſhire. A great ſupply of poultry is reared in Middleſex, chiefly, however, for home conſumption. Many pigeons and rabbits are alſo bred, particularly in the neighbourhood of London, by the poor people and journeymen tradeſmen. The only regular warren in the county is that on Uxbridge Common; ſo that a great proportion of the rabbits ſold by the poulterers in London are of the houſe-breed.

Middleſex, conſidering the proximity of every part of it to the Britiſh metropolis, cannot boaſt of ſuch good roads as might be expected. For, notwithſtanding the immenſe ſums raiſed to keep them in repair and proper condition, it is a fact, that even the great roads which branch off immediately from the city, as from a centre, are frequently ſuffered to remain in the moſt neglected ſtate, eſpecially during the winter months. This ariſes, in a great meaſure, from the inappropriate means employed in cleanſing them, and from the inadequacy of the materials employed in their conſtruction and repair, to ſuſtain the continued preſſure of the immenſe loads which are conſtantly drawn along them. It muſt be confeſſed, however, that many improvements in this reſpect have been made within theſe few years, and that even as they are, they would be accounted excellent in every other part of Europe, except in the neighbourhood of London. The pariſh highways, as they are denominated, are uſually kept in excellent order; but the ſame remark cannot be applied without conſiderable limitation to the ſtreets of London, which, in the carriage-ways, are uſually paved with Scotch granite. The canals which interſect Middleſex are the Grand Junction canal, and the Paddington canal. The former, ſtriking off from the Thames at Old Brentford, paſſes the grounds at Sion Hill and Oſterley, and running through a rich corn diſtrict near Hanwell, Norwood, Harlington, Weſt-Drayton, Cowley, Uxbridge, and Harefield, leaves this county near Rickmanſworth. This canal, which is navigable for veſſels of ſixty or ſeventy tons burthen, has fourteen locks to Harefield Moor, where the level is 114 feet two inches above that of the river Thames. From its numerous cuts, ſide branches, and collateral ſtreams, it is, beyond doubt, the moſt important inland navigation in the kingdom, as it affords a direct water communication to all the various manufacturing towns of Warwickſhire, Staffordſhire, Lancaſhire, Derbyſhire, and ſeveral other counties. The general breadth of this canal is thirty feet, but at the bridges it is contracted to fifteen. The Paddington canal branches off from it near Cranford, and is continued on a level from thence to the dock at Paddington, the ſides of which are occupied with yards and warehouſes, for the reception and ſecurity of merchandiſe. The advantages derived to the metropolis and the country at large from this canal, are likewiſe various and important. A third canal, called the Regent's Canal, ſtretching from the Thames, weſt of London, to join that river near Limehouſe, has been lately projected, and is now carrying into execution. Though there are no ſtreams of any conſequence which take their riſe in this county, ſeveral conſiderable ones water it in different directions. Of theſe, the moſt important, not only in Middleſex, but in England, is the Thames, which ſerves as the boundary between this county and Surrey, as already mentioned. See THAMES.

The other principal rivers of Middleſex are the Colne, the Brent, and the Lea; all of which diſcharge their waters into the Thames. The Lea, which joins it at Bow Creek, is navigable as high as Ware and Hertford. All of theſe waters are covered at different points with mills, and other machinery, employed in the various departments of manufactures and the arts. Beſides theſe ſtreams there are ſeveral others, which, though of trivial ſize, have ſome claims to attention. Fleet Brook, which is now encloſed from the view in its paſſage through London, was formerly navigable for barges. It takes its riſe among the high grounds at Hampſtead Heath and Caen Wood, from whence it proceeds by Kentiſh Town, Pancras, Bagnigge Wells, Mount Pleaſant, and Saffron-hill, croſſing Chick-lane, and running under Fleet-market and Bridge-ſtreet. where it enters the Thames. The New River is an artificial ſtream, formed by the collected waters of ſeveral ſmall ſprings iſſuing from the vicinity of Chad-well, in Hertfordſhire. (See NEW RIVER.) Several mineral ſprings riſe in the immediate vicinity of London; and ſome of them were formerly of much repute, though they are now but ſeldom uſed. The Spa fields, north of London, derive their name from the number of chalybeate ſprings that riſe within them, of which that at Iſlington Spa, called alſo New Tunbridge Wells, is the principal. At Bagnigge Wells are ſprings both chalybeate and cathartic. The other ſprings of note are St. Chad's Wells, near the bottom of Gray's-inn-lane road, Kilburn Wells, Acton Wells, and ſeveral more ſituated at Hampſtead, and in the pariſhes of St. Pancras and Shadwell.

Middleſex, as containing London, is the principal ſeat of commerce and manufactures in Great Britain. While its traders viſit the moſt diſtant parts of the known world, its artificers at home produce almoſt every variety of articles which any diſtrict in the country can furniſh. The chief portion of theſe, as may be preſumed, is manufactured in London and its ſuburbs: but many important manufactories are likewiſe ſpread over the county; moſt of them, however, the property of individuals eſtabliſhed in the town.

The maintenance of the poor in this county is too important a branch of its civil economy to be paſſed over unnoticed, even in a general account like the preſent. According to the returns made to parliament on this ſubject, in the year 1804, the number of perſons maintained in workhouſes, from the 20th of April 1802 to the 12th of April 1803, was 15,186; and the number of thoſe relieved out of work-houſes, 47,987. The total annual expence, incurred in ſupporting the former, was 224,048*l.* 2*s.* 1½*d.*; and the expence of relieving the latter, 121,901*l.* 12*s.* 3*d.*; making in all, the ſum of 364,034*l.* 0*s.* 10½*d.*, or 5*l.* 15*s.* 3*d.* for each pariſhioner. Beſides theſe, however, there were 32,506 perſons, not pariſhioners, who had received occaſional relief, to the amount of 3250*l.* 12*s.*: ſo that the whole ſum expended for the benefit of the poor, during that year, was 367,284*l.* 12*s.* 10½*d.* The amount of the rates, for the ſame period, was 490,144*l.* 1*s.* 7¼*d.*; an average of 10*s.* 10½*d.* *per* head on the whole reſident population, then computed, as has been ſeen, at 818,129 perſons. Eight perſons in the hundred, according to this calculation, were relieved by the poor's rate. Independent of theſe parochial burthens, there were then 1132 friendly ſocieties, of which 54 were ſtated to be female ſocieties, and 750 to have been enrolled at the quarter-ſeſſions, purſuant to the acts paſſed in the 33d and 35th years of his preſent majeſty. The total number of perſons belonging to theſe ſocieties is ſtated at 72,741, (of whom 3754 were females,) being nine in a hundred of the reſident population.

The Romans ſeem to have had only two ſtations in this county: Londinum or Auguſta, now London; and Sullonicæ or Brockley hills, near Elſtree, on the borders of Hertfordſhire. Roman remains, however, have been diſcovered at many other places. The Roman roads appear to have concentrated in London, and to have branched off from that city in different directions, as from a common centre. The Watling-ſtreet, running from Dover, is preſumed to have entered Southwark at the point now called Dowgate, and, keeping along the preſent Watling-ſtreet, to have quitted the city at Alderſgate. After this, its preciſe direction cannot be eaſily determined; but it probably turned weſtward at the end of Old-ſtreet, and continuing along Wilderneſs-row and Clerkenwell, croſſed the Fleet Brook, and aſcended the hill at Portpool-lane; thence purſuing a north-weſterly direction, it fell into the tract which now forms the high road to St. Alban's, and approaching the ſtation of Sullonicæ, paſſed on through Elſtree to Verulamium. The Ikenild-ſtreet, taking an eaſterly direction up Old-ſtreet, and over Bethnal Green, went on by Old Ford to Camalodunum or Colcheſter. The Ermin-ſtreet led northwards through Iſlington, Stoke Newington, and Hornſey, to Enfield: then turning off near that town, it paſſed Clay-hill, and entered Hertfordſhire. A fourth Roman road led into Surrey and Berkſhire, by the towns of Brentford, Hounſlow, and Staines, along the courſe of the preſent turnpike; and there ſeems every reaſon to believe that a fifth took the direction of Eſſex, through Whitechapel and Stratford-le-Bow. Several camps of Britiſh and Roman conſtruction are diſperſed throughout the county, but none of them are peculiarly intereſting: and in general it may be remarked, that, except in London and Weſtminſter, there are few remains of antiquity in Middleſex, which have any claims to the particular notice of the antiquary.

Middleſex is divided into ſix hundreds, excluſive of the cities and liberties of London and Weſtminſter, and the Tower Hamlets. The total number of pariſhes, places, precincts, and extra-parochial places, in the whole county, as returned under the population act, was 234. All of theſe, with the exception of the city and liberties of Weſtminſter, which are governed by the dean and chapter of Weſtminſter, are included in the dioceſe of London. It contains nine market-towns, diſtinct from the metropolis, namely, Barnet, Southall, Finchley, Uxbridge, Brentford, Hounſlow, Edgeware, Staines, and Enfield. Uxbridge market is principally for corn; and at Hounſlow there is always a very conſiderable ſhow of fat cattle, for the ſupply of the London butchers. Beauties of England and Wales, vol. x. by E. W. Brayley. Camden's Britannia, by Gough, fol. vol. ii. Stukeley's Itinerary, fol. Agricultural Survey of Middleſex, by Middleton, 8vo.

MIDDLESEX, a county of America, in Maſſachuſetts, bounded north by the ſtate of New Hampſhire, eaſt by Eſſex county, ſouth by Suffolk, and weſt by Worceſter county. It is nearly of a ſquare form; its greateſt length being 52, and its greateſt breadth 42 miles. It has 42 townſhips, containing 46,928 inhabitants, and was made a county in the year 1643. It is watered by five principal rivers, *viz.* Merrimack, Charles, Concord, Naſhua, and Myſtick, beſides ſome ſmaller ſtreams. The chief towns are Charleſtown, Cambridge, and Concord. The ſouthern and northern ſides of the county are hilly, but none of the hills exceed 100 feet in height; and they are either covered with wood, or cultivated to the ſummit. The air is generally ſerene, and the temperature mild. The ſoil in ſome parts is rich black loam, but in others it is light and ſandy. It produces the timber, grain, and fruit, which are common throughout the ſtate, either by natural growth or cultivation.—Alſo, a maritime county of Connecticut, bounded north by Hartford county, ſouth by Long Iſland ſound, eaſt by New London county, and weſt by New Haven. It is divided into ſix townſhips, containing 13,874 inhabitants, of whom 72 are ſlaves. The chief town is Middleton.—Alſo, a county of New Jerſey, bounded north by Eſſex, north-weſt and weſt by Somerſet, ſouth-weſt by Burlington, ſouth-eaſt by Monmouth, eaſt by Rariton bay, and part of Staten iſland. It contains 17,890 inhabitants. From the mouth of Rariton river to Brunſwick, the land on both ſides is generally good, both for paſture and tillage, and produces conſiderable quantities of every kind of grain, and of hay. The chief town is New Brunſwick.—Alſo, a county of Virginia, on the ſouth ſide of Rappahannock river, on Cheſapeak bay, about 35 miles long, and 7 broad, containing 1687 free inhabitants, and 2516 ſlaves. The chief town is Urbanna.

Middlesex, one of the three counties into which the iſland of Jamaica is divided; the two others being Cornwall and Surry. This county is compoſed of eight pariſhes, one town, *viz.* St. Jago-de-la-Vega, or Spaniſh Town, the capital of the iſland, and thirteen villages.

Middlesex, *Bill of*, in *Law*. See Bill.

MIDDLETON, Sir Hugh, in *Biography*, a public-ſpirited man, was the ſixth ſon of Richard Middleton, eſq. governor of Denbigh caſtle, in the reigns of Edward VI., Mary, and Elizabeth. The ſubject of this memoir ſettled in London, as a goldſmith; but in early life he had engaged in mining ſpeculations in his own country, and worked a copper-mine in Cardiganſhire, which brought him in a conſiderable income. During the reigns of Elizabeth and James I., the citizens of London obtained a power to bring a new ſupply of water to the city, from certain ſtreams or ſprings in Middleſex or Hertfordſhire. Various attempts were made; but they were all abandoned, on account of the difficulty and expences attached to ſo vaſt a concern. At length the city made over to Mr. Middleton, and his heirs, all the powers and rights conferred by an act of parliament; and he began the buſineſs in the year 1608. Two ſprings, one riſing near Ware, and the other at Amwell, in Hertfordſhire, were united for the ſupply of an artificial river, which was conducted to the metropolis. The expences of the undertaking were ſo great, that they exhauſted the fortune of the projector, who, having in vain applied to the corporation of London for aſſiſtance, procured it from the king, to whom a half-ſhare of the concern was made over, in conſideration of his taking an equal ſhare in the expences. This great work was completed in 1613; and on Michaelmas day, the water was let into the reſervoir of Iſlington with great ſolemnity. Mr. Middleton was rewarded with the honour of knighthood; but his profits were ſo ſmall, that he was under the neceſſity of engaging in the buſineſs of a ſurveyor, or what is now denominated a civil engineer, and in that capacity rendered eſſential ſervices to his country, by various ſchemes of mining, draining, &c. In 1622 he was created a baronet, and he died in the year 1631; ſince which, the value of the ſhares in this New River, as it is ſtill called, have advanced ſo much as to create large fortunes to the heirs of the original holders. A hundred pounds ſhare, ſome years ſince, ſold as high as fifteen thouſand pounds. Of late, however, there have been ſeveral acts of parliament paſſed in favour of other projects, which will be noticed under the article Water-*Works*, and which have reduced the value of the New River ſhares full one half. It is the faſhion now to decry the company as extravagant in their charges for ſupplies of water; but it ſhould be remembered, that the ſhares of this corporation, like thoſe of other commercial companies, are perpetually changing their maſters; and it is probable that the majority of ſhare-holders, when their value was even at the higheſt, had paid their full price, ſo as to gain only a moderate intereſt upon their purchaſe money. Biog. Brit.

Middleton, William, a Welſh poet, was born at Gwernſnog in Denbighſhire, and died about 1600. He ſerved in the armies of queen Elizabeth, and afterwards commanded a ſhip of war; and when at ſea, turned the book of Pſalms into Welſh verſe. This work was finiſhed in the Weſt Indies, in 1595. He was alſo the author of a Grammar, and Art of Poetry, publiſhed in 1598.

Middleton, Conyers, a celebrated divine of the church of England, was born in the year 1683 at Richmond, in Yorkſhire, where his father was miniſter. At the grammar-ſchool of that town he was educated, and from a very early period he gave fair promiſe of future excellence. At the age of ſeventeen he was ſent to Trinity-college, Cambridge; and in 1702 was choſen a ſcholar upon the foundation, and took his degree of B.A. In a ſhort time afterwards he entered into deacon's orders, and officiated as curate to one of the ſenior fellows of his college, at Trumpington, a village near Cambridge. In 1706 he was elected fellow of his college, and in the following year he proceeded M.A. Soon after his election to the fellowſhip, he took an active part in the meaſures which were concerting in oppoſition to Dr. Bentley's imperious conduct, as maſter of the college; and he united in a petition to the biſhop of Ely, which charged the doctor with many miſdemeanors. For his zeal in this buſineſs he was conſidered by the doctor as his moſt determined and dangerous enemy. While this diſcuſſion was carrying on, Mr. Middleton married a lady of large fortune, and was obliged to vacate his fellowſhip; but he ſtill reſided at Cambridge, till he was inducted to a living in the Iſle of Ely. To this he removed, but finding the ſituation unhealthy, he left it in about a year, and returned to Cambridge, where he was when George I. paid a viſit to the univerſity. On this occaſion he got his name inſerted, with thoſe of ſeveral others, in the royal mandate for the degree of doctor of divinity, which he accordingly received from the hands of Dr. Bentley, the regius profeſſor. Dr. Middleton on this occaſion reſiſted the fees, for the ceremony called creation, which led to a controverſy, that run out to a conſiderable extent, and which was carried on with great bitterneſs. The addition made to the public library at Cambridge, by a preſent from the king of biſhop More's books, which had been purchaſed at the expence of ſix thouſand pounds, induced the univerſity to paſs a decree for erecting a new ſenate-houſe, that a ſuitable place might be provided for the reception of his majeſty's donation. This decree was accompanied with a vote for a new office in the univerſity, *viz.* that of principal librarian, which was conferred upon Dr. Middleton. Such a promotion was no more than what was juſtly due to his literary merit. To ſhew how well qualified he was for that appointment, he publiſhed, in 1723, a little piece, entitled "Bibliothecæ Cantabrigienſis ordinandæ Methodus quædam; quam Domino Procancellario Senatuique conſiderandam et perficiendam, Officii et Pietatis ergo proponit." Soon after the doctor had completed the arrangement in the new library, his health requiring a change of climate, he applied for leave of abſence from the univerſity; and having obtained a ſpecial grace for that purpoſe, though not without difficulty, he ſet out for the continent, in company with lord Coleraine, a nobleman of conſiderable learning, who, upon their arrival at Paris, introduced him to the celebrated Montfaucon. Here Dr. Middleton ſeparated from his lordſhip, and travelled by the direct route for Rome, where he arrived early in the year 1724. After reſiding in this city about twelve months, Dr. Middleton returned through France to England, and arrived at Cambridge in the latter end of the year 1725. Almoſt immediately after his return he publiſhed a tract, entitled “De Medicorum apud Romanos veteres degentium Conditione Diſſertatio; qua contra Viros celeberrimos Jac. Sponium, et Ric. Meadium M.D.D. ſervilem atque ignobilem eam fuiſſe oſtenditur.” Dr. Mead had juſt before this publiſhed an oration, in which he had defended the dignity of the medical profeſſion, and endeavoured to vindicate it from the reproach of its having been held in ſuch low eſtimation by the ancient Romans, as to be left in the hands of ſlaves and the meaneſt of the people. In defence of the opinion of the learned phyſician, a work was publiſhed under the title of “Ad Viri Reverendi Con. Middletoni, S.T.P. de Medicorum apud Veteres Romanos degentium Conditione, &c. Diſſertationem Reſponſio.” This was publiſhed without any author’s name, but it was ſoon found to be the production of profeſſor Ward, who had been engaged by Dr. Mead to write it; and at his expence it was printed and publiſhed. Dr. Middleton replied in a very ſpirited defence both of his character and argument, entitled “Diſſertationis de Medicorum Romæ, &c. Defenſio.” With this the doctor finiſhed his part of the debate; and through the whole progreſs of it, he did not fail on every occaſion to expreſs a proper regard for Dr. Mead’s real merit: and this literary altercation did not prevent them from living afterwards upon very good terms with each other. While our author was at Rome, he had the advantage of beholding popery in the full pomp and diſplay of its pageantry, which he compared rather to the ſolemn acts of idolatry of old Rome, than to any thing recommended by the plain and ſimple precepts of Chriſtianity. He examined it very accurately; and with the view of tracing the ſimilarity, he made notes and obſervations while he was in Italy; and, after his return home, kept up an epiſtolary correſpondence with his friends and acquaintance there. From theſe materials he drew up, and publiſhed in 1729, “A Letter from Rome, ſhewing an exact Conformity between Popery and Paganiſm; or, the Religion of the preſent Romans derived from that of their heathen Anceſtors.” This performance was exceedingly well received by the public, and went through ſeveral editions in a very ſhort ſpace of time. While, however, the author was entitling himſelf to the thanks of the Proteſtant world, by expoſing the corruptions and impoſtures of the Romiſh church, there were ſome, even of the church of England, who took grievous offence at the book, pretending that he had attacked the Popiſh miracles with a gaiety that ſeemed to contemn all miracles, and particularly thoſe of our Saviour, by invalidating the force of certain rules which had been eſtabliſhed by ſome divines as the criterion of true miracles. Our author next made an attack upon Dr. Waterland’s, “Vindication of the Scriptures, &c.” which had been written in reply to Tindal’s famous book, entitled “Chriſtianity as old as the Creation.” This drew upon Dr. Middleton the charge of infidelity, and he narrowly and with much difficulty eſcaped academical cenſure. During the conteſt in which he had involved himſelf on this ſubject, he was appointed to the new profeſſorſhip of phyſiology at Cambridge, which had been founded in purſuance of the will of Dr. Woodward. He delivered, in the year 1731, a Latin inaugural oration, at his entrance upon the office, that did credit to the appointment of Dr. Woodward’s executors. The duties of this poſt Dr. Middleton diſcharged with fidelity and reputation, till the year 1734, when he reſigned it. In the following year he publiſhed “A Diſſertation concerning the Origin of Printing in England, ſhewing that it was introduced and practiſed by William Caxton, at Weſtminſter, &c” About this time the doctor was introduced to the celebrated lord Harvey, by whoſe advice and encouragement he undertook to write “The Hiſtory of the Life of M. Tullius Cicero.” This great work, which was well adapted to his taſte, and for which he was perfectly qualified, employed ſo much of his time and attention, that it was not ready for publication till the year 1741, when it appeared in two volumes, 4to. It was publiſhed by ſubſcription, and the profits enabled him to purchaſe a ſmall eſtate in the neighbourhood of Cambridge, at which he uſually ſpent the ſummer ſeaſon.

While Dr. Middleton was employed on the life of Cicero, a vacancy occurred in the maſterſhip of the Charter-houſe, and he was mentioned for it by ſir Robert Walpole, and came to London with the hope of obtaining it; but was diſappointed in his expectations, and returned to the compoſition of his favourite work. In the progreſs of this work, he engaged with Mr. Tunſtall in a controverſy reſpecting the authenticity of Cicero’s letters to Brutus, and of thoſe of Brutus to Cicero. He alſo, about the ſame period, publiſhed “Germana quædam Antiquitatis eruditæ Monumenta, quibus Romanorum veterum Ritus varii tam ſacri, tam profani, tum Græcorum atque Ægyptiorum nonnulli illuſtrantur, Romæ olim maxima ex Parte collecta, ac Diſſertationibus jam ſingulis inſtructa.” This work, which conſiſted of the figures of thoſe curious remains of antiquity that he had purchaſed at Rome, and other places, with a diſſertation on each, was followed, in 1747, by “A Treatiſe on the Roman Senate, in two Parts,” which terminated Dr. Middleton’s labours in profane literature; and he now proceeded to the publication of a treatiſe, which laid the foundation of another fierce controverſy with his clerical brethren. It was publiſhed in 1747, and was “An introductory Diſcourſe on the miraculous Powers ſuppoſed to have ſubſiſted in the Chriſtian Church from the earlieſt Ages, &c.” To this numerous anſwers were written, which, however, did not prevent him from proceeding with his plan; and in 1749 he produced the larger work, to which the former was, as it aſſumed to be, only an introduction. This was entitled “A free Inquiry into the miraculous Powers, &c.” The main object of the *Inquiry* is to ſhew, that there is no ſufficient reaſon to believe that any miraculous powers did ever actually ſubſiſt in any age of the church, after the times of the apoſtles. The publication of this piece raiſed up againſt him a hoſt of adverſaries, who charged him with the moſt pernicious deſigns. He had, however, the ſatisfaction of knowing that the truth of his argument was generally admitted by almoſt all enlightened and diſintereſted readers. The author ſet about preparing an “Anſwer to all the Objections made againſt the free Inquiry;” which, however, he did not live to publiſh. A few months after his death, the greater part of what he had written was given to the world, under the title of “A Vindication of the free Inquiry, &c.” In the ſpring of 1750 he publiſhed “An Examination of the Lord Biſhop of London’s Diſcourſes concerning the Uſe and Intent of Prophecy.” The deſign of the biſhop’s diſcourſes was to ſhew, that there is a manifeſt connection between the prophecies of every age, from the beginning of the world to the commencement of the goſpel of Jeſus Chriſt; which chain of prophecies, delivered at different times, and reaching through ſeveral thouſand years, is yet manifeſtly ſubſervient to one and the ſame adminiſtration of Providence. Dr. Middleton denied the principle, and laboured to refute the theory of the prelate; maintaining that the authority of the goſpel, as far as it is grounded on prophecy, reſts on thoſe ſingle and independent predictions, which are delivered occaſionally in the law and the prophets, and not on any fanciful ſcheme of prophecy deduced from Adam and the antediluvian world. Within a few months of the publication of the laſt-mentioned work, our author's conſtitution began to give way; and on the 28th of July 1750, he departed this life. His character has been drawn with great accuracy, by the writer of his article in the General Biography, from which we ſhall extract a few ſentences. "That Dr. Middleton was a very learned and ingenious divine, will not be diſputed by any one. That he was an ardent lover of truth, as well as ſteady and diſintereſted in the purſuit of it, may be fairly concluded from the circumſtances of his life above related, the ſacrifices which he muſt have made by adopting and avowing ſentiments that at once cut off all his hope of preferment, and the firmneſs with which he encountered the utmoſt rage and malice of fierce bigots and hypocritical zealots. That he was a ſincere believer in the Chriſtian religion, his own expreſs and repeated declarations ſufficiently prove, as well as his conciſe and admirable expoſure of one of its moſt artful and malignant enemies, in his "Letter to Dr. Waterland," and his devoting many of his learned inquiries to its ſervice. His faith he acknowledges was not of that kind which can eaſily digeſt incredibilities, but only a principle grounded on the perception of truth, and claiming no other merit than that of being a ſlave to his reaſon, to whoſe dictates it paid an abſolute and unreſerved ſubmiſſion. Confined within theſe juſt limits, however, it produced the nobleſt fruits, in a life ſpent in habits of temperance, ſtudy, and the ſearch after truth; and which, in other reſpects, likewiſe, was as exemplary and agreeable to the rules of the goſpel, as that of the moſt zealous of all his orthodox opponents." There were found among his papers, after his death, materials for a life of Demoſthenes, correſpondent to that of Cicero. In 1752, his "Miſcellaneous Works" were publiſhed in four volumes, 4to. of which a ſecond edition was publiſhed in five volumes, 8vo.

Middleton, in *Geography*, an interior townſhip, in Eſſex county, Maſſachuſetts, incorporated in 1728, and containing 598 inhabitants; 20 miles N. of Boſton.—Alſo, a city, poſt-town, and port of entry of Middleſex county, pleaſantly ſituated on the weſtern bank of Connecticut river. Its public buildings are a Congregational church, an Epiſcopalian church, a court-houſe, and naval office. It contains about 500 houſes, and carries on a conſiderable trade.

Middleton, a poſt-town of the county of Cork, Ireland, which was a borough before the union, and which, from its proximity to Cork harbour, has ſome buſineſs, chiefly carried on at the village of Ballinacurra, about a mile diſtant. Here are an endowed ſchool, a barrack, two bolting mills, and a brewery. The pariſh, from a union made ſeveral years ago, is one of the moſt valuable in Ireland, being above 3000*l. per annum.* Middleton is 121 miles S.W. from Dublin, and 12 miles E. of Cork, on the road to Youghel.

Middleton, a market-town and pariſh in the hundred of Salford, and county palatine of Lancaſter, England, was firſt conſtituted a town in the year 1791, ſince which time it has been gradually increaſing in extent and population. The market is held on Friday every week, in a very commodious market-place, laid out by lord Suffield, who is lord of the manor. The government of the police here is confided to two conſtables, who are choſen annually at the court-leet. In the church, a venerable pile of building, are ſeveral monuments of the Aſheton family, who for many centuries were reſident in this pariſh. The ſide aiſles of this edifice are embattled; and in the windows appear ſome ſtained glaſs of ſhields, and other devices. A carved ſcreen of ſeven compartments divides the chancel from the choir. It is ornamented with a great profuſion of armorial bearings of the Aſhetons, Radcliffes, Groſvenors, and Stanleys. The living is a rectory. Here is a free grammar ſchool, which was founded by Dr. Alexander Nowel, dean of St. Paul's, and principal of Braſen-noſe college, in 1572. This is now a moſt reſpectable eſtabliſhment, and frequently contains between 150 and 200 ſcholars. Dean Nowel was educated at this place. See Charton's intereſting Life of Nowel, 8vo. 1809.

The chief ſupport of this town is derived from its cotton manufacture; but there are likewiſe a conſiderable twiſt manufactory, and ſome bleaching works. The population here, in 1801, according to the parliamentary returns of that year, amounted to 3265 perſons. Beauties of England and Wales, vol. ix. by J. Britton.

MIDDLETOWN, a townſhip of America, in Strafford county, New Hampſhire; about 40 miles N. by W. of Portſmouth.—Alſo, a townſhip of Rutland county, Vermont; 39 miles N. of Bennington.—Alſo, a townſhip in Delaware county, New York; 40 miles W. of Catſkill.—Alſo, a townſhip in Newport county, Rhode iſland, containing 931 inhabitants. In the town, ſituated on the iſland which gives name to the ſtate, about two miles from Newport, is a large cavity in the rocks, called "Purgatory."—Alſo, a town of about 60 or 70 houſes in Berkley county, Virginia, near the North mountain: it has two churches, one for Preſbyterians, and one for Baptiſts.—Alſo, a ſmall poſt-town in Newcaſtle county, Delaware, on Apaquinimy creek; 21 miles S.S.W. of Wilmington.—Alſo, a townſhip in Monmouth county, New Jerſey, which contains two places of worſhip, one for Baptiſts, and one for the Dutch Reformed church, and 3226 inhabitants. The ſalt-works are in North river, which divides this town from Shrewſbury. Here is an academy of 40 or 50 ſtudents. The light-houſe on the point of Sandy-beach is in this townſhip. The high lands of Naveſink, which are on the ſea-coaſt near Sandy-beach, are 600 feet above the level of the water, and are the lands firſt diſcovered by mariners in this part of the coaſt.—Alſo, a flouriſhing poſt-town in Dauphin county, Pennſylvania, on the north-weſt ſide of Swatara creek, which diſcharges itſelf into the Suſquehannah, two miles below: it contains a German church, and more than 100 houſes, and carries on a briſk trade with the farmers in the vicinity. It is eſtimated that 200,000 buſhels of wheat are brought down the river annually to the landing-place, two miles from the town; 92 miles W. by N. from Philadelphia. N. lat. 40° 12'. W. long. 76° 44'. There are alſo two other townſhips of the ſame name in this ſtate; one in Delaware county, and the other in that of Cumberland.—Alſo, a poſt-town in Frederick county, Maryland; nearly 8 miles W.N.W. of Frederickſtoun.—Alſo, a town in Dorcheſter county, Maryland; 8½ miles N.W. of Cambridge.

MIDDLEWICH, a conſiderable market-town in the hundred of Northwich, and county of Cheſter, England, is ſituated at the conflux of the rivers Croco and Dane, about 6 miles from Northwich, 22 from Cheſter, and 167 from London. Its name was derived from its centrical ſituation between the Wiches, or Salt Towns, of which there are three in the county; and its origin has been ſuppoſed to be as remote as the time of the Romans; the road to it from Northwich being mentioned by Camden, as raiſed with gravel to ſuch a height as to be readily known for a work of that people. The church is a ſpacious ſtructure, and includes two chapels. On the ſouth ſide is a college, founded by Thomas Savage, archbiſhop of York. The government of the town is veſted in a bailiff and burgeſſes, annually choſen. Under the population act of 1800, the number of houſes was returned as 268, occupied by 1190 perſons. Conſiderable employment is derived to the inhabitants from the manufacture of ſalt, which has been carried on in this town from a very early period; very valuable brine ſprings being found in the town and its vicinity. A cotton manufactory has been recently eſtabliſhed here. A grammar ſchool was founded at Middlewich about the end of the 17th century: the ſchool-houſe was given by Ralph Lowndes. Markets are held on Tueſdays and Fridays, and two fairs annually. The pariſh of Middlewich is very extenſive, and compriſes 15 townſhips. One of theſe, Kinderton, has been decided by Mr. Whitaker to be the Condate of the Romans. Lyſons's Magna Britannia, vol. ii. Beauties of England and Wales, vol. ii.

MIDDLING-TEETH, in the *Manege*, are the four teeth of a horſe that come out at three years and a half, in the room of other four foal-teeth, ſeated between the nippers and the corner-teeth; from which ſituation they derive the title of *middling*. There is one of them above, and one below, on each ſide of the jaws. See TEETH.

MIDERFELS, in *Geography*, a town and caſtle of Bavaria; 12 miles N.E. of Straubin.

MID-FEATHER, in the Engliſh *Salt-works*, the name given to a ſort of partition placed in the middle of the furnace, over which the pan is ſet for boiling the ſea-water or brine into ſalt.

This partition divides the body of the furnace into two chambers. See SALT.

MID-HEAVEN, *Medium cœli*, in *Aſtronomy*, is that point of the ecliptic which culminates, or is in the meridian. See CULMINATION.

MIDHURST, in *Geography*, a market-town in the hundred of Eaſtbourne and county of Suſſex, England, is pleaſantly ſituated on an eminence, ſurrounded by ſeveral ſmall hills, and watered by the river Arun. The petty ſeſſions for the hundred, and a weekly market on Thurſdays, are held here. In the town is a free grammar ſchool. The church is in the patronage of lord Montague. According to the parliamentary returns of 1801, this town contained a population of 1073 perſons, of whom thirty-one only were engaged in agriculture, and 194 in different departments of trade.

Adjoining to the town is a plot of ground, called the *borough* of Midhurſt, which has the privilege of ſending two members to parliament; though, like the borough of Old Sarum, not a ſingle houſe ſtands within its limits. The ſituation of the burgage tenures, however, is diſtinctly marked by large ſtones ſet up for that purpoſe. This place poſſeſſes its privileges as a borough by preſcription, having been the ſcite of a town of conſiderable importance previous to the Norman conqueſt. The governing officers here are a ſteward and bailiff, who are choſen annually at the court leet of the manor, and exerciſe juriſdiction over the town.

Gale and Stukeley regard Midhurſt as the Miba of Ravenna, from a tortuous etymology of its name; but Camden conſiders the opinion of theſe antiquaries on this ſubject as wholly devoid of probability, all the MSS. being againſt them.

In a park, at a ſhort diſtance from the town, ſtand the ruins of Cowdray houſe, which was formerly the ſeat of the ancient family of Montague. This noble edifice was deſtroyed by fire in 1793, when moſt of the furniture and valuable paintings which it contained were conſumed. It was an immenſe building, of a quadrangular form, with a court in the centre, which was ornamented with a fine reſervoir of water. An account of this houſe, with views of it, were publiſhed in the Vetuſta Monumenta, by the Society of Antiquaries; but it is to be regretted that the hiſtory of the town has never been laid before the public. Our chief authority for this article is Hay's Hiſtory of Chicheſter, 8vo. 1804, which is very unſatisfactory.

MIDIAH, a town of European Turkey, in Romania, on the Black ſea; 69 miles E. of Adrianople.

MIDIAN, *Land of*, or *Midianitis*, in *Ancient Geography*, a country inhabited by the Midianites, who were the deſcendants of Abraham by Keturah, and who were ſeated on the N. of the Amalekites; having the Dead ſea on the W., the Iſhmaelites on the E., and the Moabites and Reubenites on the S.; the river Arnon parting them from this laſt tribe. Their country was hot, ſandy, and in many parts of it quite deſert; yet it abounded with cattle, particularly with camels, which were uſeful beaſts of burden for their caravans, with which they traded into Egypt in the time of the patriarch Jacob. The land of Midian was divided into a kind of pentarchy, or five kingdoms, in the time of the Exodus; ſo that the Iſraelites, in the war which they waged with the Midianites, are ſaid to have ſlain its five kings, whoſe capitals are ſuppoſed to have been ſituated near the Dead ſea. They had alſo a famous metropolis, called after the name of their progenitor, often mentioned in the prophetic books of ſcripture, as well as by other authors; particularly by Joſephus, who places a town of that appellation near the Red ſea, not far from the ſpot where Ptolemy places that of Madiana. (See MADIAN.) Beſides theſe towns, there were in this country Dibon-Gad, a large town on the river Arnon, and Almon-Diblathaim, not far from it, Beeroth, ſo called from its many wells, and ſome others, placed by geographers within the Midianitiſh territories. As to the city of Midian, it is probable that they rebuilt it, after the havock committed upon them by the Iſraelites, becauſe Euſebius and St. Jerom, who place it on the river Arnon, eaſtward of the Dead ſea, and ſouth of Ar, or Areopolis, inform us, that in their time ſome remains of it were viſible.

MIDIANITES, in *Ancient Hiſtory*, derived their origin and name from Midian, the fourth ſon of Abraham by Keturah. He, as well as the reſt of his brethren, having received a portion from their father, were ſent into the Eaſt country, that they might be at a proper diſtance from Iſaac. The Midianites, in early times, were confounded with the Iſhmaelites (ſee that article); and many ages afterwards they are mentioned in conjunction with the Nabatæans and Kadarenes, the poſterity of Nabioth and Kadar, the ſons of Iſhmael. We alſo find them ſo incorporated with the Moabites, that Moſes ſeems to have regarded them as almoſt one nation. Their religion was the ſame, and they acted in the ſtricteſt concert together againſt him and the Iſraelites. They were likewiſe united by ties of blood with theſe nations, as on the one ſide they were deſcended from Abraham, and on the other from Lot; and, moreover, as they happened to live in the northern and ſouthern parts of their country, they joined either the Moabites or the Iſhmaelites. The Midianites were a very numerous race, and may be diſtinguiſhed into two claſſes, *viz.* ſhepherds and merchants. The ſhepherds moved here and there in tents, and drove their cattle before them; even when they went to war. The merchants alſo travelled from place to place in companies or caravans, as the merchants of thoſe parts do at this day, and left the care of their cattle to the women. The former had probably no fixed habitations, except ſome ſtrong holds near their borders; the merchants alſo had few or none but marts or ſtations, in places convenient for their trade. Theſe, by exchanging their gold and jewels with their brethren for their cattle, enriched the ſhepherds with precious ornaments. Their manners reſpectively differed according to their mode of life; but they are in general repreſented as being very ſumptuous in their apparel. (See Judg. viii. 26.) From the book of Job (ch. xix. 23, 24.) we learn, that the uſe of writing was known at an early period in thoſe parts among the deſcendants of Abraham; and the Midianites being of the number, we may reaſonably ſuppoſe, could not have been unacquainted with it. They muſt alſo have had ſome knowledge of arithmetic, and alſo of ſhip-building; ſo that we may extend the circle of their ſciences beyond writing and arithmetic, and allow them a competent ſkill in geography, geometry, and aſtronomy. The Midianites varied in religion as much as in their manner of life. In the north of Midian they appear in the days of Moſes to have been addicted to all the abominations of the Moabites; but in the ſouth we find that they were attached to a rational and ſublime ſyſtem, long after their brethren had ſunk into the groſſeſt corruption. The government of the Midianites is repreſented rather as ariſtocratical than monarchical. Their chiefs, however, are ſtyled kings. The moſt ancient account of this nation that occurs, after what we have already ſtated, is that of their war with Hadad the Horite, when Midian was ſmitten by him in the field of Moab. The next is that of their purchaſing Joſeph from his brethern for twenty pieces of ſilver, and carrying him away with them into Egypt. See the article Joseph.

Many years after this event there lived in Midian, near the Red ſea, a prieſt or prince of the ſouthern Midianites, called Jethro; whoſe daughters were moleſted by ſome ſhepherds, and prevented from procuring water for their father's flocks. On this occaſion Moſes, who in his flight from Pharaoh had arrived in Midian, interpoſed on behalf of theſe females, and cauſed the ſhepherds to retire. In conſequence of this ſeaſonable act of kindneſs, Moſes was invited to the houſe of Jethro, who gave him one of his daughters in marriage, and kept his ſon-in-law with him forty years. (See the article Moses.) When Moſes overcame Sihon the Amorite, the Midianites were at enmity with Iſrael; at leaſt thoſe who bordered upon the Moabites; and they ſeem about this time to have been very active in ſeducing the Iſraelites from the worſhip of God to idolatry. The Jewiſh lawgiver, however, made preparation for invading their country, and they fortified their caſtles and combined all their ſtrength in order to reſiſt the enemy. Their efforts were unavailing; as they were defeated with great ſlaughter, and all their cities and caſtles were laid in aſhes, and their country plundered and deſolated. About 150 years after this ſlaughter of the Midianites, two kings, named Zebah and Zalmunna, appeared as their conductors in a war againſt the Iſraelites; and they were joined by the Amalekites and Arabians. The deſtruction occaſioned by theſe combined forces continued for ſeven years; and the Iſraelites were compelled by the ravages of the plains and by want of ſuſtenance, to retire to the mountains, and ſhelter themſelves in caves and fortreſſes. Gideon, however, exerted himſelf for the reſcue of his country; and his efforts were ſo ſucceſsful, that the Midianites never afterwards preſumed to contend with Iſrael. They were, however, a powerful nation many ages after this event, as well as famous for their induſtry, riches, and the magnificence of their tents; but in the firſt century of the Chriſtian era their name ſunk into diſuſe, and was ſwallowed up by that of the more powerful people of Arabia. Between 3 and 400 years ago there was a ruined city, which bore the ancient name, in the neighbourhood of which they pretend to ſhew the place where Moſes watered his father-in-law's cattle. Abulfeda calls it Medyan, and Moſes's father-in-law, Shoaib; and the place is ſtill one of the ſtations in the pilgrimage from Egypt to Mecca, under the name of Shoaib's cave. Anc. Un. Hiſt. vol. ii.

MIDNAPOUR, in *Geography*, a river of Hindooſtan, ſituated partly in Bengal, and partly in Oriſſa; bounded N. by Burdwan and Pachete, E. by Biſſunpour and Hoogly, S. by Mohurbunge, and W. by Allahabad, about 110 miles long, and from 30 to 40 broad. The capital of the ſame name is a town of Bengal; 60 miles W. of Calcutta. N. lat. 22° 28′. E. long. 87° 27′.

MIDNIGUNGE, a town of Hindooſtan, in Oude; 25 miles N. of Allahabad.

MIDNOI. See Copper *Iſland.*

MIDNYPOUR, a town of Hindooſtan; 35 miles N.E. of Benares.

MIDONNO, a town of Japan, in the iſland of Niphon; 85 miles N.N.W. of Jedo.

MIDRIFF, in *Anatomy*. See Diaphragm.

MIDSAMA, in *Geography*, a town of Japan, in Niphon; 12 miles N.E. of Tomu.

MIDSHIP, is a term of diſtinction, applied by ſhipwrights to ſeveral pieces of timber which lie in the broadeſt part of the veſſel, called the *midſhips*, although it is not in the middle of her length with regard to the breadth; it is a ſuppoſed line from the ſtem to the ſtern-poſt.

Midship-*Beam*, is the beam upon which the extreme breadth of the ſhip is formed, and which is ſituated in the midſhip frame, nearly in the middle of her length, ſerving as a ſtandard from whence the dimenſions and proportion of the maſt and yards are to be taken. See Beam.

Midship-*Frame*, is a name given to that timber, or combination of pieces, formed into one timber, which determines the extreme breadth of the ſhip, as well as the figure and dimenſion of all the inferior timbers.

Midship-*Men*, are officers on board a ſhip of war, whoſe ſtation, when they are on duty, is, ſome on the quarter-deck, others on the poop, &c.

Their buſineſs is, to mind the braces, to look out, and to give about the word of command from the captain, and other ſuperior officers. They all aſſiſt, on occaſion, both in ſailing the ſhip, and in ſtowing and rummaging the hold; and in performing the neceſſary buſineſs of the veſſel, either aboard or aſhore. The number of midſhip-men, like that of all other officers, is always in proportion to the ſize of the ſhip to which they belong. Thus a firſt-rate man of war has twenty-four, and the inferior rates a ſuitable number in proportion. No perſon can be appointed a lieutenant, without having previouſly ſerved two years in the royal navy in this capacity, or in that of mate, beſides having been at leaſt four years in actual ſervice at ſea, either in merchant ſhips, or in the royal navy.

MIDSUMMER-Day, is the feſtival of St. John the Baptiſt, held on the 24th of June. See Quarter-*Day*.

MIDWAY, in *Geography*, a town, or rather a village, of America, in Liberty county, Georgia, 10 miles N.W. of

Sunbury. Its inhabitants are deſcendants of emigrants from Dorcheſter, near Boſton, who migrated in 1700.—Alſo, a townſhip of Rutland county, Vermont; E. of and adjoining Rutland.

MIDWIFE, a woman employed in aſſiſting women in child-birth. Johnſon ſuppoſes it to be derived from a Saxon word, meaning mead, or reward. As the practice of midwifery was entirely confined to women, until very lately, we have no term by which to denominate a male practitioner, but the barbarous compounded one, man-midwife. Had a more ſignificant term been found for the women, we might have uſed it as we have the word author, from which we have made authoreſs, a female writer; though we think Johnſon neither admits that word, nor the word man-midwife into his dictionary. The Romans, entertaining, perhaps, a more favourable opinion of the capacities of women, have the word autrix, a female writer, from auctor, which ſeems to juſtify us in the uſe of the word authoreſs. The French, more fortunate, call a midwife an accoucheuſe, from the verb accoucher, to put to bed, and the male practitioners, accoucheurs; a term which we have now pretty generally adopted.

MIDWIFERY is the art of delivering women of their young. It muſt be nearly coeval, as a practice, with the creation. At firſt it was very ſimple, and conſiſted ſolely in the knowledge of the method of dividing the navel-ſtring. Animals uſually bite it aſunder with their teeth. Women, probably, firſt made uſe of the ſharp edge of a ſtone, or of a ſhell, for the purpoſe, which is the mode ſtill practiſed in barbarous countries. As difficulties would occaſionally occur, either in the excluſion of the fœtus, or of the placenta, or afterbirth, ſome female friend, or relative, would be called upon to give aſſiſtance. If the placenta happened to be detained beyond the uſual time, which is one of the moſt ordinary accidents in labours, the aſſiſtant would naturally attempt to draw it away by the funis, which ſhe would find hanging from the pudenda. If a leg or arm of the fœtus preſented, inſtead of the head, ſhe would, doubtleſs, take hold of the preſenting part, and endeavour by that means to draw the child from its confinement. In theſe attempts, if it ſhould be one of the lower limbs that preſented, her exertions would generally be crowned with ſucceſs; but as the obſtacle making aſſiſtance neceſſary, ſuppoſes a relative diſproportion between the birth and the paſſage through which it is to paſs, the child would uſually be dead born. On the other hand, if an arm preſented, the ſame ſucceſs would attend the exertions of the midwife in a few caſes only; as in premature birth, or where the child happened to be remarkably ſmall. It would more commonly happen, that all attempts to bring the child in that poſture would fail; but the uterus perſiſting to exert itſelf, or, in other words, the labour-pains continuing, they would ſometimes thruſt down the feet, or the breech of the child, the head and ſhoulders gradually receding, and riſing upwards, and it would at length be forced into the world in that poſition. In theſe caſes, though the child would be dead, the woman would frequently recover. It would more often happen, that this evolution would not take place, and that the woman, exhauſted by long continued and fruitleſs exertions, bruiſed and injured by the preſſure of the fœtus, and tormented by the diſtention of her bladder, no egreſs being allowed to the urine, would fall a ſacrifice to the preſſure of ſo many accumulated evils.

Some of the earlieſt means made uſe of in tedious and difficult labours, appear to have been, anointing the pudenda with oils, and putting the woman into warm baths, as we find it recommended by Hippocrates, Avicenna, and other ancient writers; by theſe means they hoped to relax the parts, and render them more eaſy of diſtention, and thence to procure a freer paſſage for the fœtus. This continued to be the practice for many ages.

From examining the little that has been written by the ancients on the ſubject, it is evident they had no knowledge of that ſpecies of obſtacle to the birth of the child, which is occaſioned by the mal-conformation of the bones of the pelvis of the woman. They attributed the whole of the difficulty to a rigidity of the muſcles, or of the ligaments connecting the bones of the pelvis together, which they hoped by theſe means to looſen.

Hieronymus Mercurialis, who flouriſhed about the middle of the ſixteenth century, tells us, it was not unuſual to put women on a courſe of bathing and anointing ſeveral weeks before they attained to the period of parturition. Speaking of what is to be done, prior to the labour, he ſays, "Utatur balneis aquæ dulcis, in quibus herbæ laxantes et emollientes coquantur. Inungatur etiam eodem tempore, dorſum, et pecten, ſimiliter loca muliebria iis linimentis, quæ poſſunt emollire, et lenire." (De Morb. Mul. lib. ii.) Another cuſtom which was probably only practiſed among the common people, was placing the parturient women in an erect poſture, that they might profit by the weight of the fœtus, and ſhaking them ſtrongly; thinking, probably, that the child would drop down, as fruit falls from the tree.

"Alii," Moſchiou ſays, (Harm. Gynæc. p. 11.) "ad ſcalas ligabant, et ſic pendere jubebant; alii infinitum deambulare et ſalire cogebant; alii ſcalas aſcendere; alii autem, manibus ſub axillis miſſis, a terra ſublevabant, et diutius exagitabant." Hippocrates had long before, and probably with the ſame view, recommended in caſes where the head of the child preſented, but on account of the ſtraightneſs of the paſſage was detained above the brim of the pelvis, to anoint the parts, and to put the woman into a bath of warm water. Theſe methods failing, the head of the child was to be opened with a ſcalpel, and then to be extracted with a ſtrong iron pincers, or hooks. "Caput gladiolo diſſectum. Inſtrumento quod conſtringat comminuto, et oſſicula per oſſium volſella extrahito, aut unco attractorio ad claviculam uti firmiter adhæreat immiſſo, non confeſtim, ſed paulatius remittendo, et rurſus adurgendo, extrahito." (Hip. Oper. Om. Fæſio. p. 618.) Celſus recommends a ſimilar practice, (lib. vii. cap. 29. De Medicina.) Avicenna mentions a kind of fillet that was uſed in theſe caſes. (See the article FILLET.) This contrivance, although it had a few favourers, was never in general uſe; the more common method in tedious and difficult births was to diminiſh the bulk of the child, or of the part neareſt to the external ſurface, with ſcalpels, or other cutting inſtruments, and then to draw it away with iron hooks, pincers, or forceps, armed with teeth. Thoſe who wiſh to ſee the forms of theſe inſtruments, or a more particular account of the methods of applying or uſing them, may conſult Albucaſis's Methodus Medendi, lib. ii. and Ruett, De Conceptione et Gen. Hominis, in which many of them are particularly delineated and deſcribed.

As caſes of ſuch difficulty as to render the uſe of inſtruments neceſſary are rare, not occurring oftener than once in five or ſix hundred labours, and as the practice of midwifery was for many ages, indeed ſo late as to the end of the ſixteenth century, almoſt excluſively in the hands of women, it is not to be wondered at, that little improvement was made in the method of aſſiſting women in the only caſes that would come under the care of the ſurgeon, until a very late period. Hippocrates having learned that in ordinary births the child preſented with its head to the orifice of the womb, thought that in all caſes, when it offered in a different poſture, it ought to be puſhed back, in order to bring down the head. This he attempted to do even when the breech or the feet came firſt. If an olive, he ſays, comes into the neck of a bottle acroſs, and you attempt to bring it through in that poſture, you will either cruſh the olive, or break the glaſs; but as it is of little conſequence which of the ends of the olive comes firſt, he ſhould have ſeen, that it is nearly equally immaterial which end of the child comes firſt. This, however, does not ſeem to have occurred to him, and as his name was of great authority in every thing relating to medicine, his rules continued to be followed until the middle of the ſixteenth century. Ambroſe Parey, who flouriſhed about that time, firſt recommended turning the child and bringing it by the feet in all croſs preſentations. This may be conſidered as the firſt material improvement that had been made in the practice of midwifery. The rule was further explained and extended by his pupil Guillemeau, and afterwards by Mauriceau, Le Motte, Peu, Puzos, and other French writers, and it has long ſince been adopted by the practitioners in the art in every part of Europe, not only in croſs-births, but in all caſes of flooding, in whatever poſture the child may preſent, alſo when the funis umbilicaris comes down before the head of the child, and by ſome ſurgeons, as we ſhall ſee by and by, in caſes where the forceps or lever are now ordinarily uſed.

A few years before Ambroſe Parey's book appeared, Eucharius Rhodion, a phyſician of Frankfort, publiſhed the firſt popular work that we are acquainted with on the ſubject. As it was intended for the inſtruction of the midwives, it was printed at firſt in the German language. In 1532, it was tranſlated into Latin, under the title of "De partu hominis," and in a few years after, into French, Engliſh, and other modern languages. The practical rules recommended by him, are ſuch as he had learned from Hippocrates, Avicenna, and other ancient writers. In croſs preſentations, the midwife was to endeavour to bring down the head; when this could not be effected, if the breech, or feet, were next the uterine orifice, the child was to be allowed to come into the world in that poſture, taking, however, eſpecial care, he ſays, that the hands ſhould be brought down, and placed one on each ſide of the body of the child, a rule which could not poſſibly be followed, and which ſhews that the writer had never practiſed the art. The ſame cenſure may be paſſed upon almoſt every regulation, that had been hitherto promulgated on the ſubject. Nearly all of them tending rather to miſlead, than to inform the practitioner, and to increaſe rather than diminiſh the pain, difficulty, and danger of the labour.

We have two tranſlations of Rhodion's book into our language. The firſt by Richard Jones, who dedicated it to Katherine, queen to king Henry VIII. It was printed in the year 1540, and is decorated or illuſtrated with ſome indifferent engravings on copper, which, however, are eſteemed, as being the firſt ſpecimens of the kind executed in this country. In 1545, Thomas Raynold, phyſician, publiſhed a ſecond tranſlation. This has paſſed through ſeveral editions, under the title of "The Birth of Mankind," and was nearly the only manual uſed by the midwives until the year 1672, when Dr. Hugh Chamberlen gave a tranſlation of Mauriceau's "Treatiſe on the Art of Midwifery," in which the firſt dawning of a rational practice of the art appears. In the preface to the tranſlation, Dr. Chamberlen announces an invention, "known only," he ſays, "to his father, brothers, and himſelf, with which they were enabled to terminate the moſt difficult labours, without injuring either the mothers or the children." Though he gives no intimation by which it could be diſcovered what were the means uſed for the purpoſe, yet it was in time found out to be the forceps. The merit of the invention conſiſted in making the blades of the inſtrument ſeparable, and capable of being locked, or united together, after being introduced into the vagina, and placed one on each ſide of the head of the child. (See the article Forceps, in *Midwifery*.) A moſt invaluable diſcovery, and which has deſervedly immortalized the inventor. (See Chamberlen, Hugh.) But he at firſt very much overrated their power, imagining that they were applicable in all caſes, where the head of the child was "enclavée," or fixed in the pelvis, not having met with a caſe, we may ſuppoſe, where the bones forming that cavity were conſiderably diſtorted. Accordingly he undertook to deliver a woman whoſe pelvis was ſo contracted and narrow, as to render it impoſſible that the head of a full-grown fœtus ſhould paſs through it undiminiſhed. The operation, or trial, which was performed at Paris, where he went with the view of ſelling his ſecret, failed. Mortified at the check he received, he left the country, and went to Amſterdam, where he is ſaid to have ſold the ſecret to Roonhuyſen, a ſurgeon in great practice in that city, who has the credit of having invented the lever which bears his name. See that article.

About the ſame time Deventer, an eminent ſurgeon of a town in Holland of that name, acquired conſiderable fame by his practice in the obſtetric art. As the form, as well as the manner of uſing the forceps and lever were kept ſecret by the proprietors of thoſe inventions, or only diſcloſed to perſons who would pay a large ſum of money for them, Deventer declaimed violently againſt the uſe of inſtruments, affirming he could terminate the moſt difficult labours with his hand alone. He contended that the greateſt obſtacle to the birth of the child aroſe from the oblique poſition of the uterus, its fundus falling too much forward, or to one ſide of the abdomen of the mother. The head of the child was therefore forced by the pains, ether againſt the ſacrum, or againſt one of the ſides of the pelvis, inſtead of being directed into the centre of that cavity. In all caſes of difficulty, if the head of the child was not forced down ſo low as to render it impracticable, he paſſed his hand into the uterus, turned the child, and delivered it by its feet. When that could not be done, he introduced his left hand into the back part of the vagina, and gradually puſhed back the bones of the coccyx, ſo as to give ſpace ſufficient for the head of the child to paſs. In caſes where the pelvis was diſtorted, he muſt neceſſarily have failed in his attempt, for the ſame reaſon that Chamberlen failed with his forceps, but as ſuch caſes would only occur once in five or ſix hundred labours, that ſmall number of exceptions would give little check to his fame, which was continued to his name for many years after his death. This doctrine and practice, which have long ſince been exploded, were patronized in this country by Mowbray, ſir Richard Manningham, and Eaton, who were all averſe to the uſe of inſtruments.

The conſtruction and uſe of the forceps being at length made public by Mr. Butter in the third volume of the Medical Eſſays in 1732, and more fully by Chapman in 1734, and that of the lever by M. Preville, in his tranſlation of Smellie's Midwifery into French, publiſhed at Paris, in 1754, the teachers of the art were careful in inſtructing their pupils in the method of employing thoſe inſtruments, which have entirely ſuperſeded the rude practice of Deventer. The *perforator* and *crotchet* (ſee thoſe articles) came into uſe about this time, and continue to be employed in the few caſes that require ſuch aſſiſtance, in the place of the ſcalpel, and the forceps with teeth.

Practitioners in the art being now poſſeſſed of ſuch powerful aſſiſtants, it was to be feared they might be induced to have recourſe to them for the purpoſe of accelerating the labour, in caſes where there were only ſuch obſtacles as in a moderate ſpace of time would be overcome by the pains. Cautions againſt this faſcinating practice are found in all the late treatiſes on the art. Smellie, who had a larger ſhare of practice, and who inſtructed a greater number of pupils than any other profeſſor in his time, is frequent in his admonitions againſt uſing art, other than in aid of nature, where ſhe is abſolutely and decidedly incompetent to the completion of the labour. How ſeldom alſo this happens, he is careful to inform them. He very much ſimplified the form of the forceps, and that they might not be uſed before the head of the child had deſcended ſufficiently low in the pelvis, he conſiderably reduced them in length; he alſo contrived a method of locking them, much more convenient than had been before uſed. Before he retired from the practice, in which he introduced ſeveral valuable improvements, he publiſhed, in 1752, “A Treatiſe on the Theory and Practice of Midwifery,” which contained the ſubſtance of every thing that was uſeful, that had been printed on the ſubject, as well as the reſult of his own extenſive practice. This was followed by a ſet of plates, in large folio, correctly drawn and well engraved, illuſtrating his practice. Soon after he publiſhed two volumes of caſes, arranged in claſſes, referring to his treatiſe, and ſhewing the efficacy of the rules he had there inculcated.

While Smellie was making large ſtrides toward improving every part of the practice of midwifery, and bringing it to perfection, Levret, and various other writers on the continent, were exerting themſelves in a ſimilar manner, and with perhaps equal felicity. In the mean while, hoſpitals and other inſtitutions were formed, for the reception of parturient women. As the management and care of theſe were under the immediate direction of the phyſicians and ſurgeons, and the opportunity which for ſo many ages had been wanting, of acquiring an exact knowledge of the proceſs of a natural labour, and of the obſtacles that occaſionally obſtructed its progreſs and completion, was now obtained. To this alſo, the change that had been taking place, within ſomething more than a century, in the opinions and manners of the public had contributed. Several phyſicians and ſurgeons had, in the courſe of that time, applied themſelves to the practice of midwifery. Hence we find, Mauriceau, Deventer, Ruyſch, Roonhuyſen, our countryman Dr. Chamberlen, and others, enjoying a conſiderable portion of practice in the art.

The cuſtom of employing men in the place of women, originated among the ladies of the higheſt rank in France, and gradually deſcended to the middling and lower claſſes of the people. The advantages derived from the change, both in the manner of conducting the labour, and in the management of the woman and child after the labour, became ſo obvious, that the practice has by degrees ſpread over all Europe. That the poor who could not, and a few who from prejudice ſtill refuſed to employ men, might reap the benefit of the improvements that have been made in the practice of the art, no women are now allowed to engage in the buſineſs, who have not been previouſly inſtructed by ſome public teacher, and who do not obtain from him certificates of their qualifications. The conſequence of theſe arrangements has been, that every part of the art has been inveſtigated with the greateſt care, and ſuch has been the zeal of the profeſſors, or perſons engaged in the practice, that the works on the ſubject of midwifery, which have been publiſhed within leſs than a century, are ſufficiently numerous to form of themſelves no inconſiderable library. Thus this art, which was ſo late in being cultivated, has already attained a degree of perfection, that puts it on an equality, at leaſt, with any other branch of medicine. Of this great maſs of publications, many of them excellent, it may be ſufficient to mention, among foreign productions, Puzo's “Traitè des Accouchmens,” Baudelocque's “Art des Accouches,” Crant's “De Re Inſtrumentaria,” and the “Opuſcula” of Roederer, and of Plenk, which embrace the whole circle of the art. Among our own writers, White “On the Management of Pregnant and Lying-in Women,” and Rigby “On Uterine Hemorrhage,” have each in their way given directions that are calculated to abide the teſt of time. “Obſervations on human and comparative Parturition,” publiſhed in 1794, may be added, as containing a number of curious and uſeful facts not generally known or attended to. The late Dr. William Hunter's ſplendid plates of the human gravid uterus, and not more ſplendid than correct, places before our eyes the fœtus at different periods of its exiſtence, ſhews the poſture in which it lies in the uterus, and the manner in which it is connected with that viſcus; and laſtly, Dr. Denman's “Introduction to the Practice of Midwifery,” which has already paſſed through ſeveral editions. For comprehenſiveneſs and exactneſs, it holds the ſame rank now that Smellie's Treatiſe did at the time when it was publiſhed, embracing and explaining, in a luminous and judicious manner, every thing, we believe, that is known on the ſubject.

MIEDNIKI, in *Geography*. See MEDNIKI.

MIEDZIAL, a town of Lithuania, in the palatinate of Wilna; 52 miles S. of Breſlaw.

MIEDZINECZE, a town of Poland, in the palatinate of Brzeſk; 25 miles W. of Brzeſk.

MIEDZIRZECZKA, a town of Poland, in the palatinate of Volhynia; 52 miles N.N.W. of Zytomiers.

MIEDZYRZECZ, a town of Lithuania, in the palatinate of Novogrodek; 44 miles W.S.W. of Novogrodek.

MIEDZYRZYCZ, a town of Ruſſian Poland, in the palatinate of Kiev; 32 miles W.S.W. of Czyrkaſy.

MIEGIA, in *Botany*, appears to have been named by Schreber in honour of two Swiſs anatomiſts and botaniſts, who flouriſhed in the beginning and middle of the laſt century. Moſt probably they were father and ſon, but we are not ſufficiently acquainted with their hiſtory poſitively to aſſert this. John Rodolph Mieg publiſhed his inaugural Diſſertation on *Chamæmelum leucanthemum* at Baſil, in 1721, which was reprinted two years afterwards. Achilles Mieg publiſhed a work in 1751, at the ſame place, which he calls *Specimen obſervationum anatomicarum atque botanicarum*, and in this are deſcribed ſome rare graſſes, as well as the genus *Montia*. Schreb. 786. Willd. Sp. Pl. v. 1. 311. Mart. Mill. Dict. v. 3. (Remirea; Aubl. Guian. 44. Juſſ. 34. Lamarck Illuſtr. t. 37.)—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Gramina*.

Gen. Ch. *Cal.* Glume ſingle-flowered, of two, ovate, concave, ribbed valves; the upper ſhorter and obtuſe; the lower ſomewhat longer and rather acute. *Cor.* of two, ſwelling, ribbed valves; the outer ovate, obtuſe, within the lower calyx-valve, and longer than it; the inner oblong, compreſſed at the top, rather acute, with folded margins, longer than the outer, within the upper calyx-valve. Nectary of one leaf, ovate, gibbous at the back, ſlightly compreſſed, acute, ſmooth, thick, corky, thinner at the tip and margins, ſhorter than the corolla, oppoſite to its inner valve, encloſing the germen. *Stam.* Filaments three, capillary, longer than the corolla; anthers oblong, acute. (Aubl.) *Piſt.* Germen oblong, nearly triangular, within the nectary; ſtyle ſimple, capillary, longer than the corolla; ſtigmas two, capillary. *Peric.* none. *Seed* ſolitary, oblong, triangular, approaching to globoſe, wrapped up in the nectary, and incloſed by the permanent calyx and corolla.

Eſſ. Ch. Calyx of two oppoſite valves, ſingle-flowered. Corolla of two valves. Nectary of one leaf, enveloping the germen.

Obſ. The above generic character was made by Schreber, from the parts of fructification as they were found by him in a dried ſpecimen. The nectary he obſerves is remarkable. Aublet's character of *Remirea* is very different from that of Schreber's *Miegia*.

1. M. *maritima*. Willd. n. 1. (Remirea maritima; Aubl. Guian. t. 16.)—A native of the ſea ſhores of Cayenne and Guiana, flowering and bearing ſeed at various times of the year.—*Root* perennial, creeping, long, branched, knobbed, ſolid. *Stems* about ſix inches high, branched at their ſummits, leafy and ſcaly below. *Leaves* oblong, narrow, rigid, ſtriated, acute, rough at the margin, ſheathing at the baſe. *Flowers* crowded together into a nearly ſeſſile, terminal, ſhort and thick panicle. The *roots*, when bruiſed or maſticated, afford a grateful, aromatic ſmell, ſhewing an affinity to the genus *Cyperus*, from which indeed this plant ſeems to differ chiefly in its ſolitary florets, and corky nectary.

MJEIBOW, in *Geography*, a town of Lithuania, in the palatinate of Novogrodek; 58 miles W.S.W. of Novogrodek.

MIEKOW, a town of Auſtrian Poland, in the palatinate of Cracow; ſaid to have been built after the model of Jeruſalem by Gripſius Jaxa, after his return from a pilgrimage to that city; 12 miles N. of Cracow.

MIEL, Jan, in *Biography*, a painter, known in Italy by the name of Giovanni della Vite, probably becauſe he choſe to diſregard the grand ſtyle of art in which at firſt he practiſed with Andrea Sacchi, and paint common nature and living objects.

He was born in Flanders in 1599, and firſt learnt to paint under Gerard Segers; but he ſoon left him, and went to Italy, where he ſtudied the antique and the works of the beſt maſters with great ſucceſs, and was employed to paint pictures as large as the life for ſeveral of the churches in Rome. He had the honour to ſtudy in the academy of Andrea Sacchi, then in great repute, and was invited by him to aſſiſt in a large picture he was then engaged upon; but they ſoon diſagreed, and Miel left his maſter in diſguſt, piqued with a ſatiric expreſſion of Sacchi concerning his talent for painting *bambocciate*, or ſcenes of merriment, drolls, &c. his imagination principally leading to ſuch ſubjects.

In conſequence, he ſet himſelf afreſh and with increaſed diligence to ſtudy the grand ſtyle, and rival Sacchi; but after a time gave it up almoſt altogether, and painted thoſe ſubjects for which nature appears to have deſigned him, with a portion of talent nearly equal to Bamboccio himſelf. His ſucceſs was fully equal to his ſkill, and he filled the cabinets of the nobility of Rome, Florence, and other places, with his ingenious performances.

The luſtre of his fame induced Charles Emanuel, duke of Savoy, to invite him to Turin, where he arrived in 1659, and was received by his highneſs with great reſpect, and engaged to paint for him ſeveral pictures relative to the chaſe, in which he introduced an immenſe number of ſmall figures of perſons of all ranks, horſes, dogs, different ſpecies of game, &c. all which he finiſhed ſo much to the ſatisfaction of the duke, that he honoured Miel with knighthood, and beſides paying him handſomely for his pictures, preſented him with a croſs ornamented with diamonds of great value.

He remained at Turin ſix years, during which time he painted a great number of pictures, and at the end of it died of a ſlow fever, or rather conſumption, brought on, Baldinucci aſſerts, by his uneaſineſs at not obtaining his patron's permiſſion to reviſit Rome.

MIELAN, in *Geography*, a town of France, in the department of the Gers, and chief place of a canton, in the diſtrict of Mirande; 6 miles S.S.W. of Mirande. The place contains 1403, and the canton 10,221 inhabitants, on a territory of 272½ kiliometres, in 29 communes. N. lat. 43° 25'. E. long. 0° 23'.

MIELEC, a town of Poland, in the palatinate of Sandomirz; 56 miles S.W. of Sandomirz.

MIELNICK, a town of Poland, in the palatinate of Bielſk; 44 miles S.W. of Bielſk.

MIEN, a town of China, of the ſecond rank, in Se-tchuen; 56 miles W. of Pao-king. N. lat. 51° 28'. E. long. 104° 29'.

MIEN-TAM-KEOU-TOUKA, a town of Chineſe Tartary. N. lat. 41° 1'. E. long. 119° 42'.

MIEN-YANG, a town of China, of the ſecond rank, in Hou-quang. N. lat. 30° 12'. E. long. 112° 49'.

MIER-CHAS-KUN, a town of Perſia, in the province of Farſiſtan, containing about 400 houſes and ſeveral bazars, the ruins of Perſepolis; 40 miles N. of Schiras.

MIERIS, Francis, in *Biography*, a moſt admirable painter of the Flemiſh ſchool, who was born at Leyden in 1635. He acquired the principles of the art under Gerard Dow, who honoured him with the title of prince of his diſciples, and this praiſe he juſtly merited, for he more nearly approached the purity and delicacy of Dow than any other man has ever done: indeed, in ſome reſpects he became viceroy over that king of high and minute finiſhing, being more agreeable in his deſigns, and having more correctneſs in drawing.

He painted portraits with great delicacy, but his general ſubjects were converſations, perſons performing on muſical inſtruments, doctors with their patients, and ſuch like: theſe he treated with great ingenuity in compoſition and execution; painting his draperies with ſo much minuteneſs, that all the peculiarities of their different textures are viſible. Silk, velvet, ſtuff, carpets, &c. all were not only marked with their general characteriſtic appearances, but the threads of their texture were made as viſible as in nature, and rendered completely deceptive. It is this attention to minutia, united to breadth and truth, which give ſo much value to his works; which are very rare, and very coſtly of courſe. His own valuation of his time was a ducat an hour: and for one picture of a lady fainting, with a phyſician attending her, and applying remedies, he was paid at that ratio, ſo large a ſum as fifteen hundred florins. The grand duke of Tuſcany is ſaid to have offered 3000 for it, but was refuſed. One of the moſt beautiful of the works of Francis Mieris, in this country, where they are not very common, is in the poſſeſſion of Mr. P. H. Hope, and is known by the appellation of the "Shrimp Man." He died in 1681, and is called by connoiſſeurs the Old Mieris, to diſtinguiſh him from his ſon,

Mieris, William, who of courſe is called the Young. He was born at the ſame place as his father, and learned from him the art of painting, till he arrived at the age of 19; when, his father dying, he was left to follow the dictates of his own mind, which happily led him to ſtudy nature, and in that ſtudy he made a conſiderable progreſs towards obtaining an equal reputation with his father.

At firſt he painted the ſame ſubjects as his father, but afterwards, ambitious of a nobler fame, he attempted higher ſubjects, but not being prepared with proper ſtudies, he did not ſucceed ſo happily as his adventurous ſpirit deſerved. He ſometimes painted landſcapes and animals, and alſo modelled his figures with very conſiderable ſkill. Probably this diviſion of his time and ſtudies operated to prevent his arriving at the ſame degree of excellence in minute finiſhing as his father: certain it is, that his works will not bear the compariſon, being poor and thin, and wrought by a leſs full, and more timid pencil. He died in 1747, aged 85, and left a ſon, Francis Mieris, born at Leyden in 1689, who not having the talent of originality, employed himſelf in copying the works of his father and grandfather; and it is moſt likely, that nine out of ten of the works diſtributed at ſales under the name of Mieris, are the ſecond-hand productions of this, the younger Francis.

MIES, or MIZA, in *Geography*, a town of Bohemia, in the circle of Pilſen; 14 miles W. of Pilſen. N. lat. 49° 43′. E. long. 13° 6′.

MIETOU, a town of Sweden, in the government of Abo; 14 miles N.W. of Abo.

MIEZA, a town of Spain, in the province of Leon; 42 miles W. of Salamanca.

MIFFLIN, a county of Pennſylvania, in America, ſurrounded by Lycoming, Franklin, Cumberland, Northumberland, Dauphin, and Huntingdon counties; containing 1851 ſquare miles, 1,184,960 acres, and divided into eight townſhips. The mountains of this county abound with iron ore, and ſeveral forges have been erected for working it. It is well watered by the Juniatta and other ſtreams; it has ſeveral mineral ſprings, and abundance of lime-ſtone. This county and Center contain 13,609 people. The chief town is Lewiſtown.—Alſo, a ſmall town in the above county, on the E. ſide of the Juniatta; 12 miles E. of Lewiſtown.—Alſo, a fort on a ſmall iſland, at the mouth of Schuylkill river; about ſix miles S. of Philadelphia.

MIFFLINBURG, a poſt-town of Northumberland county, Pennſylvania; 218 miles from Waſhington.

MIGLERE, LA, a town of Italy, in the department of the Po, on the Stura; 24 miles N.N.W. of Turin.

MIGLIAJO, in *Commerce*, a weight and meaſure by which oil is ſold at Venice: the weight = 40 miri, each being 25lb.: the meaſure = 1210lb., or 40 miri, each = 30¼lb.: ſo that ſuch a miri correſponds to about 4¼ Engliſh gallons.

MIGLIANICA, in *Geography*, a town of Naples, in Abruzzo Citra; 7 miles E. of Civita di Chieti.

MIGLIANO, a town of Naples, in Principato Ultra; 15 miles N.N.E. of Conza.—Alſo, a town of Italy, in the department of the Lower Po; 15 miles E. of Ferrara.

MIGLIAVACCA, GIOVANNI AMBROSIO, in *Biography*, counſellor of legation, and opera poet to the elector of Saxony, king of Poland, author of an opera intitled "Solimano," and of many cantatas performed at Vienna and Dreſden. This poet endeavoured to imitate the elegant and natural ſtyle of the amiable Metaſtaſio.

MIGLIONICO, in *Geography*, a town of Naples, in Baſilicata; 9 miles S.W. of Matera.

MIGNANO, a town of Naples, in Lavora; 11 miles N. of Sezza.

MIGNARD, PETER, in *Biography*, an hiſtorical and portrait painter, born at Troyes, in Champagne, in 1610. He was the diſciple of Vouet, but quitted his ſchool at an early period of his life, and went to Rome, anxious to ſee and ſtudy the works of Raphael, Michael Angelo, and the Caracci. He there lived with Du Freſnoy, and they ſtudied together the noble works of art which that city preſented to them; they alſo travelled together to Florence and Venice, that they might leave no ſource of improvement unſought which the extraordinary talents of their great predeceſſors had prepared and left for their ſtudy and imitation.

The reſidence of Mignard at Rome, which he prolonged for 22 years, and the ſtyle he acquired of compoſition and drawing by the imitation of the Roman maſters, together, obtained for him the appellation of the Roman; but to judge candidly, one would imagine that the former was the principal cauſe of that denomination; for his ſtyle of deſign ſavours too much of the flutter of the French ſchool, inſtead of the chaſte ſimplicity of Raphael and the beſt of the Romans.

Mignard enjoyed a full ſhare of favour and fortune during his life. He painted portraits of the popes Urban VIII. and Alexander VII., together with thoſe of many of the nobility of Rome.

Louis XIV., hearing of his fame and abilities, ſent for him to Paris, and is ſaid to have ſat to him for his portrait ten times. Almoſt all the illuſtrious nobles of the French court followed the example of their ſovereign, and were painted by Mignard. His ſtyle of execution in theſe portraits is wrought up with all the falſe taſte and pompous parade which diſtinguiſhed that vicious period of the French nation; when parade paſſed current for true ſplendour; what was only ſpecious or ſubtle, was received as uſeful and learned; and bombaſt aſſumed the ſtation due only to true dignified ſimplicity. His pictures are all flutter; every thing ſeems in motion; even when the ſcene is laid in a cloſe room, the draperies are flying about as in a high wind. The actions of his figures are in aſſumed airs, like pompous, and not unfrequently bad actors, and the colouring of his pictures, though freſh and vigorous, is not true, but teinted, and reminds the obſerver of the pallette. With theſe defective points in his character as an artiſt, Mignard is not unworthy of regard. His drawing is correct: his arrangement of parts is ingenious: and his invention fertile. He contrived to make his pictures ornamental, and is the beſt portrait painter of the French ſchool.

His patron, Louis, ennobled him; and, after Le Brun's death, appointed him his principal painter, and the director of the manufactories of Seve and the Gobelins. He lived to the age of 85, dying in 1695. He had an elder brother, whoſe name was Nicholas, a ſkilful painter, but who never roſe to equality with him.

MIGNATRICE, LA, *Ital.*, a miniature paintreſs in 1770, the late Mrs. Corri, whoſe family name was Bicchelli, then a young and beautiful woman, a profeſſed miniature paintreſs, and a brilliant and very pleaſing ſinger at the Academie, or private concert of the nobility and gentry at Rome, where no females are allowed to appear on the ſtage, was beſt known by the title of La Mignatrice. After her marriage with her ſinging-maſter, Corri, ſhe came with him to Edinburgh in 1772, to ſing at the concerts in that city, where he was engaged to direct the concerts, and give inſtructions in muſic. They remained at Edinburgh till about the year 1787, when they removed to London, where Mrs. Corri, mother of the accompliſhed Mad. Duſſec, died in 1802, much lamented by her family, friends, and all who had heard her ſing in the early part of her life.

MIGNONETTE, in *Botany*. See RESEDA.

MIGNOT, STEPHEN, in *Biography*, a learned French eccleſiaſtic, a native of Paris, was born in the year 1698. He was brought up to the church, and was admitted to the degree of doctor by the faculty of the Sorbonne, and rendered himſelf eminent for his acquaintance with the ſacred ſcriptures, the fathers, eccleſiaſtical hiſtory, and canon law. When upwards of ſixty years of age, he was elected a member of the Royal Academy of Inſcriptions and Belles Lettres. He died in the year 1771, leaving behind him numerous works, of which the following ſeem moſt worthy of notice: *viz.* "A Treatiſe on Commercial Loans," in four volumes; "The Rights of the State and of the Prince, with Reference to the Eſtates of the Clergy," in ſix volumes;

“The Hiſtory of the Conteſt between Henry II., and St. Thomas of Canterbury;” “The Reception of the Council of Trent, in Catholic Countries;” “A Paraphraſe on the New Teſtament,” in four volumes; “A Memoir relating to the Liberties of the Gallican Church.”

MIGRATION, or TRANSMIGRATION, the paſſage or removal of any thing out of one ſtate or place into another; particularly of colonies of people, birds, &c. into other countries.

The migration of the ſouls of men into other animals after death, is the great doctrine of the Pythagoreans, called the *metempſychoſis*.

The migration of birds, as the ſwallow, quail, ſtork, crane, field-fare, woodcock, nightingale, and other birds of paſſage, is a very curious article in natural hiſtory, and furniſhes a notable inſtance of the powerful inſtinct impreſſed by the Creator. Dr. Derham obſerves two things remarkable in this ſubject; the firſt, that theſe untaught, unthinking creatures, ſhould know the proper times for their paſſage, when to come, and when to go; as alſo, that ſome ſhould come when others go? No doubt, the temperature of the air, as to cold and heat, and their natural propenſity to breed their young, are the great incentives to thoſe creatures to change their habitation. But why ſhould they at all change their habitations? and why is not ſome certain place to be found, in all the terraqueous globe, affording them convenient food and habitation all the year round?

The ſecond, that they ſhould know what way to ſteer their courſe, and whither to go. What inſtinct is it that moves a poor fooliſh bird to venture over vaſt tracts of land and ſea? If it be ſaid, that, by their high aſcents up into the air, they can ſee acroſs the ſeas; yet what ſhould teach or perſuade them, that another land is more proper for the purpoſe than this? that Britain, for inſtance, ſhould afford them better accommodation than Egypt? than the Canaries? than Spain? or any other of the intermediate countries? Phyſico-Theol. p. 349.

Lud. de Beaufort remarks, that birds, in their migration, obſerve a wonderful order and polity: they fly in troops, and ſteer their courſe through vaſt unknown regions, without the compaſs. (Coſmol. Divin.) It is to be added, that the birds of paſſage are all peculiarly accommodated, by the ſtructure of their parts, for long flights.

Naturaliſts are divided as to the places whither birds of paſſage retire when they leave us. Mr. Willughby thinks the ſwallows fly into Egypt and Ethiopia.

Olaus Magnus ſays, they lurk in holes, or under water; which is confirmed by Etmuller, who aſſures us, that he ſaw a buſhel of them taken out of a frozen fiſh-pond, all hanging together, head to head, feet to feet, &c. in one cluſter. (Diſſert. ii. c. 10.) Olaus adds, that this is a common thing in the northern countries; and that ſuch a cluſter being carried accidentally by ſome boys into a ſtove, the ſwallows, after thawing, began to fly about, but weakly, and only for a little time.

A farther confirmation of this account was given by Dr. Colas, a perſon very curious in ſuch things, to the Royal Society. Speaking of the way of fiſhing in the northern parts, by breaking holes, and drawing their nets under the ice, he related, that he ſaw ſixteen ſwallows ſo drawn out of the lake of Samrodt, and about thirty out of the king's great pond at Roſineilen; and that at Schlebitten, near a houſe of the earl of Dohna, he ſaw two ſwallows juſt come out of the waters that could ſcarcely ſtand, being very wet and weak, with their wings hanging on the ground. He added, that he had often obſerved the ſwallows to be weak, for ſome days after their firſt appearance.

Some of our own countrymen have given credit to the ſubmerſion of ſwallows; and Klein patroniſes this doctrine in his Hiſt. Av. 205, 206. But they aſſign no reaſon, why theſe birds are capable of enduring ſo long a ſubmerſion without being ſuffocated, or without decaying in an element ſo unnatural to them; when we know that the otter, the cormorant, and the grebes ſoon periſh if caught under ice, or entangled in nets; and it is well known, that theſe animals will continue much longer under water than any others to whom nature hath denied that particular ſtructure of heart, neceſſary for a long reſidence beneath that element. Mr. John Hunter, having diſſected many ſwallows, found nothing in them different from other birds as to the organs of reſpiration; whereas all thoſe animals which he had diſſected, of the claſs that ſleep during winter, ſuch as lizards, frogs, &c. had a very different conformation in thoſe organs. He farther adds his opinion, that theſe animals breathe in their torpid ſtate; and, as far as his experience reaches, he knows they do; and he, therefore, eſteems it a very wild opinion, that terreſtrial animals can remain any long time under water without drowning.

There is another more probable opinion, with reſpect to the diſappearance of ſwallows, which has high antiquity to ſupport it. Ariſtotle and Pliny aſſert, that theſe birds do not remove very far from their ſummer habitation, but winter in the hollows of rocks, and during that time loſe their feathers. We have had many inſtances of ſome ſpecies of ſwallows having been diſcovered in a torpid ſtate, on the cliffs of the Rhine, in old dry walls and ſand-hills in Scotland, in the chalky cliffs of Suſſex, in hollow trees, and lead mines, &c. Theſe ſeveral places are ſuppoſed to be the lurking habitations of later hatches, or of thoſe young birds that are incapable of diſtant migrations; where they generally continue inſenſible and rigid, though, like flies, they may ſometimes be re-animated by an unſeaſonable hot day in the midſt of winter. From theſe facts, it is reaſonable to conclude, that, though one part of the ſwallow tribe migrates, others may have their winter-quarters nearer home. If it ſhould be aſked, why ſwallows alone are found in a torpid ſtate, and not the many other ſpecies of ſoft-billed birds, which likewiſe diſappear about the ſame time? the following reaſon, ſays Mr. Pennant, may be aſſigned. No birds are ſo much on the wing as ſwallows; none fly with ſo much rapidity and ſwiftneſs; none are obliged to ſuch ſudden and various evolutions in their flight; none are at ſuch pains to take their prey: and none exert their voice more inceſſantly; whence they ſuffer a great expence of ſtrength and ſpirits, and acquire ſuch a texture of blood, as other animals do not experience; and become thus diſpoſed to a more laſting repoſe than other birds. But notwithſtanding this conceſſion, it is moſt probable that ſwallows in general, as well as other birds, migrate from colder into warmer climates, in ſearch of proper food, a ſure aſylum from man during the time of courtſhip, incubation, and nutrition, and a temperature of air ſuiting their conſtitutions.

The generality of birds that remain the winter with us have ſtrong bills, or are enabled to feed on what they can find at that ſeaſon; thoſe which leave us have uſually very ſlender bills, and their food is the inſects of the fly kind; which diſappearing towards the approach of winter, compel them to ſeek them in regions where they may be found; and the length of the wings of the generality of theſe birds, enables them to prey flying, if there be food for them in their way, and to continue a long time on the wing without reſt.

The various conjectures about the places to which they retire, are owing to want of ocular teſtimony; but if we conſider the vaſt tracts of land yet unknown to us, we cannot doubt but there may be many places for them, in which we can have had no opportunities of finding them. But the moſt probable conjecture ſeems, that the places to which they retire lie probably in the ſame latitude in the ſouthern hemiſphere, as the places from whence they depart; where, the ſeaſons reverting, they may enjoy the like agreeable temperature of the air. And, if theſe places are ſuppoſed to be divided from them by too large ſeas, why may not ſome other parts of the ſouthern hemiſphere, which are leſs diſtant, ſerve their turn?

This, certainly, ſeems much more reaſonable than that they ſhould remain on our ſide of the northern tropic, within a few degrees of which, at the winter ſolſtice, it is ſo cold as frequently to produce ſnow; which, by diſperſing ſuch inſects as birds that feed upon the wing ſubſiſt on, muſt make them periſh, were they not to remove to thoſe warmer climates where they may ſtill find food. The ſwallows, as they cannot ſubſiſt ſo long in cold ſeaſons as ſome other birds of paſſage, which feed, after the diſappearance of flies in the air, on what inſects they find in their receſſes, viſit us later, and depart from us ſooner, than the reſt. The nightingales, and ſome other birds, which leave us for the winter, are ſeen, ſometimes, a month after the ſwallows; and from the whole it ſeems natural to infer, that the ſwallows paſs the tropic of Cancer, though it is not yet known to what place they at length retire.

The manner of the birds of paſſage journeying to their ſouthern abode may vary, according to the different ſtructure of their bodies, and their power of ſupporting themſelves in the air. Thoſe birds with ſhort wings, ſuch as the redſtart, blackcap, &c. though they are incapable of ſuch long flights as the ſwallow, or of flying with ſo much celerity, yet may paſs to leſs diſtant places, and by ſlower movements. Swallows and cuckoos may perform their paſſage in a very ſhort time; but there is for them no neceſſity for ſpeed, ſince every day's paſſage affords them an increaſe of warmth, and a continuance of food.

Providence, which has guided the defenceleſs animals in many other inſtances to the ſafeſt methods of performing their neceſſary works, may have inſtructed many of theſe birds which have ſhorter paſſages to make, or places to ſtop at by the way, to fly only in the night, that they may be ſecure from the birds of prey; and Mr. Cateſby gives a proof that ſome ſpecies do ſo, from his own obſervation; for, lying on the deck of a ſloop on the north ſide of Cuba, himſelf and the whole company heard ſucceſſively, for three nights, flights of rice birds, which are eaſily diſtinguiſhed from all other birds by their notes, and which were paſſing over their heads northerly; which is their direct way from Cuba, and the ſouthern continent of America, from whence they get to Carolina, annually, about the time that rice begins to ripen, and from whence they return ſouthward again, when it is gathered, and they are become fat.

That this is the caſe alſo with ſome ſpecies of ſwallows, has been proved beyond contradiction by M. Adanſon, Hiſt. de Senegal, p. 67. We often obſerve them collected in innumerable flocks on churches, on rocks, and on trees, previous to their departure hence; and Mr. Collinſon proves their return here, perhaps, in equal numbers, by two curious relations of undoubted credit; the one communicated to him by Mr. Wright, maſter of a ſhip, and the other by the late ſir Charles Wager; who both deſcribed to the ſame purpoſe, what happened to each of them in their voyages. "Returning home," ſays ſir Charles, "in the ſpring of the year, as I came into ſoundings in our channel, a great flock of ſwallows came and ſettled upon my rigging: every rope was covered; they hung on one another like a ſwarm of bees; the decks and carving were filled with them. They ſeemed almoſt famiſhed and ſpent, and were only feathers and bones; but being recruited with a night's reſt, took their flight in the morning." This apparent fatigue proves that they muſt have had a long journey, conſidering the amazing ſwiftneſs of theſe birds; ſo that in all probability they had croſſed the Atlantic ocean, and were returning from the ſhores of Senegal, or other parts of Africa.

The ſhort-winged birds are ſuppoſed little qualified for long flights, particularly the quail, which is a bird never ſeen long together on the wing, or making any long flights; its not doing this frequently is, however, no proof that it is not able to do it: nor does the ſtructure of its body at all beſpeak its inability; and Bellonius affirms, that he ſaw them in great flights paſſing over, and repaſſing, the Mediterranean ſea, at the very ſeaſons when they leave us, and they return again. The ſame inſtinct that directs theſe birds to depart to diſtant countries, doubtleſs alſo directs them to the ſhorteſt way, and ſends them to the narroweſt cuts, not the wider ſeas, to croſs.

Among the birds of paſſage, we have ſome alſo which come to us in the autumn, at the time when the ſummer birds are leaving us; and go from us again in the ſpring at the times when theſe return: theſe, however, are only four kinds; the field-fare, the redwing, the woodcock, and the ſnipe; and of theſe the two laſt often continue with us through the ſummer, and breed; ſo that the two firſt ſeem the only kinds that certainly leave us at the approach of ſpring, retiring to more northern parts of the continent, where they live the ſummer, and breed; and, at the return of winter, are driven ſoutherly from thoſe frigid climes, in ſearch of food, which there the ice and ſnow muſt deprive them of. There are many others alſo, particularly of the duck, or wading kind, that breed and make their ſummer abode in the deſolate fenny parts of our iſland; and when the ſeverity of our winters deprives them of their food, neceſſity forces them to retire towards the ſea in numerous flights; where they find water unfrozen, and where they remain till the return of ſummer; but theſe cannot properly be called birds of paſſage.

It ſeems pretty evident from the whole, that the ſummer birds of paſſage leave us only in ſearch of a more warm climate, and a greater plenty of food; both which advantages they procure to themſelves by their alternate change of climate; but the migration of the winter birds of paſſage is not ſo eaſily accounted for, ſince there is no ſuch apparent neceſſity for their leaving us, either on the ſcore of food or climate. The place of the ſummer retirement of theſe birds is Sweden, and ſome other countries in that latitude; but as they would find thoſe places too cold and deſtitute of proviſion, were they to haſten immediately to them on their departure from us, they journey along gradually, and prolong their paſſage through the more moderate countries of Germany and Poland; by which means they do not arrive at their northern habitations, where they are to paſs their ſummer, and where they breed, till the ſeverity of the cold is ſo far abated as to render it pleaſing to them, and there is proper food for them; and when they reviſit us the following winter, their journey is performed in the ſame leiſurely manner.

Sweden and the other countries whence they come to us, ſeem the proper home of theſe birds; ſince there they were bred; and the journey they take to us being only for a warmer climate, and plenty of food, it is no wonder that, when theſe benefits are to be expected again in their native place, they return to it.

The principal food of theſe birds, while with us, is the fruit of the white-thorn, or haws, which hang on our hedges in winter in prodigious plenty; but where they breed, and ſeem to live moſt at eaſe, as in Sweden, &c. there are no haws, nor, indeed, in many of the countries through which they journey in their way; ſo that it is evident they change their food in their paſſage. And upon the whole it appears, that Providence has created birds, &c. with conſtitutions and inclinations adapted to their different degrees of heat and cold; which, to them, are moſt agreeable, and to which they will travel from places which to other animals might ſeem more agreeable: by this means no part of the globe is without its inhabitants. Phil. Tranſ. vol. xliv. p. 435, &c. vol. li. p. 459, &c. Pennant's Britiſh Zoology, vol. i. p. 406, &c. vol. ii. p. 709, &c.

MIGREEVO, in *Geography*, a town of Ruſſia, in the government of Novgorod; 36 miles S. of Tcherepovetz.

MIGU, a town of Arabia, in the province of Oman; 140 miles S.W. of Julfar.

MIGUEL-Estevan, a town of Spain, in New Caſtile; 40 miles S. of Huete.

Miguel-*Turria*, a town of Spain, in New Caſtile; 4 miles S.E. of Civdad Real.

Miguel, *St.*, a town of Mexico, in the province of Guatimala; 50 miles E. of Cuzcatlan.—Alſo, a town of S. America, in the kingdom of Grenada; 85 miles E. of Santa Fé de Bogota.—Alſo, a town of Spain, in the province of Seville, between the rivers Guadiana and Odier, near the coaſt of the Atlantic.—Alſo, a town of S. America, in Popayan; 90 miles E.S.E. of Paſto.—Alſo, a town of Paraguay; 360 miles E. of Aſſumption.—Alſo, a town of Mexico, in the province of Nicaragua, on the N.W. coaſt of Amapalla bay; 100 miles S.E. of Leon. N. lat. 13° 35'. W. long. 88° 56'.—Alſo, a town of Mexico, in the province of Mechoacan; 80 miles N. of Mechoacan. N. lat. 21° 20'. W. long. 102° 26'.—Alſo, a town of S. America, in the province of Chiquitos.—Alſo, a town of S. America, in the province of Quito; 50 miles S.W. of Quito.—Alſo, a town of S. America, in the audience of Quito; 15 miles N.W. of St. Joſef de Huales.—Alſo, a miſſion of Spaniſh monks in New Albion, near the coaſt of the Pacific ocean. N. lat. 31° 58'. E. long. 243° 42'.—Alſo, a ſmall iſland in the N. Pacific ocean, called alſo "St. Bernardo," the moſt weſterly of the range which forms the weſtern boundary of the canal of St. Barbara. N. lat. 34°. E. long. 240° 3'.—Alſo, a river of Braſil, which runs into the Atlantic, S. lat. 10° 8'.—Alſo, a town of Braſil, in the government of St. Paul; 15 miles E. of St. Paul.—Alſo, a town of Congo, and capital of the province of Ovando; 150 miles S.S.E. of St. Salvador. S. lat. 7° 45'.—Alſo, a town of Mexico, in the province of Culiacan, on the Ciguatlan; 30 miles S.E. of Culiacan. N. lat. 24° 6'. W. long. 107° 52'.—Alſo, a town of New Mexico, in the province of Cinaloa; 70 miles W.N.W. of Cinaloa.—Alſo, a town of New Mexico; 60 miles S. of Santa Fé.

Miguel, *St.* See Madeira.

Miguel *Archangel*, *St.*, an iſland in the Pacific ocean, diſcovered by Quiros in the year 1606.

Miguel *d'Ibarra*, *St.*, a town of South America, and capital of a juriſdiction of the ſame name, in the audience of Quito, containing about 10,000 inhabitants. The houſes are built of ſtone, and tiled. The ſuburbs are inhabited by Indians, in mean cottages. The pariſh church is a large, elegant, and well-ornamented building. Here are convents of Franciſcans, Dominicans, and Fathers of Mercy, a college, and a nunnery of the order of the Conception; 45 miles N.N.E. of Quito. N. lat. 0° 25'. W. long 77° 40'.—Alſo, a juriſdiction of S. America, in the government of New Grenada, and audience of Quito. The temperature of the air is different in all the villages of this juriſdiction, but generally warm, on account of their low ſituations. Moſt of the farms have plantations of ſugar-canes, and mills for extracting the juice, of which they make large quantities of white ſugar. Some farms are planted with fruits, common in a hot climate, and in others they only cultivate cotton, which is obtained in the greateſt perfection. In thoſe farms that are ſituated in a leſs hot part of this juriſdiction are ſown maize, wheat, and barley. Here are alſo large multitudes of goats, but not many ſheep. The Indians weave a conſiderable quantity of cloth and cotton. This juriſdiction has ſeveral mines of ſalt, which ſupply the countries that lie to the north of it. Near a village, called Mira, there is a great number of wild aſſes.

Miguel *de Piura*, *St.* See Piura.

Miguel *de Ribera*, *St.*, a town of Peru, in the dioceſe of Arequipa; 62 miles W.S.W. of Arequipa.

Miguel *de Tucuman*, *St.*, a town of S. America, in the province of Tucuman; the ſee of a biſhop, containing ſeveral monaſteries. Its ſituation is elevated and agreeable, and in its vicinity are fertile fields, and ſeveral ſilver mines: ſome mules are bred; but the chief traffic is in a kind of cars, or covered waggons, which paſs to Buenos Ayres and Jujuy, and which the inhabitants are enabled to build by their abundance of wood; 200 miles E. of Copiapo. S. lat. 27° 25'. W. long. 66° 30'.

Miguel *Bay*, *St.*, a bay on the E. coaſt of the iſland of Luçon. N. lat. 14° 12'. E. long. 123° 40'.

MIHALY, a town of Hungary; 10 miles N. of Zutmar.

MIHAU, a ſmall iſland in the Engliſh Channel, near the coaſt of France; 15 miles W. from the iſland of Bas. N. lat. 48° 47'. W. long. 3° 30'.

MIHEL, a diſtrict of the archduchy of Auſtria, between the Danube and Bohemia.

MIHIEL, St., a town of France, in the department of the Meuſe, and chief place of a canton, in the diſtrict of Commercy, ſituated on the Meuſe, in a valley ſurrounded with mountains. It has ſix gates and three fauxbourgs. The place contains 5022, and the canton 14,010 inhabitants, on a territory of 255 kiliometres, in 28 communes. N. lat. 48° 54'. E. long. 5° 37'.

MIHIRA, a name, in the Sanſcrit, for the ſun. See Surya.

MIHLACK, in *Geography*, a town of Auſtria; 18 miles S.W. of Freyſtadt.

MIJARISIMA, one of the ſmall Japaneſe iſlands. N. lat. 34° 10'. E. long. 139° 45'.

MIJAS, a town of Spain, in the province of Grenada; 10 miles N.E. of Marbella.

MIJASKA, a river of Ruſſia, which runs into the Iſer, in the government of Tobolſk.

MIJAVARA, a town of Japan, in the iſland of Niphon; 12 miles S. of Awaſi.—Alſo, a town of Japan, in the iſland of Ximo; 28 miles S.E. of Ikua.

MIJO, a town of Peru, in the dioceſe of La Plata; 70 miles E.S.E. of Lipes.

MIIT Demsis, a town of Egypt, on the eaſt branch of the Nile; 35 miles N. of Cairo.

Miit *Gera*, a town of Egypt, on the eaſt branch of the Nile; 12 miles S. of Manſora.

Miit *Harun*, a town of Egypt, on the eaſt branch of the Nile; 2 miles N.W. of Miit Demſis.

Miit *el Koli*, a town of Egypt, on the eaſt branch of the Nile; 10 miles N.N.E. of Menſora.

Miit *Laſſi*, a town of Egypt, on the eaſt branch of the Nile, oppoſite to Miit Demſis.

Miit *Naſer*, a town of Egypt, on the eaſt branch of the Nile; 3 miles S. of Semennud.

Miit *Kamer*, or *Miet Ghamer*, called by Savary *Mit Khamr*, a town of Egypt, on the eaſt branch of the Nile; 24 miles N. of Cairo. This town, though ſmall, is populous and commercial. The market places are narrow, and badly lighted; the ſtreets are crooked and dirty. Here is a moſque, with a ſquare tower, which ſeems to have ſerved as a church for the Chriſtians, before the Arabian conqueſt. Through all Egypt there is not a ſimilar minaret; all being round, narrow, and lofty.

MIKALIDI, or Maarlich, a town of Aſiatic Turkey, in the province of Natolia, ſituated on a river, the ancient Rhyndus, which runs into the ſea of Marmora. It has a port about two miles from the town, whence they ſend ſilk, wool, grain, and fruit to Smyrna, Conſtantinople, &c.; 35 miles W. of Burſa. N. lat. 40° 10′. E. long. 28° 22′

MIKANIA, in *Botany*, a genus ſeparated by Willdenow from the Cacalia and Eupatorium of Linnæus; ſee thoſe articles; and named by him in honour of profeſſor Joſeph Mikan of Prague, of whoſe botanical performances we find nothing mentioned, except a mere catalogue of plants, an epitome of the 13th edition of the Linnæan *Syſtema Vegetabilium*, with ſome new ſpecies of Jacquin ſuperadded, publiſhed at Prague in 1776; an octavo of 403 pages.—Willd. Sp. Pl. v. 3. 1742.—Claſs and order, *Syngeneſia Polygamia-æqualis*. Nat. Ord. *Compoſitæ diſcoideæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* oblong, ſimple, of from four to ſix erect, equal, oblong, channelled, unarmed, permanent ſcales. *Cor.* compound, uniform, diſcoid; florets moſtly equal in number to the ſcales of the calyx, all uniform, perfect, fertile, monopetalous, funnel-ſhaped, with a regular, four or five-cleft, ſpreading border. *Stam.* Filaments five, capillary, ſhort; anthers united into a cylindrical tube. *Piſt.* Germen minute; ſtyle thread-ſhaped, moſtly rather longer than the corolla, deeply divided; ſtigmas ſlender, ſpreading. *Peric.* none, except the permanent, ſomewhat expanded calyx. *Seeds* ſolitary to each floret, oblong, angular; down ſeſſile, ſimple, longer than the calyx. *Receptacle* ſmall, naked.

Eſſ. Ch. Receptacle naked. Calyx of from four to ſix equal leaves, containing as many florets. Seed-down ſimple, ſeſſile.

Section 1. *Stem climbing.*

1. M. *Houſtonis.* Willd. n. 1. (Eupatorium Houſtonis; Linn. Sp. Pl. 1172. Swartz. Obſ. 300.)—Stem twining. Leaves ovate, entire. Flowers ſpiked.—Native of buſhy places at Vera Cruz. *Houſton.* In Jamaica, but rare. *Swartz.* The *ſtem* is twining, ſhrubby, round, ſmooth, with widely ſpreading branches. *Leaves* oppoſite, ſtalked, ovate, pointed, entire, ribbed, ſhining. *Spikes* oppoſite, ſpreading almoſt horizontally, many-flowered. *Flowers* minute, white, inodorous. *Calyx* of four ſcales. *Florets* four.

2. M. *haſtata.* Willd. n. 2. (Eupatorium haſtatum; Linn. Sp. Pl. 1172. Swartz. Obſ. 299. Kleinia? ſcandens; Browne Jam. 316. t. 34. f. 3.)—Stem twining. Leaves haſtate, ſomewhat heart-ſhaped, acute, ſlightly toothed, ſmooth. Flowers ſpiked.—Native of thickets on the hills of Jamaica. *Stem* ſhrubby, climbing, round, ſtriated, purpliſh, ſlightly downy. *Leaves* oppoſite, haſtate, acutely pointed at each lobe, from one to near three inches long, three-ribbed, ſmooth, except a ſlight downineſs on the ribs or veins; heart-ſhaped at the baſe; obſcurely toothed or ſerrated at the margin. *Footſtalks* about as long as the leaves, ſometimes much ſhorter, ſlender. *Spikes* axillary and terminal, about the ends of the branches, downy, bracteated, near two inches long, obſcurely whorled. *Flowers* uſually four in a whorl, white, ſmelling like *Cacalia ſuaveolens*. The whole plant has a bitter taſte. *Sw.*

3. M. *ſcandens.* Willd. n. 3. (Eupatorium ſcandens; Linn. Sp. Pl. 1171. Jacq. Ic. Rar. v. 1. t. 169. Conyza ſcandens, ſolani folio anguloſo; Plum. Ic. 86. t. 99?)—Stem twining. Leaves heart-ſhaped, taper-pointed, wavy and toothed; lobes ſpreading. *Flowers* corymboſe.—Native of Virginia, in a watery ſoil. This was introduced into the Engliſh gardens about 100 years ago, and is a hardy perennial, flowering in Auguſt and September, but of no remarkable beauty. The *ſtem* is rather herbaceous than ſhrubby, climbing, ſmooth, or downy. *Leaves* on long ſtalks, one and a half inch long, roughiſh, veiny, three-ribbed at the baſe. *Flowers* white, in axillary, ſtalked, leafy, more or leſs compound corymbs. *Seed-down* tawny; not white, as mentioned by Willdenow. *Florets* four.

4. M. *volubilis.* Willd. n. 4. (Eupatorium volubile; Valh. Symb. v. 3. 93. E. cordatum; Burm. Ind. 176. t. 58. f. 2.)—Stem twining. Leaves heart-ſhaped, crenate, acute, lobes rounded, approximated. Corymbs panicled.—Native of the Eaſt Indies. The *ſtem* in our's is very nearly ſmooth, much leſs downy than in the laſt. Willdenow mentions the reverſe. *Leaves* much larger, exactly heart-ſhaped, acute, nearly ſmooth, bluntly crenate; occaſionally entire, as figured by Burmann. *Corymbs* compound, on long ſtalks. *Seed-down* bluſh-coloured, or purpliſh.

5. M. *denticulata.* Willd. n. 5. (Eupatorium denticulatum; Vahl. Symb. v. 3. 93.)—"Stem climbing, angular. Leaves heart-ſhaped, bluntiſh, finely toothed, rough. Flowers corymboſe."—Native of Surinam. "*Branches* with five prominent angles. *Leaves* two inches long, ſtalked; paler and ſlightly downy beneath; ſometimes entire. *Florets* and *calyx-ſcales* four. *Seed-down* purpliſh." Of this we have ſeen neither ſpecimen nor figure.

6. M. *tomentoſa.* Willd. n. 6. (Eupatorium tomentoſum; Lamarck Dict. v. 4. 410.)—Stem twining. Leaves alternate, heart-ſhaped, finely toothed, ſomewhat angulated, cottony beneath; the upper ones ovate. Spikes panicled.—Native of the Iſle de Bourbon. One of Commerſon's ſpecimens was given by Thouin to Linnæus. It is ſaid to have the ſcent of lilac. The *ſtem* is very long, ſlender, twining, round, cottony when young. *Leaves* alternate, ſtalked; ſmooth, or ſlightly cottony, above; clothed with ſnow-white denſe pubeſcence, like a white poplar, beneath. *Spikes* of flowers numerous, alternate, compoſing axillary leafy panicles. *Calyx* ſmooth. *Seed-down* white.

7. M. *amara.* Willd. n. 7. (Eupatorium amarum; Vahl. Symb. v. 3. 93. E. parviflorum; Aubl. Guian. v. 2. 797. t. 315.)—Stem twining, roughiſh. Leaves ovate, entire; rough beneath. Flowers corymboſe. Bracteas ſpatulate, at the baſe of the ſmooth calyx.—Native of the banks of rivers in Guiana, flowering in Auguſt. Communicated by E. Rudge, Eſq. The *ſtems* are ten feet long, branched, twining, round, rough with ſhort, denſe, rigid pubeſcence. *Leaves* oppoſite, ſtalked, three inches long; nearly ſmooth above; rough and harſh beneath. *Flowers*

in corymboſe, leafy, axillary panicles, three together ſeſſile at the end of each partial ſtalk, with two or three ſhort, ſpatulate, ſtalked, leafy *bracteas*. *Florets* and *calyx-ſcales* four. When wounded, the *ſtem* and *branches* diſcharge a yellowiſh, viſcid, aromatic fluid.

8. M. *latifolia*.—Stem twining, ſmooth. Leaves ovate, taper-pointed, nearly entire, ſmooth. Flowers corymboſe. Bracteas lanceolate, at the baſe of the roughiſh calyx.—Native of the iſland of St. Lucia. Very near the laſt, but differing in the above characters. The *leaves* are dark green above, and very ſmooth; pale, ſcarcely roughiſh to the touch, beneath. *Infloreſcence* as in *M. amara*, but the *bracteas* are much ſmaller, ſeſſile, lanceolate or elliptical, minutely roughiſh. *Calyx* alſo roughiſh. *Florets*, and rufous *down of the ſeed*, half as long again as the calyx; whereas in the laſt ſpecies they are much ſhorter, and concealed within it.

9. M. *chenopodifolia*. Willd. n. 8.—“ Stem twining. Leaves ovate, ſomewhat triangular, pointed, wavy, five-ribbed, ſmooth. Flowers corymboſe.”—Native of Sierra Leone. *Stem* with ſmooth ſtriated branches, apparently climbing. *Leaves* oppoſite, ſtalked, triangular-ovate, ſlightly haſtate, ſmooth on both ſides. *Corymbs* denſe, ſtalked, terminal. *Calyx* ſmooth, of four ſcales, with as many florets. *Down* reddiſh. *Willd.*

10. M. *auriculata*. Willd. n. 9. (Eupatorium auriculatum; Lamarck Dict. v. 2. 411. E. ſcandens; Thunb. Prodr. 142?)—Stem twining, angular, ſmooth. Leaves alternate, triangular, ſomewhat haſtate, toothed, ſmooth. Stipulas rounded. Flowers corymboſe.—Gathered by Sonnerat at the Cape of Good Hope; and Willdenow well conjectures that it is probably the *E. ſcandens* of Thunberg, with whoſe ſhort definition it ſeems to agree. The *ſtem* has many angles, and is much branched, twining and zigzag. *Leaves* ſmall, with a pair of claſping *ſtipulas* at the baſe of their ſtalk, and ſometimes a pair of ſimilar auricles. *Calyx* of five or ſix ſcales, with as many florets. *Lamarck.*

11. M. *ſtipulacea*. Willd. n. 10. (Eupatorium ſtipulaceum; Vahl. Symb. v. 3. 94.)—Stem twining, round, ſmooth. Leaves oppoſite, haſtate, acute, ſomewhat toothed, ſmooth. Stipulas oblong. Flowers corymboſe.—Gathered by Commerſon in Braſil. *Stem* twining, ſlender, finely ſtriated. *Leaves* ſtalked, much like thoſe of ſome haſtate *Chenopodium*; rather glaucous, and obſcurely downy, beneath. *Stipulas* recurved, ſmall, oblong, acute. *Flowers* in many axillary, oppoſite, ſtalked, often compound corymbs. *Calyx* roughiſh at the baſe, membranous upward, of four ſcales, with as many florets. *Down* purpliſh, rough, projecting, with the florets, much beyond the calyx.

12. M. *rubiginoſa*. (Cacaliæ cordifoliæ varietas, foliis integris; Linn. Suppl. 352.)—Stem twining, downy. Leaves oppoſite, heart-ſhaped, pointed, wavy, finely downy. Panicles axillary, cymoſe. Bracteas ſpatulate. Native of South America? Of this we have ſeen but an imperfect ſpecimen in the Linnæan herbarium, on which there is no mark to indicate its native country. By its reſemblance to many of the foregoing ſpecies only, can we judge of its being a climber; for we have but an inch and a half of the *ſtem*, with a pair of oppoſite ſtalked *leaves*, each two inches long, with an axillary ſtalked corymboſe *panicle*, accompanied by a pair of ſmall leaves, to each. Every part is clothed with extremely ſhort, denſe, ſoft, ruſty, velvet-like pubeſcence. The ſurface of the *leaves*, on both ſides, ſparkles with exceſſively minute golden reſinous dots. *Flowers* not very numerous. *Bracteas* as long as the calyx, ſpatulate or obovate, obtuſe, with or without a ſmall point, and tapering at their baſe. *Scales* of the calyx very much like them in ſhape and ſize, and both are equally downy externally. *Seed-down* reddiſh, ſcarcely extending beyond the calyx. This is certainly very diſtinct from the following, with which the younger Linnæus, who found the ſpecimen here deſcribed in his father's herbarium, marked *Eupatorium*, confounded it.

13. M. *cordifolia*. Willd. n. 11. (Cacalia cordifolia; Linn. Suppl. 351.)—Stem twining? angular, roughiſh. Leaves oppoſite, heart-ſhaped, pointed, toothed, rough. Panicles axillary? cymoſe, leafy. Bracteas ovate, pointed, ſhorter than the calyx.—Gathered by Mutis in New Spain, South America. By its near agreement with the laſt ſpecies, we judge this alſo to be a climbing plant. The Linnæan ſpecimen conſiſts of only a large compound corymboſe *branch* of flowers, accompanied by ſmall oppoſite leaves, as uſual in this ſection of the genus, but whether it may have been axillary or terminal, we cannot determine. With it are two ſeparate *leaves*, not unlike thoſe of a *Helianthus*, each three inches long, of a very broad heart-ſhaped figure, oblique or unequal, minutely but diſtantly toothed, with a ſhort taper point. They are rough on both ſides, with minute harſh pale briſtles, their ribs, which are three in the middle, and two at each ſide, clothed with ruſty down. *Footſtalks* two inches long, or more, ruſty. *Panicle* many-flowered, with roughiſh angular ſtalks. *Bracteas* ſcattered, ſtalked, gradually ſmaller upwards, ovate, pointed, entire, briſtly at the edges; thoſe which are cloſe to the flowers ſeſſile, ſhorter than the calyx. *Scales* of the calyx four, elliptic-lanceolate, acute, ribbed, concave; the two outermoſt roughiſh, eſpecially upward; the innermoſt only being ſmooth as deſcribed in the *Supplementum*. *Seed-down* reddiſh, rough, longer than the calyx, as are alſo the *florets*.

14. M. *laurifolia*. Willd. n. 12. (Cacalia laurifolia; Linn. Suppl. 351.)—Stem twining? Leaves oppoſite, elliptic-ovate, triple-ribbed, very ſmooth and ſhining. Panicles denſe, terminal, downy.—Native of Mexico. *Mutis*. This has all the appearance of a climbing *ſhrub*, though Willdenow could have no reaſon, from the Linnæan deſcription, to ſuſpect it. The *branches* are much twiſted, forked, round, ſmooth, leafy at their extremities. *Leaves* one and a half or two inches long, near an inch wide, almoſt elliptical, obtuſe, entire, ſlightly revolute, rigid, ſmooth; varniſhed as it were on the upper ſide; thickly dotted beneath; their lateral ribs ſpringing from the middle one at a good diſtance from the baſe, beſides a pair at the very bottom. *Panicle* three inches long, denſe obtuſe, with hairy corymboſe ſtalks. *Bracteas* ſmall, oblong. *Scales* of the calyx four, linear, hairy, (by no means ſmooth as in the *Suppl.*), rather dilated and feathery at the tips. *Seeds* furrowed, angular, rough, nearly as long as the calyx. *Florets* and *down* much longer. *Styles* greatly protruding, with long, narrow, purpliſh ſtigmas.

Section 2. *Stem erect.*

15. M. *meliſſifolia*. Willd. n. 13. (Eupatorium meliſſæfolium; Lamarck. Dict. v. 2. 411.)—Stem erect. Leaves oppoſite, ovate, crenate, ſeſſile, downy beneath. Flowers corymboſe, terminal.—Gathered by Dombey in Peru. *Stem* about two feet high, round, ſlightly downy, panicled above. *Leaves* ſeſſile, and even ſomewhat embracing the ſtem, oval, coarſely crenate, green, about two inches or more in length, and one inch and a half wide. *Flowers* purpliſh. *Calyx* of five ſtraight ſcales. *Florets* five. *Down* rough.

16. M. *ſatureifolia*. Willd. n. 14. (Eupatorium ſatureiæfolium; Lamarck Dict. v. 2. 411.)—Stem erect, branched. Leaves oppoſite or ſcattered, linear, obtuſe,

entire, downy. Flowers corymboſe.—Gathered by Commerſon at Monte Video. The *ſtem* ſeems ſcarcely ſhrubby, round, alternately branched, downy, leafy. *Leaves* moſtly ſcattered, the lower ones only being often oppoſite, ſeſſile, linear, or linear-lanceolate, obtuſe, nearly or quite entire, tapering at the baſe, thickly dotted, minutely hairy; paler beneath. *Flowers* large, purple, a few together in tufts on terminal, corymboſe, downy ſtalks. *Calyx* downy, but half the length of the florets and rough browniſh *ſeed-down*. *Corolla* five-cleft, ſlightly hairy.

Commerſon gathered at the ſame place a ſlender variety, with much ſmaller *leaves*, and only one or two *flowers* at the top of a few of the branches. We agree with him that, though very different in appearance, the ſpecimen diſplays no diſtinctive ſpecific character. Indeed we have an intermediate variety, which leaves the matter without any uncertainty. We make no apology for correcting the barbarous conſtruction of the ſpecific names of this and the foregoing. S.

MIKELSBURG, in *Geography*, a fortreſſed town of Tranſylvania, with a depôt of arms for the principality; 6 miles S.E. of Hermanſtadt.

MIKLOS, ST., a town of Tranſylvania; 12 miles N.N.W. of Medies.

MIKLOSVAR, a town of Tranſylvania, on the river Alaut; 16 miles N. of Cronſtadt.

MIKOLAIOW, a town of Auſtrian Poland, in Galicia; 28 miles S.S.W. of Lemberg.—Alſo, a town of Poland, in Volhynia; 24 miles W of Lucko.

MIKULINOZE, a town of Poland, in Podolia; 56 miles N.N.W. of Kaminiec.

MILA, a town of Thibet; 222 miles S.W. of Latac.—Alſo, a town of Tunis; 30 miles S. of Conſtantina.

MILAGRO, a town of Spain, in the province of Aragon, at the confluence of the Arga and Aragon; 5 miles E. of Calahorra.

MILAN, *Duchy of*, a country of Italy, bounded on the north by the Griſons, on the eaſt by the Venetian ſtates, on the ſouth by the ſtates of Piedmont and Parma, and on the weſt by Piedmont and Savoy. Its greateſt breadth from north to ſouth is upwards of 100 miles, and its greateſt length from eaſt to weſt 108 miles. This fertile duchy is ſaid to contain, on 2432 ſquare miles, a population of 1,116,850 perſons; and it has formerly produced to the king of Spain a revenue of above two millions of dollars. According to Mr. Young's ſtatement, the ſoil is chiefly ſtrong loam, or loamy ſand; and the climate has a ſingular circumſtance belonging to it, that the northern mountainous tracts are mild and warm, but the plains are cold. Orange and lemon trees flouriſh in the open air, on the weſtern ſides of the lake of Como, though bounded by the high Alps, which to the north are covered with perpetual ſnow; while, in the plain of Lombardy, even to the Apennines, theſe trees require ſhelter. The Boromean iſles alſo, in the Lago Maggiore, are covered with theſe delicate trees. The lands in this duchy are moſtly encloſed; but its agriculture can never proſper, while the preſent ſyſtem continues, which is that of the landlord's paying taxes and repairs, and the tenant's providing cattle, implements, and ſeed, and then their dividing the produce between them. For the irrigation of the country, they have canals, ſubſiſting as early as the 11th century, ſome of which are more than 30 miles long, and nearly 52 feet wide. The arable lands produce the uſual kinds of grain and fruits, and the paſtures are excellent, affording means for breeding cattle in abundance; and for making cheeſe that has been every where held in eſtimation. The wine is good, and the mulberry trees, for the culture of ſilk, are numerous. Its ſheep are but few and bad. Its mines have not been much explored: however, there are are ſome of copper and lead above the lake of Como, and the mountains; and the Boromean iſles preſent fleſh-coloured granite, and lapis ollaris is plentiful near Como. In this duchy are manufactures of wool and ſilk, though its ſilk is not equal to that of Piedmont; and it has numerous workmen in gold, ſilver, embroidery, and ſteel, as well as in cryſtal, agate, aventurine, and other ſtones. The trade of the Milaneſe is conſiderable; but its imports generally exceed its exports. Its ſtuffs are moſtly conſumed at home; its ſilks, ſtockings, gloves, and handkerchiefs, are exported.

After the fall of the kingdom of Lombardy, Milan became ſubject to the emperors of the Weſt. After the conteſts between the emperors and the popes, it loſt its form of a republic, and became ſubject to the archbiſhop: in 1277, Otto Viſconti, the archbiſhop, was declared lord of Milan. His family long poſſeſſed this rich principality. After two or three changes it was ſeized, in 1535, by Charles V., as a fief of the empire, and he gave it to his ſon Philip; whoſe ſucceſſors, as kings of Spain, retained the Milaneſe till the year 1706, when it became an appanage of Auſtria, though a conſiderable part of it had been transferred to the houſe of Sardinia. Its revenues have been lately eſtimated at about 300,000*l*. When the Ciſalpine republic was formed, the Milaneſe was divided into four departments, *viz.* Olona, Verbano, Lario, and Delle Montagna. Milan was appointed the capital of the whole republic; and the ſame eſtabliſhment ſtill reſpects the kingdom of Italy.

MILAN, a city, and capital of the lately eſtabliſhed kingdom of Italy, and, before the revolution in France, the capital of the duchy above deſcribed. Including its gardens, it is ſaid to be ten miles in circumference, and it is chiefly defended by a wall and rampart, together with a citadel having ſix baſtions at ſome diſtance, ſo that it has been reputed a ſtrong place. It has ſome ſtraight and broad ſtreets, among many that are narrow and crooked; but its paper windows, or thoſe of glaſs and paper intermixed, give it a mean appearance. It has 12 gates, 230 churches, 90 convents, 100 religious fraternities, 120 ſchools, and about 120,000 inhabitants. It is the ſee of an archbiſhop, and its nobles are numerous. Its cathedral is a large but irregular building, conſtructed of marble, and ornamented with marble ſtatues: its treaſury, among other valuable articles, contains an invaluable coffin of rock-cryſtal, in which are depoſited the remains of St. Charles Boromeo, cardinal and archbiſhop of Milan. The chief church for antiquities is that of St. Ambroſe; and the Ambroſian college, in the centre of the town, was founded by Frederic Boromeo, and has ſixteen profeſſors, who communicate their inſtructions gratis. The fine library which he began was finiſhed by cardinal Gelbert Boromeo, and is ſaid to contain more than 40,000 printed volumes, and ſome thouſands of MSS. In this college are alſo an academy of painting, and a muſeum. The ſeminary for ſciences, where ſtudents are both taught and maintained, and the college of the nobles, are ſtately buildings, but inferior to the Helvetian college, founded for a number of Swiſs. Here is alſo a mathematical academy. The great hoſpital is a fine building, and liberally endowed by duke Francis Sforza IV.; and its income is ſaid to be between 90 and 100,000 rix-dollars. This hoſpital, which has ſeveral others dependent upon it, admits not only ſick perſons, but alſo foundlings and lunatics. The large lazaretto is only uſed in time of contagion. Among the civil buildings is the old and ſpacious regency-houſe, and the new and ſtately town-houſe, where is an equeſtrian ſtatue of Philip II.

This city was founded by the Gauls about 584 years B.C.; but has undergone many ſieges, and particularly that by the emperor Frederic I. in 1162, who, after a ſiege of ſeven months, deſtroyed the gates, ramparts, and edifices, leaving only a few churches, and ſowed ſalt on the ruins. However, it recovered from theſe diſaſters; and it ſtill maintains many manufacturers and artiſans; and by means of ſeveral rivers and canals, carries on a conſiderable trade. In 1800 it was taken by Bonaparte; and when the Ciſalpine republic was eſtabliſhed, it became the capital of the department of Olona and of the whole republic, and it maintains the ſame rank in the kingdom of Italy; 132 miles W. of Venice, 65 N. of Genoa. N. lat. 45° 26′. E. long. 9° 11′.

MILAPOUR, a town of Hindooſtan, in Myſore; 22 miles E. of Colar.

MILASA, or Marmara, a town of Aſiatic Turkey, in Natolia; anciently called Mylaſſa. In this place are the remains of three temples, and of a column, called Meander's pillar; 16 miles S.W. of Mogla. N. lat. 37°. E. long. 27° 50′.

MILATIA, a town of Poland, in Volhynia; 44 miles S.W. of Lucko.

MILAVERAM, a town of Hindooſtan, in the circar of Condapilly; 14 miles N. of Condapilly.

MILAY, a town of Bohemia, in the circle of Leitmeritz; 16 miles S. of Leitmeritz.

MILAZZO, Cape, a cape of Spain, on the W. coaſt of Galicia. N. lat. 38° 20′. E. long. 15° 23′.

MILBANK'S Sound, an inlet in the North Pacific ocean, between Point Day and Cape Swaine.

MILBORNE-Port, a borough-town and pariſh in the hundred of Honethorne, and county of Somerſet, England. The former ſtands on one of the branches of the river Parret, at the diſtance of ten miles from Ilcheſter, and two from Sherborne, in Dorſetſhire. This place is of great antiquity, having been a borough of conſiderable importance prior to the Conqueſt; after which event it loſt much of its conſequence, though it retained all its former privileges till the reign of Edward III., by whom it was deprived of the right of ſending members to parliament. In the reign of Charles I., however, that franchiſe was reſtored; and it now returns two repreſentatives, who are choſen by the inhabitants paying ſcot and lot. The government of this town is veſted in the owners of nine bailiwicks, who are lords thereof, aſſiſted by two deputy bailiffs, two conſtables, and ſeveral other inferior officers. Beſides theſe there is likewiſe an aſſociation within the borough, conſiſting of nine perſons, two ſtewards, and ſeven aſſiſtants, who are privileged to hold property in their corporate capacity, for the benefit of the poor.

The buildings of Milhorne-Port are chiefly diſpoſed in four ſtreets, the principal one of which, called High Street, is of conſiderable width, but extremely irregular. In this ſtreet ſtands the guild-hall, an ancient edifice, having a doorcaſe partly of Saxon and partly of Norman architecture. The old market-houſe is now converted into warehouſes, and there is no regular market now held. The church, an ancient ſtructure, built in the form of a croſs, is ſurmounted by a very maſſive quadrangular tower, ſupported by two pointed and two ſemi-circular arches. In the north aiſle are ſeveral handſome monuments, in honour of the Medlycot family. On opening a plot of ground near the churchyard, for the purpoſe of building, ſixty bodies of men and women were diſcovered, arranged in regular rows, which, from the want of coffins, are ſuppoſed to have been buried at the time of the great plague.

Beſides the borough, the pariſh of Milborne-Port contains two conſiderable villages, called Kingſburg-Regis and Milborne-Wyke. The former has land-tax and parochial aſſeſſments peculiar to itſelf; and there is held here an annual court-baron, wherein the lords' rents are paid, preſentments made, and a conſtable, tything-man, and hayward appointed. The lands in this vicinity are moſtly arable, and in a high ſtate of cultivation and fertility.

According to the parliamentary returns of 1801, the total population of this pariſh amounted to 953 perſons, 440 males and 513 females; of which number 577 were engaged in different branches of trade, and 200 in agriculture. Collinſon's Hiſtory and Antiquities of Somerſetſhire, vol. ii. 3 vols. 4to. Maton's Weſtern Counties, vol. ii. 8vo.

MILBOURN, Luke, in *Biography*, an Engliſh divine, was the ſon of Mr. Luke Milbourn, a nonconformiſt miniſter, who was ejected from the living of Wroxhall, in Warwickſhire, in 1662, and died at Newington in 1667. His ſon received a good education, became maſter of arts, and obtained the rectory of St. Ethelburg in London. He publiſhed ſermons and theological tracts, 2 vols. 8vo.; a poetical verſion of the Pſalms; and ſeveral poems, for which Pope gives him a place in the Dunciad. He died in 1720.

MILCE, in *Geography*, a town of Poland, in Volhynia; 34 miles N.N.W. of Lucko.

MILDEN. See Moudon.

MILDENHALL, a market-town and pariſh in the hundred of Lackford, and county of Suffolk, England, is ſituated on the river Lark, at the diſtance of 12 miles from Bury, and 70 from London. The pariſh is of great extent, from the diſperſed arrangement of its ſtreets, which in fact form a ſeries of little villages. That part of the town called the Borough, or High-town Mildenhall, is its principal diviſion, and contains both the church and the manor-houſe. The former is a very large and handſome ſtructure, and has a rich roof of carved work, and a lofty tower, and contains a variety of monuments in honour of the family of the Norths. This church is ſuppoſed to be of very ancient foundation, and is much admired for its architecture. The manor-houſe, likewiſe an old edifice, but greatly altered and repaired of late years, conſtitutes the family reſidence of ſir Thomas Charles Bunbury, bart., who was one of the repreſentatives for the county in the laſt parliament. The ancient manſion of the Norths here has a gallery in front, extending the whole length of the houſe. This town was much injured by a fire, which broke out on the 17th of May 1507, and in a few hours conſumed 37 dwelling houſes, beſides barns, ſtables, and other appurtenances.

Mildenhall is the chief town of the hundred, and, according to the parliamentary returns of 1801, contained a population of 2283 perſons, 1095 males and 1188 females; of which number 390 were returned as engaged in agriculture, and 147 in different branches of trade and manufactures. The petty ſeſſions are held here, as well as a weekly market on Friday. This town has furniſhed London with two lord mayors, Henry Barton and William Gregory; the former of whom held that honourable office in 1428, and the latter in 1451.

The vicinity of Mildenhall preſents to the view a flat, open country, wholly devoid of any intereſting features, except a few family-ſeats, the chief of which are Ickworth, Ruſhbrook, and Culford. Ickworth is diſtinguiſhed for its noble park, which is no leſs than ten miles in circumference. Kirby's Suffolk Traveller, 8vo. 1764. Carliſle's Topographical Dictionary.

MILDEW, in *Agriculture*, a diſeaſe frequently deſtructive to corn, pulſe, and other crops.

M. Duhamel ſtates, that “it attacks the blades and ſtems of corn, which it covers with a powder of the colour of ruſt of iron, when at the height of their vegetation. This ſubſtance does not adhere ſtrongly to the blades; for he has ſeen the hair of white ſpaniels full of this powder, after they have run through a field attacked with this diſeaſe. It is likewiſe known, that if the infected wheat is waſhed by a plentiful rain, the ruſt diſappears almoſt entirely, and the grain ſuffers little from it. The French give it the name of ruſt, from the colour of the powder, and it ſeems to be the ſame diſtemper, which the Roman writers term *rubigo*. He adds, that the cauſe of this diſtemper is uſually ſaid to be dry gloomy weather, happening while the corn is at the height of its vegetation; and in effect, he has many times obſerved, that when a hot ſun has ſucceeded ſuch dry hazy weather, corn was ruſted within a few days afterwards. It is not common in clear, dry, hot years: but when the ſpring is wet, the fineſt fields of wheat run great hazard of being deſtroyed by it, which generally appears upon the breaking out of the ſun in the morning, after cloſe and ſultry weather, during which there has not been any dew. The ruſty powder then gathers upon the blades in ſuch quantities as to cover the earth around. M. de Chateauvieux cut off the mildewed blades, and found the trial anſwer: the ſame plants produced new blades, and throve much better than thoſe on which this operation had not been performed, but this cannot be done, except when the corn is very young. It is very fatal; as the fineſt wheat is ſuddenly brought almoſt to nothing, when it is entirely attacked with it.

“If it attacks the plants while they are young, and before their ſtems begin to riſe, the miſchief is ſometimes not very great, provided there comes on a ſeaſon favourable to their farther growth. In this caſe they are only weakened, as if they had been fed or mowed. They ſhoot out anew, and produce ears; though their ſtraw is ſhorter, and thoſe ears are ſmaller than they would otherwiſe have been. But if both blades and ſtalks are mildewed at the ſame time, the further growth of the plant is ſtopt and the grain gets ſcarcely any more nouriſhment; ſo that the crop is exceedingly diminiſhed.”

It was obſerved that, “in the autumns of 1753 and 1754, when the corn was ruſted, the ſecond crop of hay was ſo likewiſe. The graſs turned from a fine green to the ugly ruſty colour of the corn: it was covered with the ſame kind of powder, and its quantity diminiſhed ſenſibly every day; and as the whole of a field of corn is not uſually affected at the ſame time, ſo this diſtemper extended only to ſome parts of the meadow.”

“The cauſe of this diſtemper is undoubtedly the ſame in corn and in graſs; but its effect is not exactly ſimilar. It may deſtroy annual plants, ſuch as corn, entirely; but in perennials, like graſs, it deſtroys only the leaves or blades. May not the preſervation of theſe laſt be owing to the taking off thoſe leaves or blades, when they are cut for hay? But this is only conjecture; for it is confeſſed, that he has not yet made any obſervation on this head.

It may be noticed that theſe cauſes are far from being ſatisfactory; but it is a difficult enquiry, and one which has lately, eſpecially by botanical writers, been conſidered in a very different point of view. The facts that have been lately preſented to the public on this ſubject, ſhew that it is not much influenced by ſoil, ſituation, or the nature of the climate. The anſwers that have been given to different enquiries on this matter, may probably lead to ſome uſeful concluſions. On this ſubject Mr. Chatterton ſtates, in the 44th volume of the Annals of Agriculture, that “1. From what he has ſeen, and heard from others, it appears that all ſoils in his neighbourhood, Yorkſhire, have had mildewed crops upon them; but as far as he can judge, the heavy clays, which had a good fallow, have eſcaped the beſt.” But it is afterwards obſerved, that though “this was the caſe in ſome pariſhes about him, yet, for the moſt part, in the Eaſt Riding they ſuffered more ſeverely than any others, upon whatever ſoil: the reaſon ſeems to be, that in general they were more luxuriant, and laid ſome time before they were ripe. And he alſo underſtands that crops on all ſoils (where thrown down) were the moſt affected with the diſeaſe, if it may be ſo called; from which it ſhould ſeem not to ariſe from any previous cauſe, ſuch as the ſeaſon of ſowing, the difference of ſeed or manure, &c., but from ſome uncommon bad ſtate of the atmoſphere not long before harveſt, which moſt affected the ſtraw that reſted in an horizontal poſition. He has further learned from a perſon, who ſays he cut a field of wheat, which was affected with the mildew, while in a green ſtate (but not before the grain had arrived at a good degree of ſolidity), and that it is much better corn than others which were ſuffered to ſtand till ripe. On the ſea ſide, there appeared juſt before reaping time, but little (in compariſon) damaged in the vicinity of the beach; yet two or three miles from the ſea, it ſeemed as bad as in other places at a greater diſtance; and he has known, when all the gardens have been ruined by froſts in the ſpring, at a diſtance from the ſea, while thoſe upon the edge of the cliff have not ſuffered at all.”

And it is afterwards obſerved, 2. That “both early and late ſown crops have ſuffered; but which have ſuffered moſt is hard to aſcertain.

3. “That it is not eaſy to ſay, what ſituations have been moſt affected with mildew; it may be ſaid all are nearly the ſame: he has obſerved upon the wolds in Yorkſhire a great deal that would not pay for thraſhing; ſo bad was it, that hens would prefer ſhelling oats for their broods, rather than pick up the wheat that lay about them; and in the low lands at the foot of the wolds, both on ſtrong and light ſoils, much of the ſtraw appeared black in many fields.

4. “It is ſuppoſed, that both thick and thin ſown crops have been equally affected.

5. “He imagines, from what he has heard, that old or new ſeed had no effect.

6. “That this ſubject ſeems to be enveloped in myſtery, as ſeveral perſons in this neighbourhood have had two fields of wheat adjoining each other—ſituations and ſoils alike—management ſimilar in every reſpect, only not all ſown at the ſame time—yet both may be ſaid to have been ſown in good ſeaſon: the one field entirely eſcaped the mildew, the other ſo much damaged, that it was not worth thraſhing. Something might here be advanced on earlier or later ſowing; but, perhaps, not any thing that could in the leaſt guide the farmer in his future management, as ſeaſons are ſo various.

7. “That the crops of both kinds of land have ſuffered ſeverely, and in ſome places both have eſcaped; without a general ſurvey, it is hard to decide.

8. “But he has not heard of any difference in crops ariſing from difference of manure; he has not, however, inquired much into this matter.

9. “He has not heard of the different kinds of ſeed being different in regard to mildew.”

And the reſults of the inquiries of another writer in the ſame work are, that in Lincolnſhire the ſoils moſt liable to it, are 1. “In general light, loamy, and rich ones. 2. Late ſown crops. 3. That there is very little difference in ſituations, but if any, high ones have the advantage. 4. That the quantity of ſeed has little or no advantage; but drilling the ſeed has, on account of the greater and uniform depth. 5. That he never knew any difference between old and new ſeed, with regard to the mildew in wheat. 6. That he attributes the ſole cauſe of the mildew in wheat to mild winters, and to the inflammation of oxygen gas at the eve of harveſt. 7. That fallow crops on ſtrong clay ſoils have been leaſt affected. 8. That all kinds of manures diſpoſe wheat to mildew in ſuch ſeaſons; lime in ſome degree prevents it. 9. That he has no knowledge of the barberry having any effect at all upon wheat. 10. That no kind of wheat that he knows of, is exempted wholly from the mildew. 11. That early cutting from early ſowing, has the greateſt advantage, but not before the milk in the grain is completely coagulated."

It is alſo ſtated, 1. "That in Staffordſhire Dr. Lewis made ſome obſervations on the diſeaſe, and means of preventing it.

2. "That he does not think it of conſequence to the queſtion, at what time of the ſeaſon wheat is ſown, becauſe the period of the approach of the mildew cannot be even conjectured, as it has ever been variable. In this neighbourhood it ſo happened, that the wheat which was ſown in September and November 1803, ſuffered in general more from the mildew, than that of October.

3. "That high and conſequently ventilated ſituations are doubtleſs more likely to receive a remedy to the diſeaſe, than low and ſheltered ones; but he believes they were all equally affected.

4. "That it has not appeared, that any particular mode of ſowing has been a preſervative to the crop. That drilled corn, rather than broad-caſt, is more eaſily cured, muſt be granted, if the drill be wide enough to admit of a perſon to ſet his foot between the rows, becauſe with a long pole, which, by means of ſtraps, might be ſuſpended from his ſhoulders acroſs his breaſt to a proper height, he might bruſh off the greater part of the dew, as he walked up and down, to the extent of three yards on each hand: and indeed, in a field of broad-caſt, the ſame means might economically be purſued, as it would ſurely anſwer to deſtroy a part of the diſeaſed grain, which if left to itſelf would be good for but little, to ſave the remainder. Thoſe crops which were ſtrong and thick, ſuffered, in general, conſiderably more than thoſe which were thinner. 5. That it does not appear to him, that either new or old ſeed is of conſequence to the queſtion. 6. That the cauſe exiſts in the atmoſphere, as he has already ſaid. He has no doubt, and he thinks, we may fairly conclude its being of that kind, which is termed phlogiſticated; that particularly in the ſummer it is ſo loaded with the putrid effluvia of animal and vegetable ſubſtances, as to be incapable of attaining the height neceſſary to undergo the chemical proceſs of purification by the action of the vitriolic, nitric, and muriatic particles with which the air of the higher regions is charged; and that, therefore, it deſcends in that undepurated and unwholeſome fluid which we term mildew. It has frequently been obſerved, that in thoſe ſeaſons, which have been preceded by a ſevere winter, the air is more pure than when the winter has been mild; but whether the mildew has been more prevalent after a hard or temperate winter, has not yet made a part of his obſervation. Late froſts and fogs are generally reckoned inimical to vegetation, though he never heard it ſuggeſted, that they are in any degree connected with the ſucceeding mildew. That crops on fallows and thoſe on layers have ſhared an equal fate. 8. Nor has there been any difference in conſequence of different kinds of manure. 9. That the barberry tree is of ſuch rare growth in this pariſh, that if it had any effect upon wheat, it could not but have been aſcertained long ſince, beyond controverſy; but, when once an idea has gone abroad, every inſtance in favour is deemed a proof, while the many in contradiction are never advanced. He heſitates not to pronounce, that it has *no effect* on wheat. Mr. Barker of Congreve had laſt year, within 50 yards of his barberry tree, one of the beſt crops of wheat in this neighbourhood; while Mr. Keeling, his next neighbour, at 200 yards diſtance from the ſame tree, and near no other, had a crop as bad as Mr. Barker's was the contrary. He knows not of five barberry trees in this pariſh, but there were more than 50 times as many bad crops; which proportion he dare venture to ſay, will be found to bear throughout England. How then can it be concluded, that the tree is ſo peculiarly pernicious in this inſtance? Since writing the above, he has received an acconnt of Mr. Makcrell, who lives in the pariſh of Brewood, having had a fine piece of wheat, not in the leaſt affected by the mildew, though immediately in the vicinity of a hedge almoſt entirely compoſed of barberry buſhes. 10. He has never either ſeen or heard of any exception in favour of wheat of the bearded kind, nor indeed of any other; nor yet that any one ſort ſuffered particularly. 11. That as the mildew totally prevents thoſe ears, which it affects, from coming to any perfection, it does not ſtrike him, that the period of its being reaped can be of any conſequence, and if not it muſt be beſt to let it ſtand till the ſtraw has received its full benefit."

And the ſtatements of Mr. Lumbert on this ſubject are, "1. That no ſoil is peculiar to the mildew. 2. That late ſown crops have generally ſuffered moſt; but there have been inſtances of the reverſe. 3. That low and ſheltered ſituations have ſuffered moſt; but this has been, perhaps, attributable to the wheat growing more luxuriantly, from its ſituation, than the ſtamina of the land could ſupport when it was arriving at maturity: to this may be added a want of ventilation. 4. That a huge crop may be conſidered a cauſe of mildew; for an unkind ſeaſon, or want of ſtamina in the land, may check the vegetable mucilage before the corn is completely filled, and thereby produce a prediſpoſition to mildew. 5. That no difference is obſerved in new and old ſeed, where the ſituations have been ſimilar. 6. That the firſt cauſe of mildew is a prediſpoſition in the wheat. This prediſpoſition is created by a decreaſe of mucilage in the ſtraw, which allows the watery particles to inſinuate themſelves, and ſtill further check the circulation of the juices in the ſtem that are neceſſary to the perfection of the grain, and had before become languid from the unkindneſs of the ſeaſon, or the feebleneſs of the ſoil. When the watery particles have inſinuated themſelves, the ſtraw becomes diſcoloured, and he has no doubt but a complete putrefaction would immediately ſucceed it, if it were not prevented by a circulation of air. At all times during its growth, barley and oat ſtraw appears to have ſufficient mucilage in itſelf to reſiſt the effects of the watery particles; but when it is cut it becomes like the ſtubble in the fields, and cannot much longer reſiſt it. 7. That fallows and layers have been equally liable. 8. He has obſerved, that an over luxuriant growth in the ſpring is favourable to the mildew, and has noticed that that luxuriance may be produced by particular manure, ſuch as green vetches ploughed in, &c. which ſeem to cauſe a conſiderable fermentation in the ſoil, and produce a rapid vegetation for a ſhort time. 9. That early cutting and laying down is moſt clearly beneficial; and if the wheat is ſeverely affected, it is almoſt impoſſible to cut it too ſoon."

And farther, the facts collected by profeſſor Balſamo in

Sicily, and detailed in the ſame work, lead to the ſame concluſions. For he ſtates it as "evident that the mildew was common to the grain of all Sicily, without exception of kind, of ſoil, expoſition, or other circumſtances. It attacked, in different degrees, the barley, oats, and the plants of meadows; almoſt all plants, whether ſpontaneous or cultivated: and this conſideration proves to him that the opinion which attributes the diſtemper to fogs and dews, is erroneous; nor is it at all probable, that any meteor ſhould, *at one time*, be the cauſe, in places which, from the vicinity of mountains, rivers, and a multitude of other circumſtances, had a very different climate from each other; and from the obſervations regiſtered at the Royal Obſervatory, it appears, that, as every one knows, the fogs were rather heavier and more frequent in April and May 1803, when no mildew enſued, than in the ſame months in 1804, when the great miſchief followed. And many caſes have occurred to him of ſpots peculiarly given to fogs, and from which the countrymen argued a ruinous mildew, yet bright and clear crops were produced, while ſpots more free from fogs have been attacked." The ſame reaſoning may "be applied to dews; theſe are more frequent and copious in the vicinity of rivers and ſtagnant waters, than in other places; and it is true, that in many of theſe laſt, and in more than one of the firſt, the grain better reſiſted the mildew. Brucato is a humid diſtrict, waſhed by rivers, and chequered by marſhes, which render the air inſalubrious; yet it produced this year of mildew a reaſonable crop of grain. And he obſerved at Margana, that the wheat upon a farm ſituated on the banks of a river, and very humid, with a bad air, was generally better than in the neighbouring country of Vicari, notably more dry from its ſituation. Grain that is thin upon the ground, is more ſubject to mildew than that which from thickneſs retains much more of the dew." It is ſtated that the "Abbé Rozier, in his voluminous Dictionary, ſays, that the mildew is cauſed by the drops of water formed by fogs and dews when diſſipated by a hot ſun; but in Sicily, the ſun in April, and much more in May and June, is always active; and our fogs in May are proverbial." And "in travelling in the beginning of ſummer, through the country, it is viſible, that the mildew, in its various degrees, is connected with the ſoil, and the divers methods of cultivation; but the variety of effects is myſterious and inexplicable, on the ſuppoſition that the cauſe is external to the plant."

After ſome remarks on the nature of the diſeaſe, Mr. Marſhall ſays, that a certain prevention of it would be a diſcovery worth millions to the country. "Until this be made, let the grower of wheat, not only endeavour to ſow early; but let him look narrowly to his crop, during the critical time of the filling of the grain; and whenever he may perceive it to be ſmitten with the diſeaſe, let him loſe no time in cutting it: ſuffering it to lie on the ſtubble, until the ſtraw be firm and criſp enough to be ſet in ſheaves, without adhering in the binding places: allowing it to remain in the field, until the grain ſhall have received the nutriment which the ſtraw may be able to impart. Where wheat has been grown on 'lammas land,' and the ground obliged to be cleared by the firſt of Auguſt, crops have been known to be cut, 'as green as graſs,' and to be carried off and ſpread upon graſs land to dry. Yet the grain has been found to mature; and always to afford a fine ſkinned beautiful ſample. Rye-graſs that is cut, even while in bloſſom, is well known to mature its ſeeds, with the ſap that is lodged in the ſtems. Hence there is nothing to fear, from cutting wheat or corn, before the ſtraw be ripe." The opinion of Mr. Young is likewiſe the ſame; he therefore adviſes the farmer to be very attentive to his wheat crops in July, as "they are every where liable to this fatal diſtemper, which admits but of one cure or check, and that is, reaping it as ſoon as it is ſtruck. The capital managers in Suffolk, know well, that every hour the wheat ſtands after the mildew appears, is miſchievous to the crop. It ſhould be cut, though quite green, as it is found that the grain fills after it is cut, and ripens in a manner that thoſe would not conceive who had not tried the experiment, which he has done many times; reaping ſo early, that the labourers pronounced he ſhould have nothing but hens'-meat. They were always miſtaken, for the ſample proved good, while others, who left it longer, ſuffered ſeverely. The fact is now pretty generally admitted."

It is further ſtated by the firſt of theſe writers, "that the operation of this diſeaſe is carried on by the fungus tribe, evidently appears, from the ingenious and perſevering labours of botaniſts," as lately ſhewn by ſir Joſeph Banks. (See BLIGHT.) "But fungi, it is equally evident, are an effect, not the cauſe of the diſeaſe. They are the vermin of the more perfect vegetables; and faſten on them, whether in a dead, or in a diſeaſed ſtate; but ſeldom while they are in full health and vigour. Their minute and volatile ſeeds may be ſaid to be every where preſent, ready to produce their kind wherever they may find a genial matrix. Such, at leaſt, appears to be the nature of the fungus, or fungi, of wheat; for it may be liable to the attack of more than one ſpecies. In a dry warm ſummer, which is well known to be favourable to the health, vigour, and productiveneſs of the wheat crop, the ſeeds of fungi are harmleſs, ſo long as the fine weather continues. On the contrary, in a cold wet ſeaſon, which gives languor and weakneſs to the wheat plants, few crops eſcape, entirely, their deſtructive effects. A ſtanding crop not unfrequently eſcapes, while plots that are lodged in the ſame field, eſpecially in pits and hollow places, become liable to their attack. And, by the facts above ſtated, we plainly ſee, that even ſtrong healthy crops may, in a few days, or perhaps in a few hours, be rendered liable to be aſſailed; not progreſſively, as by an infectious diſeaſe; but at once, as by a *blaſt* or *blight*. In the ſtate of the atmoſphere we are to look for the cauſe of the diſeaſe, in a *ſtanding crop:* and nothing is ſo likely to bring on the fatal prediſpoſition of the plants as a ſucceſſion of cold rains, while the grain is forming. The coolneſs neceſſarily gives a check to the rich saccharine juices which are then riſing towards the ear; and the moiſture may, at the ſame time, aſſiſt the ſeeds of the fungi to germinate and take root. Thus reaſon and facts concur, in pointing out the cauſe, and the operation of the diſeaſe. There appear to be two reaſons why corn which happens to be ſtruck with this diſeaſe, in a dry warm ſummer, is expoſed to exceſſive injury; as facts pretty evidently ſhew that it is. The habits of the plants render them more ſuſceptible of injury, their rich juices more liable to be checked; and the ſeeds of fungi, it is probable, are more widely, if not more plentifully, diſtributed, by ſuch a ſtate of the air; than they are by a cool moiſt atmoſphere. The natural event is too well known: and it is the buſineſs of art to endeavour to prevent it."

Conſequently "if by cutting down the crop, as ſoon as it is found to be diſeaſed, the operation can be ſtopped, as experience, in different inſtances, has ſhewn it may, the remedy is eaſy. It may be aſked, in what manner the remedy is thus effected. But to the practical farmer, the fact is all that is required. To him, it is equally indifferent, to know the operation of the remedy, as the operation of the diſeaſe. Thoſe who have profited by the remedy here recommended, believe, that it 'kills the mildew.' And if it ſhall appear that the fungus of wheat requires a free ſupply of air to keep it alive, or in a ſtate of health and vigour, the effect of cutting down the crop will be explained. It will perhaps be found, by experience, that the cloſer it is allowed to lie upon the ground, and the ſooner it is bound up in ſheaves (provided the natural aſcent of the ſap to the ear be not interrupted), the more effectual and complete will be the remedy. Further, on the evidence of attentive obſervation, if wheat, which has been attacked by this diſeaſe, be ſuffered to remain in the field, with the ears expoſed, until it may have received the ameliorating influence of dews, or moderate rain (to ſoften, relax, and aſſiſt the natural riſe of the ſap), the more productive it will probably become. And it may be ſtill further added, that grain which is cut while under-ripe, is leſs liable to be injured in the field by moiſt weather, than that which has ſtood until it be fully or over-ripe." And a "probable mean of prevention is that of inducing early ripeneſs (for reaſons above offered): either by ſowing early; or by forcing manures; or by ſelecting and eſtabliſhing early varieties, of wheat moſt eſpecially; as early varieties of peaſe, and other eſculent plants, are raiſed by gardeners: a work which only requires ordinary attention; and which, it is hoped, will, without delay, be ſet about and encouraged by every attentive grower of wheat, and every promoter of rural improvements, in the united kingdom." The method of raiſing and improving varieties of which will be afterwards noticed. See WHEAT.

MILDEW, in *Gardening*, is a vegetable diſeaſe, very hurtful to different kinds of trees and plants. It is ſuppoſed to proceed from different cauſes: ſome conſider it as a kind of thick clammy moiſture, which falls on, or rather tranſpires from, the leaves and bloſſoms of plants, which, by ſtopping up the pores, prevents perſpiration, and hinders their growth. But the author of "The Philoſophy of Gardening" ſuſpects it to be a plant of the fungus kind, which grows without light or change of air, and with its roots penetrates the veſſels of the vegetables to which it adheres, which are probably previouſly diſeaſed, and thus deprives them of their due nouriſhment. But what is commonly denominated mildew, is an inſect which is frequently found in vaſt numbers feeding upon the effuſed moiſture. In a treatiſe upon this diſeaſe by M. Segar, it is conceived to be of a very ſharp corroſive nature, and by its acrimony to hinder the circulation of the nutritious ſap, in conſequence of which the leaves begin to fade, and the bloſſoms and fruit to be greatly injured.

It is conceived by the firſt mentioned author, that the beſt method of removing it is by admitting more light and air, by proper thinning or pruning, ſo as to reſtore the natural vigour of the plants.

It is noticed by Mr. Forſyth, that, "contrary to the common opinion, trees are more liable to mildew on ſouth and weſt walls, than on an eaſt wall;" and that he has frequently removed ſuch trees from a ſouth or weſt wall, to a north or eaſt wall, where they have frequently recovered.

It is adviſed, that "whenever danger is apprehended, to waſh or ſprinkle the trees well with urine and lime-water mixed; and when the young and tender ſhoots are much infected, to waſh them well with a woollen cloth dipped in the following mixture, ſo as to clear them of all the glutinous matter, that their reſpiration and perſpiration may not be obſtructed.

"Take of tobacco one pound, ſulphur two pounds, unſlaked lime one peck, and about a pound of elder-buds; pour on them ten gallons of boiling water; cover it cloſe, and let it ſtand till cold; then add as much cold water as will fill a hogſhead. It ſhould ſtand two or three days to ſettle, when the ſcum may be taken off, and it is fit for uſe.

And "there is a ſweet ſaccharine ſubſtance found on the leaves of certain trees, which is generally but erroneouſly ſuppoſed to fall from heaven like dew. It is known by the title of *honey-dew*. There are ſuppoſed to be two kinds of it, one of which," Mr. Forſyth thinks, "tranſpires from the leaves of the trees where it is found; and the other is the excrement of a ſmall inſect called a vine-fretter, a ſpecies of the aphis. Bees and ants are very fond of both theſe kinds of honey-dew." As this exudation, "by its viſcous quality, cloſes up the pores, and ſtops the perſpiration of trees, it muſt of courſe be very hurtful to them."

This is a vegetable diſeaſe, which ſhould, in his opinion, be treated in the ſame manner as the mildew, by waſhing at the ſame times.

The nature of mildew is more fully explained in ſpeaking of it as relating to agriculture. See the preceding article.

MILDMAY, *Sir* WALTER, in *Biography*, the founder of Emanuel college, Cambridge, was ſurveyor of the court of augmentations in the reign of Henry VII., and privy counſellor, chancellor, and under treaſurer of the exchequer in that of Elizabeth. He is celebrated for his uncommon merits in his private and public character. Sir Walter died in 1589.

MILDORFF, in *Geography*, a town of Auſtria; ten miles W. of Crems.

MILE′, FRANCESCO, in *Biography*, born at Antwerp in 1644, was a very ingenious landſcape painter, who made the heroic ſtyle of Nicolo Pouſſin his model, and ſucceeded to a very conſiderable degree in competition with him. In tones of colour he frequently ſurpaſſes him, and more nearly approaches Titian. He fails in the conception of ſcenery, and the compoſition of his forms.

He was poiſoned, by ſome envious perſon, at the early age of 36. Had he been ſpared for a longer period, we may reaſonably expect he would have completely rivalled his great predeceſſor.

MILE, in *Geography*, a long meaſure, whereby the Engliſh, Italians, and ſome other nations, uſe to expreſs the diſtance between places. See MEASURE.

In which ſenſe mile is uſed to the ſame purpoſe with league, uſed by the French and other nations.

The mile is of different extent in different countries. The geographical or Italian mile contains a thouſand geometrical paces, mille paſſus, whence the term mile is derived.

The Engliſh mile conſiſts of eight furlongs, each furlong of forty poles, and each pole of ſixteen feet and a half: ſo that it is equal to one thouſand ſeven hundred and ſixty yards, or five thouſand two hundred and eighty feet.

The mile employed by the Romans in Great Britain, and reſtored by Henry VII., was our preſent Engliſh mile. A degree of the meridian in England, N. lat. 52°, according to the late meaſurement of colonel Mudge, is 121,640 yards, or 69.114 miles. A geographical or ſea mile is the 60th part of ſuch a degree, *i. e.* 2027⅓ yards; and three ſea-miles make a league. A degree of the meridian in N. lat. 45°, as meaſured in France in 1796, is 57008 toiſes = 121512 yards = 69.092 Engliſh miles.

Caſimir has made a curious reduction of the miles, or leagues, of the ſeveral countries in Europe into Roman feet, which are equal to the Rhinland feet generally uſed throughout the north.

The

	Feet.
The mile of Italy	50,000
of England	5,454
of Scotland	6.000
of Sweden	30,000
of Muſcovy	3,750
of Lithuania	18,500
of Poland	19,850
of Germany, the ſmall	20,000
the middle	22,500

	Feet.
The mile of Germany, the largeſt	25,000
of France	15.750
of Spain	21,270
of Burgundy	18,000
of Flanders	20,000
of Holland	24,000
of Perſia, called alſo paraſanga	18,750
of Egypt	25,000

The following Table ſhews the Length of Miles, Leagues, &c. Ancient and Modern, in Engliſh Yards.

Ancient Roman mile	1610.348
Olympic ſtadium = $\frac{1}{8}$th of an ancient Roman mile	201.2935
Stadium = $\frac{1}{10}$th of an ancient Roman mile	161.0348
Stadium = 1100dth part of a degree	111.2
Jewiſh riſin, of which $7\frac{1}{2}$ = an ancient Roman mile	214.713
Gallic leuca = $1\frac{1}{2}$ ancient Roman mile	2415.522
German raſt, or common league in France = 2 Gallic leuca	4831.044
Perſian paraſang = 2 Gallic leagues	4831.044
Egyptian ſchœne = 4 ancient Roman miles	6441.392
German league, or that of Scandinavia = 2 raſts	9662 088
The mile or league of Germany = 200 Rheniſh yards	8239.846
Great Arabian mile, uſed in Paleſtine in the time of the cruſades, rated at $1\frac{1}{2}$ ancient Roman mile	2415.713
Modern Roman mile	1628.466
Modern Greek mile of 7 Olympic ſtadia	1409.0545
Modern French league = 2500 toiſes	5328.75
Mile of Turkey, and the common werſt of Ruſſia, ſuppoſing it ſeven Olympic ſtadia	1409.0545
League of Spain = 4 ancient Roman miles	6441.392
Large league of Spain = 5 ditto	8051.74

For other meaſures of a mile, ſee Tables under Meaſure.

Mile-*ſtone*. This article is introduced ſolely for the purpoſe of ſuggeſting an improvement under the title of *Mile-hut*. The comfort and convenience which travellers derive from mile-ſtones is well known, and the dilapidations which they are ſubject to, are very generally felt as a grievance. Inſtead, however, of pointing out remedies for the evil (which might eaſily be done), we wiſh to ſee them entirely ſuperſeded by ſubſtituting mile-huts in the place of them. In every new act of parliament for a turnpike-road, or in any amended act, let it be a ſtanding order that a clauſe ſhall be introduced, obliging the truſtees to erect mile-huts on the whole line of road.

They ſhould be uniform and cheap; the whole coſt not to exiſt forty pounds: they ſhould be lime-whitened in the manner of the buildings in South Wales. The door to be the place of meaſurement, over which a painted board, with letters and figures very legible, denoting the place, thus, {London 5 ☜ / Barnet 6 ☞}, and underneath the name of the cottager, "Jones," in a different character. Each hut ſhould be furniſhed with hammers, a ſaw, a ſcrew-wrench, nails, cords, twine, and ſundry parts of harneſs to be paid for at low fixed rates by thoſe requiring them, and the keepers to be under ſimilar regulations for good behaviour as toll collectors. In winter each hut to have a lamp burning all night.

The advantages attending ſuch a plan are more than can readily be conceived. It would inſure a large ſupply of cheap cottages all over the kingdom, and would be particularly convenient for the labourers who repair the roads, who would never be more than half a mile, when at work, from their home. The truſtees would be ſufficiently remunerated by an abatement in the wages, or an eaſy rent to the occupier. Coaches, horſes, and every ſort of travellers meeting with accidents, or needing aſſiſtance, would always be within half a mile of help, and a certain knowledge of where it was to be had. But it is needleſs to enlarge, and all we wiſh is, that ſome member of parliament would endeavour to get the experiment tried upon ſome one ſtage, and we have no doubt it would ſoon come into general uſe.

MILECZA, in *Geography*, a town of Lithuania, in the palatinate of Wilna; 76 miles E. of Wilna.

MI-LEI, a town of China, of the ſecond rank, in the province of Yun-nan. N. lat. 24° 34′. E. long. 103° 14′.

MILENT, a town of Pruſſia, in the province of Pomerelia; 5 miles S.W. of Marienburg.

MILES, a Latin term, which, in its general import, ſignifies *ſoldier*.

In our Engliſh laws and cuſtoms, miles is peculiarly appropriated to a knight, called alſo *eques*.

MILESARA, in *Geography*, a town of Aſiatic Turkey, in the province of Diarbekir; 24 miles W. of Ourfa.

MILESBURY, a poſt-town of America, in Mifflin county, Pennſylvania; 262 miles from Waſhington.

MILESIMO, a town of France, in the department of the Stura; 10 miles N.E. of Ceva.

MILETIN, a town of Bohemia, in the circle of Konigingratz; 12 miles N.N.W. of Konigingratz.

MILETO, a town of Naples, in Calabria Ultra, the ſee of a biſhop; ſaid to have been built by the Mileſians, after Darius had deſtroyed their city. It was demoliſhed by an earthquake in the year 1783; 22 miles S.S.W. of Squillace. N. lat. 38° 25′. E. long. 16° 25′.

MILETS, anciently *Miletus*, a town of Aſiatic Turkey, on the W. coaſt of Natolia, once a celebrated city of Aſia Minor, in Ionia. It was ſituated on the ſouthern bank of the gulf into which the Meander diſcharged itſelf; but this river gradually accumulated its depoſit in this gulf, that the town of Miletus was removed, in proceſs of time, more than a league within the land. The town of Miletus was N. of the Poſidæan promontory, S.E. of the promontory Trogilium, and W.S.W. of the town of Myus. This town was one of thoſe which the Greeks conquered on their arrival in Aſia. The mouth of the Meander, which was very diſtant from this town, was in the time of Pauſanias under the walls of Miletus. This capital of Ionia was adorned with ſuperb edifices, and was celebrated for its commerce, ſciences, and arts. It had a grand temple of Ceres. The tomb of Nelleus, the ſon of Codrus, king of Athens, by whom the town was founded, might be ſeen near the walls, upon the way that led to the temple of Apollo Didymæus. This temple was burnt by Xerxes, but rebuilt by the Mileſians on ſo large a ſcale, that, as Strabo reports, it was equal to a village in extent, whence it remained uncovered, but was ſurrounded by a thick grove, which was inhabited by the prieſts who ſerved the temple. The citadel conſtructed by Tiſſaphernes, was ſituated on the iſthmus which ſeparated the ancient town from the new. The theatre, though built of ſtones, was caſed with marble, and enriched with ſculptures. Of all theſe ſuperb edifices, there now remain merely mutilated marbles, half buried in the ground. Miletus was the native place of Thales, one of the ſeven wiſe men of Greece, and of Aſpaſia, the wife of Pericles. Venus had a temple at Miletus, and another in its vicinity. This city was anciently called Lelegeis, from the Leleges who inhabited it; afterwards Pitynda, from the quantity of pines which its territory produced; at a later period Anactoria; and laſt of all, Mileſos, and in Latin Miletus. This town became illuſtrious by the number of colonies which proceeded from it. The Mileſians, when free from a foreign yoke, were often reduced to a ſtate of miſerable vaſſalage by domeſtic tyrants. In the time of Antiochus II., king of Syria, we find that a perſon named Timarchus reigned in Miletus, and exerciſed great cruelties on the citizens, till he was driven thence by that prince, who, on that account, was honoured by the Mileſians with the ſurname of Θεος, or God. This town lies at the diſtance of 64 miles S. of Smyrna. N. lat. 37° 22′. E. long. 27° 13′.

MILFOIL, in *Botany*, and the *Materia Medica*. See ACHILLEA.

MILFORD, or MILFORD *Haven*, in *Geography*, a ſea-port town ſituated in the pariſh of Stanton, hundred of Rhôs, and county of Pembroke. South Wales, is of very modern origin, having been founded ſince the year 1790, and raiſed to its preſent importance by the patriotic exertions of the honourable Mr. Greville, nephew to the late ſir William Hamilton, on whoſe property it ſtands. Happening to be here with his uncle in 1784, the penetrating and ſcientific eye of Mr. Greville quickly perceived the many natural advantages which this ſituation offered for a naval and commercial eſtabliſhment. He accordingly prevailed upon ſir William to apply to parliament for an act to enable him to ſet out legal quays, eſtabliſh markets, conſtruct docks, and in general to do every thing neceſſary for inſuring the proſperity of the intended town. This object being effected, the conduct of the undertaking was entirely committed to Mr. Greville, who immediately laid out the ground in allotments, according to a regular plan, and began his labours by the erection of a large inn or hotel. Numerous purchaſers quickly appeared, ſo that in leſs than ten years the town had made conſiderable progreſs, and began to aſſume an air of neatneſs and conſequence. Since that period Milford has continued gradually increaſing in extent and importance. Many improvements have been made in the haven for the greater ſafety and accommodation of the ſhipping; and a dock-yard has been formed at the ſuggeſtion of lord Spencer, where ſeveral large veſſels of war have been built and others repaired.

The ſituation of this town is moſt ſingularly beautiful, being ſeated on a ſmall promontory, the ſides of which deſcend gently to the water. The principal haven ſtretches itſelf to the ſouth, and preſents the appearance of a ſpacious lake. This harbour is one of the ſafeſt and moſt commodious in the world, and contains ſixteen creeks, five bays, and thirteen roads, where upwards of a thouſand ſail may ride in perfect ſecurity. The town at preſent conſiſts chiefly of three ſtreets, with croſſings, running in a direction from eaſt to weſt, and parallel with the ſhore of the haven. At the extremity of the lower row of houſes ſtands the church, an handſome edifice, conſiſting of a nave, chancel, and two ſide aiſles. Several of the windows in this church exhibit eſcutcheons of painted glaſs, diſplaying the arms of Barlow, Hamilton, and Greville. In the chancel ſtands an ancient vaſe of red porphyry, brought from Egypt by the learned Dr. Pococke, and intended for the baptiſmal font, but that idea not coinciding with the religious feelings of a conſiderable part of the congregation, another of Derbyſhire marble was fixed oppoſite to it for that purpoſe. Near the vaſe is placed a trunk of the mainmaſt of the L'Orient, the French admiral's flag ſhip, which was blown up at the battle of the Nile. At a ſhort diſtance eaſtward from the church ſtands the old chapel of St. Catharine, formerly dependent upon Stanton, the mother church. It is a very ancient building, having the nave vaulted into a pointed roof; and ſince the erection of the new chapel has been converted into a powder magazine. The market-houſe is a very neat ſtructure, as is likewiſe the cuſtom-houſe; the collection for which takes in both ſides of the haven from Milford town to the harbour's mouth, and round the coaſt of Bride's bay to St. David's. Two batteries for the defence of the town and haven have been lately erected, each of them mounting ſeven guns.

Milford is now the regular port for the mails from England to Waterford, for the conveyance of which five packets are ſtationed here, ſo that a daily communication is thereby kept up with Ireland. The chief trade of the town is its South ſea whale fiſhery, which is carried on with great ſucceſs by a colony of Quakers from the iſland of Nantucket, who were invited to ſettle here by Mr. Greville. They are, like moſt of their brethren, an induſtrious and well-diſpoſed people, and have greatly contributed by their exertions to the progreſs of the new eſtabliſhment. There is, likewiſe, ſome trade in wood and other ſtores requiſite for the equipment or ſupply of his majeſty's ſhips, or other veſſels which may find it neceſſary to put in here for repair or ſafety. There are two quays for the landing of goods, and extenſive ſtorehouſes for their reception, under the management of eſtabliſhed officers. Two markets are held in this town during the week, on Tueſday and Saturday, but there are no fairs. The family of Philips derive from hence the title of baron. For the encouragement of the ſcience of ſhip-building a boat-race was ſome years ago eſtabliſhed here under the auſpices of lord Cawdor and Mr. Greville. The prize for the winning boat of the firſt claſs of twenty feet keel, is a cup given by his lordſhip of the value of twenty-five or thirty pounds; and there is beſides an inferior prize for boats of a ſecond claſs from ſixteen to eighteen feet keel.

The neighbourhood of Milford exhibits a well incloſed and highly cultivated country. Several elegant villas belonging to the merchants of Milford contribute much to its beauty. The old town of Haking ſtands on the W. ſide of the influx, call Priory Pill. Near it is an elegant obſervatory built by Mr. Greville, and, with the mathematical ſchool contiguous to it, were placed under the direction of Mr. Firminger, who was for eight years ſole aſſiſtant to Dr. Maſkelyne. Here are likewiſe the ruins of the priory from whence the inlet derives its name. This religious eſtabliſhment owed its foundation to Adam de Rupe, or de la Roche, who appears to have been a man of power and conſequence in this diſtrict. It was dedicated to St. Mary and St. Buddoch for monks of the order of Tyrone, who in time forſook that ſtrict rule and became Benedictines. A ſmall portion of this edifice only now remains; moſt of the materials of which it was compoſed having been carried off within the memory of man, to aſſiſt in the erection of other buildings in the neighbourhood. The earl of Richmond, afterwards Henry VII., is ſaid to have landed at this place, in his enterpriſe againſt Richard III., on the ſeventh of Auguſt, 1485. On the eaſtern ſide of the Pill, or influx, ſtands Caſtle Pill, which was formerly a fortification for its protection. In the reign of queen Elizabeth it was reckoned among the caſtles in Pembrokeſhire; and is mentioned, in 1644, as one of the ſtrongeſt poſts which the royaliſts maintained in this part of the country. From the miſconduct of the garriſon, however, it was ſubſequently taken, after a ſhort reſiſtance, by a force apparently inadequate to the undertaking. The village of Stanton, which gives name to the pariſh in which Milford is ſituated, lies on the road between that town and Haverford-weſt. The church here was garriſoned during the civil wars by the troops of the parliament, with the view of interrupting the communication between Haverford-weſt and the fort already mentioned. According to the parliamentary returns of 1801, the whole population of this pariſh amounted to 1291 perſons, a great proportion of whom reſided in Milford. Fenton's Hiſtorical Tour through Pembrokeſhire, 1 vol. 4to. Carliſle's Topographical Dictionary of Wales, 1 vol. 4to.

Milford, a townſhip of America, in Mifflin county, Pennſylvania.—Alſo, a ſmall town in Worceſter county, Maſſachuſetts, 18 miles from Worceſter, containing 907 inhabitants.—Alſo, a poſt-town of the ſtate of Delaware, pleaſantly ſituated on the N. ſide of Maſpilion creek, about 12 miles W. of its mouth in Delaware bay; containing more than 100 houſes, inhabited by Epiſcopalians, Quakers, and Methodiſts.—Alſo, a town of Northampton county, Pennſylvania, laid out on the N.W. ſide of the Delaware, in an elevated ſituation, at Well's Ferry, 120 miles above Philadelphia. A paper-mill has been erected here by a Mr. Biddis, who has diſcovered the method of making paper and paſteboard by ſubſtituting a large proportion of ſaw-duſt in the compoſition.—Alſo, a poſt-town of Connecticut, in Long-iſland ſound, and in New Haven county, 13 miles S.W. of New Haven. The Indians call this town "Æopowage;" and it was ſettled in 1638. It contains an epiſcopal church, and two congregational churches.

Milford *Haven*, a deep bay on the coaſt of Nova Scotia, to the S.W., round the point of the ſtrait of Canſo.—Alſo, a bay on the N. coaſt of Virginia. N. lat. 37° 26′. W. long. 76° 20′.

MILHAU, a town of France, and principal place of a diſtrict, in the department of Aveyron, ſeated on the Tarn. In 1371, this town was taken by Edward III., king of England; 27 miles S.E. of Rodés. The place contains 6077, and the canton 10,443 inhabitants, on a territory of $297\frac{1}{2}$ kiliometres, in nine communes. N. lat. 44° 6′. E. long. 3° 10′.

MILHAUSEN, a town of the duchy of Stiria; 10 miles E. of Gratz.

MILI, a river of Sicily, which runs into the ſea, ſeven miles S. of Meſſina.—Alſo, a town of Thibet; 45 miles N.E. of Tchiatam.

MILIANI, a town of Africa, in the kingdom of Algiers; 22 miles S.E. Sherſhell.—Alſo, a river of Africa, in the kingdom of Tunis, which runs into the Mediterranean, about 10 miles S.E. of Tunis.

MILIARENSIS, in *Antiquity*, a ſilver coin of the empire, ſubſtituted by Conſtantine in the room of the denarius; and ſo called becauſe he fixed the price of the pound of gold at 1000 pieces of this new ſilver. But as he divided the pound of gold alſo into 72 ſolidi, each ſolidus really contained $13\frac{8}{9}$ miliarenſes, though it paſſed for 14; which difference between the real and current value of the ſolidus, in relation to the miliarenſes, muſt have occaſioned diſputes in the payment of ſmall ſums. To remedy this inconvenience, it was thought proper to alter the weight of the ſilver money, and having fixed the price of the pound of ſilver at five ſolidi, to coin ſixty pieces out of it, which retained the name miliarenſes, though the pound of gold was worth but 864. It does not appear how many miliarenſes Conſtantine coined out of the pound of ſilver: but if the piece of gold was nearly the ſame in his reign, as when five ſolidi were worth a pound of ſilver, the pound muſt have been worth $14\frac{2}{5}$ pounds of ſilver; and 1000 divided by $14\frac{2}{5}$ gives $69\frac{4}{9}$ for the number of miliarenſes coined out of the pound. Therefore it is probable, that Conſtantine's number was either 69 or 70. If the former, each piece ſhould weigh $73\frac{8}{23}$ troy grains; if the latter, $72\frac{3}{10}$. According to the former eſtimate, the proportion of gold to ſilver was always $14\frac{1}{2}$ to 1; according to the latter, $14\frac{2}{7}$ to 1. Phil. Tranſ. vol. lxi. part ii. p. 513. See **Follis**.

MILIARES Glandulæ, in *Anatomy*, glandular bodies diſtinguiſhed by their ſmall ſize; ſuch as the ſuppoſed glands of the ſkin, &c.

MILIARIUM, the name of a tall and narrow veſſel, uſed in the bathing of the ancients, for heating water to any degree, to give warmth to the reſt. See Mem. Acad. Inſcript. vol. i p. 127.

MILIARY Eruption, in *Medicine*, an eruption of minute veſicles, appearing in perſons confined to bed, in hot and cloſe apartments, eſpecially after profuſe ſweating. The term has been adopted from ancient times, from the reſemblance of the veſicles in ſize and appearance to *millet* ſeeds.

Miliary *Fever*, a denomination given to fevers of every deſcription, when accompanied by an eruption of miliary veſicles.

This is the light in which the more correct obſervation of our times has taught us to conſider the *miliary fever*. The phyſicians of the ſeventeenth and the greater part of the eighteenth century deſcribe the miliary fever, as a diſtinct eruptive fever, ariſing, like the ſmall-pox, meaſles, &c., from a peculiar poiſon or acrimony, of the proper concoction and expulſion of which from the ſyſtem the eruption was deemed evidence, according to the doctrines of the humoral pathology. Under this notion, the diſeaſe was deſcribed, by different obſervers, with a variety of titles, and no ſmall degree of confuſion aroſe from the miſapplication of theſe titles to other diſeaſes, which bore ſome reſemblance to it.

Thus, it was called, the miliary diſeaſe (Morbus miliaris), the miliary fever, the veſicular fever, or ſimply *miliaria*, and *miliaris*, and others, confounding the veſicular appearances with the purple ſpots, or petechiæ of malignant fevers, or ſuppoſing them to be of a ſimilar nature, applied the term *Purpura* to it; calling it Purpura alba, Purpura miliaris. Febris purpurata, &c. Again, another miſtake, equally groſs, was committed in places where the ſcarlet-fever was epidemic, in confounding the raſh of this diſeaſe with the veſicular eruption of miliaria. This occurred particularly at Leipſic, where *ſcarlatina* was extremely prevalent and fatal, in the year 1652, and a hiſtory of which was publiſhed by Chriſt. Joan. Langius. (See his Prax. Med. part ii. cap. xiv. § 9.) This fever was extremely contagious, and ſpread over the greater part of the continent, and was called a miliary fever; it has been even conſidered by many writers as the prototype of all miliary fevers, and the firſt example of its appearance in Europe. See Macbride, Method. Introd. to the Theory and Pract. of Phyſic, part ii. chap. xvii. Hamilton de Febri Miliari. Allioni Tract. de Miliarium Orig. Progreſſ. &c. J. Fordyce Hiſt. Febris Miliaris, &c.

Theſe errors were corrected by De Haen (De Diviſ. Febrium, § 4.); and the true nature of the miliary eruption, as always ſecondary or ſymptomatic, and as the reſult of perſpiration and of a continued heating regimen, in various febrile diſeaſes (of which, indeed, Sydenham had long before expreſſed his belief), was ſatisfactorily ſhewn by Mr. White (in his Eſſay on the Management of Lying-in Women), and by Dr. Cullen (Noſol. Method. Gen. xxxii. *note.*) In truth, the occurrence of this eruption, and of the ſevere and often fatal ſymptoms of fever, with which it was accompanied, affords a lamentable proof of the miſchief reſulting from miſtaken hypotheſis on medical ſubjects, when carried to the bedſide of the ſick. For this *miliary fever* has been, at different times and places, not only produced, but actually rendered epidemic, by the mal-practice of individuals. Mr. White aſſerts, that a midwife at Mancheſter, who had very extenſive practice among all ranks of women, and was tolerably ſucceſsful in other reſpects, had a remarkable number of her patients ſeized with the miliary fever, during their accouchement, which proved fatal to many, particularly to the wives of ſeveral of the principal tradeſmen. This diſeaſe "became ſo alarming and notorious, both in this neighbourhood and in diſtant parts of the country, as to acquire the name of the Mancheſter fever." While at the ſame time, other practitioners of the place, who purſued a different plan of treatment, met with no ſuch fever. So that the ſarcaſm of Dr. Shebbeare was but too correct, when he recommended gentle means of ſupporting the vital heat, "otherwiſe the miliary eruption may be rather a ſymptom of the phyſician than of the diſorder, as it is to be feared that ſome, through miſtaken practice, have diſcovered a way of *making* miliary fevers, and may be called a kind of manufacturers of that diſeaſe." (Practice of Phyſic.) "Quid verò demum generi humano calamitoſius," ſays De Haen, "quam quod et plebe et medicis conſpirantibus, tot milleni quotannis ægri, ab ipſo principio acutorum, in ſudores ſymptomaticos agitentur, ac veluti fundantur, ut coacta omnino criſis, in pleriſque aut letalis, aut periculoſa ſaltem, producatur; interea dum ſalutaria naturæ molimina turbantur, confunduntur, ac penitus ſufflaminantur. Faxit Deus, ut demum ſapiant Phryges!" Fe Febrium Diviſ. § 4. p. 84.

Hippocrates and the ancients have ſaid little reſpecting this miliary fever, becauſe they followed too ſteadily the dictates of nature in their practice to produce it. They do, however, mention a caſual appearance of miliary veſicles, in febrile diſeaſes. (See Hippocrates Epidem. lib. i. § 3. ægrot. 2. lib. ii. § 1. & § 3.) In like manner, thoſe practitioners who have been converſant with the treatment of diſeaſes during the laſt thirty years, have witneſſed but caſual and ſlight occurrences of theſe eruptions, and are totally unacquainted with the formidable miliary fever, deſcribed by the phyſicians of Leipſic, and ſubſequently very well known in this country.

It has been univerſally obſerved that women, during their puerperal confinement, although not excluſively, were the moſt frequently attacked by the miliary fever. This, no doubt, aroſe from the peculiar aſſiduity with which the hot and ſweating regimen was enforced with puerperal women, of which Mr. White has given an impreſſive deſcription. (Loc. cit. p. 6. et ſeq. 3d edit.) Under the ſuffocating heat and cloſeneſs of the room, in which was a large fire and a crowd of people, and every crevice, even the key-hole, cloſed; under an additional load of bed-clothes, from which the good woman was not allowed to put out her arm, or even her noſe; and conſtantly ſupplied with heating liquors from the ſpout of a tea-pot to keep up the ſweating; in ſuch a ſituation, "a few days after delivery the patient is, perhaps, ſeized with a ſhivering fit, and the nurſe is ſurprized, as ſhe proteſts ſhe has not had the leaſt waft of cold; more clothes are heaped upon her; ſpirituous liquors and hot ſpices are given her, to throw off the cold fit, which moſt certainly increaſe the ſucceeding hot one. A warm room, plenty of clothes, and warm drinks are continued, to throw her into a ſweat, but have frequently a contrary effect, by increaſing and prolonging the burning fit; which at laſt terminates in a moſt profuſe ſweat, continuing many nights and days without giving relief." (Ibid. p. 13.) The tongue becomes dry and warm; the pulſe quick, ſmall, and creeping; and the patient complains of great anxiety and oppreſſion about the præcordia, attended with ſighings, lowneſs of ſpirits, laſſitude, and extreme languor and debility. "If the hot regimen be continued," Mr. White proceeds to ſtate, "with vinous ſpicy caudles, hot alexipharmic medicines, volatile alcalious ſalts and ſpirits, opiates, and a cloſe room, ſo as to keep the patient in a perpetual ſweat, vibices or petechiæ appear, or (miliary) eruptions, either of the white or red kind, or both, firſt upon the neck and breaſts, afterwards extending themſelves all over the body, one crop ſucceeding another till the patient is worn out; but they give no relief, are not in any way critical, nor is there indeed any criſis in this diſorder, except the looſeneſs." (P. 16.) In the miliary fever, which was epidemic among puerperal women at Leipſic, about the year 1650, many of the moſt violent ſymptoms, connected with malignant fever, concurred; ſuch as extreme proſtration of ſtrength, reſtleſſneſs, and delirium, tremors and convulſive motions of the limbs, dimneſs of ſight, hæmorrhagies, &c. (See Gotofr. Welſch, Hiſt. Med. Nov. Morb. Puerp. qui *der Frieſel* dicitur:—in Haller, Diſput. Med. tom. v. § clxxiv.) The diſeaſe is ſaid to have been called *der Frieſel*, from the reſemblance of the rough ſtate of the ſkin, to a ſort of cloth called *frieſs*.

The utmoſt irregularity ſeems to have prevailed, in reſpect to the period at which the miliary veſicles made their appearance. According to Welſch, it appeared as early as the ſecond day after parturition, or within the firſt week: but other writers have not ſeen it before the fifth day, and others again on the ſeventh, eighth, tenth, or eleventh, on the fourteenth, ſixteenth, and even twenty-eighth day. This difference would, of courſe, be expected to happen, in conſequence of the different degrees of the hot regimen adopted in different inſtances, and of the variety of ſeaſon and of individual conſtitution. It ſeems to be agreed, however, notwithſtanding the hypothetical notions of the ſalubrity of ſuch expulſions of ſuppoſed morbific matter from the body, that a favourable termination of the diſeaſe is not more certain from a copious eruption, or from its early appearance; but that, on the contrary, the fuller and earlier the eruption is, the greater is the danger.

The diſtinction that has been made by writers in general, reſpecting the two kinds of miliary veſicles, the *red* and the *white*, is futile; as theſe differences of colour are by no means ſpecific, but depend entirely upon the ſize of the veſicles, their tranſparency, and the degree of inflammation accompanying them: inſomuch that the eruption which is *red* in the beginning, when the veſicles are perfectly diaphanous, becomes *white* in a day or two, when the inflammation of the ſurface is leſs, and the lymph contained in the veſicles becomes of a milky opacity.

Mr. White obſerves, that "the diſeaſes, or rather the ſymptoms, which are ſaid to ſucceed the miliary fever, are hectic heats, loſs of appetite and of ſpirits, and ſwellings of the legs, feet, and thighs; but theſe are nothing more than what follow other putrid fevers. Thoſe who have had this fever are particularly liable to returns of it during their whole lives; owing moſt probably to the ſkin being over relaxed, and its tone deſtroyed, by a too hot and forcing treatment."

Miliary eruptions have been produced in conſequence of feveriſh complaints, which confined patients to bed, and occaſioned a ſweating condition of the ſkin, as well as in the puerperal ſtate. Thus it has ſometimes occurred in perſons who became feveriſh after ſome important ſurgical operation, or remained in bed in conſequence of ſome accident; it has occurred alſo in catarrhal and rheumatic fevers, where the natural tendency to ſweating is conſiderable, and in various other febrile complaints. Hence we may explain the obſervations of ſome writers on the ſubject, who ſpeak of the miliary fever as imitating or being diſguiſed under the character of other febrile diſeaſes; when, in fact, the eruption was ſecondary, and had ſupervened upon the hot and ſweating ſtate of the patient in thoſe other fevers reſpectively; ſuch as tertians, quartans, remittents, &c. (See Memoires de la Soc. Royale de Medecine, par M. Barailon, tom. i. p. 193.) Indeed there is ſcarcely any acute diſeaſe, with which the miliary eruption has not been deſcribed as combined, and with which it might be expected to be combined, while the mode of practice, which gave riſe to it, continued to be purſued: thus it has been conjoined with typhus, gout, pneumonia, meaſles, ſmall-pox, ſcarlet-fever, hooping-cough, the fever of dentition, aſthma, &c. See Allionius Tract. de Miliarium Orig. Progreſſ. Nat. et Curat. The Cure of the Miliary Fever, by a ſubject to Mithridates.

That excellent writer, Dr. Macbride, was miſled, like his leſs intelligent brethren, by the prevalent hypotheſis of the concoction and critical expulſion of morbid acrimony, and conſidered miliary fever as ſomething ſpecific, like the contagious eruptive fevers. He has accordingly deſcribed it, as occurring alone and uncombined, under the term *miliaris ſimplex*, ſeu *benigna*. "The febrile ſymptoms previous to the eruption," he ſays, "are not very high nor diſtreſſing; no great pain, thirſt, or ſickneſs; the pulſe rather depreſſed than hard; they increaſe, however, gradually till the third or fourth day, when the eruption ſtrikes out, chiefly on the neck, back, and breaſt, being preceded by a profuſe ſweat, of a ſouriſh ſmell, and a particular tingling ſenſation in the ſkin, eſpecially in the fingers, and an itching in thoſe places where the miliary puſtules (veſicles) are moſt plentiful. In about thirty hours the eruption is full out, and replete with ſerum, with a ſlight inflammation round the baſis of the little veſicles, occaſioning a fulneſs and tenſion of the ſkin. The febrile ſymptoms now ſubſide, the patient continues to ſweat plentifully, and makes higher-coloured urine, the pulſe gradually becomes full, ſoft, and equable, and by the end of the week the eruption dries up, and the cuticle falls off in ſcales." (Methodical Introd. to Theory and Pract. of Phyſic, part ii. chap. 17.) Sir Richard Blackmore gives a ſimilar account of the progreſs of the miliary eruptions, the drying of which, "in the more kindly ſort, is generally accompliſhed in ſeven days." (Treatiſe on the Plague.) But in the worſe ſorts, he ſays, the time is much protracted; and he avers, that he has ſeen the fever continue, and a ſecond, and even a third crop of the eruptions appear, and go through the ſame courſe. And Dr. Brockleſby mentions a caſe, in which the low pulſe, great proſtration of ſtrength, and other ſevere ſymptoms, continued *forty-ſix days*, in which time *four* ſucceſſive crops of miliary veſicles occurred. See his Paper on Seltzer Water, Med. Obſ. and Inquir. vol. iv. art. ii. p. 31.

Having ſtated theſe facts upon the authority of the beſt writers on the ſubject, it is ſcarcely neceſſary to enter into any detail of the diſcuſſion, relative to the origin of the miliary fever. The ſagacity of Sydenham detected their efficient cauſe in the hot regimen generally practiſed in his time, and long afterwards. "Licet ſua ſponte nonnunquam ingruant, ſapius tamen *lecti calore* et *cardiacis* extorquentur." (Sched. Mon. de Nov. Febris Ingreſſu.) And his opinion has been ſubſtantiated, and the arguments and hypotheſis of thoſe, who denied its truth, practically refuted by the almoſt total diſappearance of the diſeaſe, even in puerperal women, ſince the rational method of ventilation and regimen, now practiſed, became generally prevalent among medical men.

It is ſcarcely neceſſary, therefore, to ſay any thing reſpecting the method of treatment. In all circumſtances, under which a perſon is confined to bed, the room in which he lies ſhould be as free from any diſagreeable ſmell or cloſeneſs as any other apartment in the houſe; which can be readily effected by the conſtant admiſſion of freſh air and by cleanlineſs: and his bed-clothes, whether he labour under fever or not, ſhould be as light as may be, provided the ſkin is not cooled below the natural ſtandard of temperature, and the patient experiences no actual ſenſation of chillneſs. Theſe rules ſhould be ſtrictly obſerved, even under a ſtate of perſpiration or profuſe ſweating; for, ſo long as no direct current falls upon the patient, coolneſs of the ſurrounding air will moderate, without ſuppreſſing, the cutaneous diſcharge. Even when the miliary eruption has appeared, in conſequence of previous improper management, coolneſs of the apartment and bed of the patient, with a free acceſs of freſh air, will be found the moſt effectual cordial, and will ſupport the ſtrength, and ſubdue the languor of body and mind more powerfully than "gallons of wine." Conſult Mr. White's able treatiſe above quoted, in which references to all the writers on the ſubject are given, and from which, as well as the Eſſay of De Haen, de Diviſione Febrium, the moſt ſatisfactory information will be obtained.

MILICIA, in *Geography*, a river of Sicily, which runs into the ſea; 10 miles E.S.E. of Palermo.

MILIEU HARMONIQUE, in *French Muſic*, is the name ſometimes given to the 3d of a common chord or triad, as being the mean or middle between the key note or fundamental baſe and its 5th.

MILILLO, in *Geography*, a town of Sicily, in the valley of Noto; 8 miles S.S.E. of Lentini.

MILIN, a town of Bohemia, in the circle of Beraun; 4 miles from Przibram.

MILIOLUM, in *Surgery*, a ſmall tumour of the eyelids, ſo called, from its being of the ſize of a millet ſeed.

MILIQUEAN CREEK, in *Geography*, a river of Upper Canada, which, running northerly, diſcharges itſelf into lake Simcoe, now called "Holland's river."

MILIS, a town of Sardinia; 12 miles from Oriſtagni.

MILITANT, a term uſed of the body of Chriſtians, while here on earth.

The Romaniſts divide the church into militant, patient, and triumphant: the militant is on earth; the patient, or paſſive, they place in purgatory; and the triumphant in heaven.

MILITARE ÆRARIUM. See ÆRARIUM.

MILITARIS TOGA. See TOGA.

MILITARIS *Via*. See VIA.

MILITARY, ſomething belonging to the militia, or ſoldiery. Thus,

MILITARY *Architecture* denotes the art of fortification. See ARCHITECTURE, and FORTIFICATION.

MILITARY *Art*, is the art or ſcience of making or ſuſtaining war to advantage. See WAR.

MILITARY *Column*. See COLUMN.

MILITARY *Court*. See COURT *of Chivalry*.

MILITARY *Diſcipline*. See DISCIPLINE.

MILITARY *Eſtate* includes the whole of the ſoldiery; or ſuch perſons as are peculiarly appointed among the reſt of the people for the ſafeguard and defence of the realm. Although the laws and conſtitution of this kingdom know no ſuch ſtate as that of a perpetual ſtanding ſoldier bred up to no other profeſſion but that of war, it has for many years paſt been judged neceſſary by our legiſlature, for the ſafety of the kingdom, the defence of the poſſeſſions of the crown, and the preſervation of the balance of power, to maintain, even in time of peace, a ſtanding body of troops, under the command of the crown, who are however *ipſo facto* diſbanded at the expiration of every year, unleſs continued by parliament; and if from experience paſt we may judge of future events, the army is now laſtingly engrafted into the Britiſh conſtitution; with this ſingularly fortunate circumſtance, that any branch of the legiſlature may annually put an end to its legal exiſtence by refuſing to concur in its continuance. (Bl. Com. b. i.) The military force of the kingdom comprehends regulars, including the royal marines, the militia, and volunteers. See MARINES, MILITIA, SOLDIER, and VOLUNTEERS.

MILITARY *Execution*, the delivery of a city or country up to be ravaged and deſtroyed by the ſoldiers, upon its refuſing to pay the contribution money impoſed upon it. It denotes alſo the puniſhment inflicted by the ſentence of a court martial. See EXECUTION.

MILITARY *Exerciſes* are the evolutions or various manners of ranging and exerciſing ſoldiers. See BATTALION, EVOLUTION, EXERCISE, and MANUAL *Exerciſe*.

MILITARY *Feuds*. See FEE and FEUD.

MILITARY *Fever*, a kind of malignant fever frequent in armies, by reaſon of the ill food, &c. of the ſoldiers. See FEVER, and TYPHUS.

MILITARY *Government*, is the ſupreme command and diſpoſal of all the military power of a nation, by land and ſea.

MILITARY *Law*. See LAW *of Arms*, and MARTIAL.

MILITARY *Machine*. See MACHINE.

MILITARY *Merit*, *Order of*, in *Heraldry*, was inſtituted in France, in the year 1759, by Louis XV. in honour of thoſe officers of his army who were Proteſtants. The marks of honour are the ſame as thoſe of the order of St. Louis. The enſign of the order is alſo of the ſame form as that of St. Louis, with this difference, that on one ſide is a ſword in pale; within this motto—PRO VIRTUTE BELLICA; and on the reverſe is a chaplet of laurel; within this inſcription, LUD XV. INSTITUIT 1759.

MILITARY *Muſic*, before the introduction of fire-arms, ſerved to animate the ſoldiers in battles and aſſaults of places, as well as for purpoſes of ſignals for the different manœuvres and duties in camp and garriſon; and, therefore there is no reaſon to doubt its having been uſed in our ancient armies. The common military inſtruments of muſic were the trumpet, drum, fife, and horns of different kinds. See an account of each under its proper title. In modern times, kettle-drums and trumpets have been chiefly appropriated to the horſe. The dragoons long had the hautbois and ſide-drum, but about the year 1759 changed theſe for the trumpet: the infantry had only the drum, till the introduction of fifes. Since the introduction of light infantry, many of theſe companies have uſed the bugle-horn.

Of late years, in addition to the drums and fifes, each regiment of infantry has had its band of muſic. The inſtruments are chiefly hautbois, clarinets, French horns, baſſoons, trumpets, cymbals, and in ſome the tabor and pipe. The band is uſually compoſed of men borne upon the eſtabliſhment of the regiment as privates, and allowed ſome additional pay from the non-effective fund of the field-officers and captains of companies. Theſe officers alſo defray the charge for inſtruments, extra-clothing, muſic, &c. though in many corps the money paid for diſcharges has been applied to the ſupport of the regimental band. Groſe's Mil. Ant. vol. ii.

MILITARY *Order*. See ORDER, and KNIGHTHOOD.

MILITARY *Pyrotechny*. See PYROTECHNY.

MILITARY *Rewards*. See REWARDS.

MILITARY *Tenures*. See TENURE.

MILITARY *Teſtament*, among the Romans, was what we call a nuncupative will; or a teſtament made only by word of mouth, in the preſence of two witneſſes.

This was a privilege peculiar to the ſoldiery, and to them only when in the field; for at other times they were ſubject to the common laws in this reſpect. See SOLDIER.

MILITARY *Townſhips*, in *Geography*, townſhips of America, in the ſtate of New York; deriving their appellation from the following circumſtance. The legiſlature of the ſtate granted 1½ million of acres of land as a gratuity to the officers and ſoldiers of the line of this ſtate. This tract, forming the country of Onondago, is bounded W. by the E. ſhore of the Seneca lake and the county of Ontario, N. by the part of lake Ontario near Fort Oſwego, S. by Tioga county, and E. by Chenango county. This pleaſant country is divided into 25 townſhips of 60,000 acres each, which are again ſubdivided into 100 convenient farms, of 600 acres, amounting in the whole to 2500 farms, well watered by a multitude of ſmall lakes and rivers.

MILITARY *Ways*, *viæ militares*, are the large Roman roads, which Agrippa procured to be made through the empire, in the time of Auguſtus, for the more convenient marching of troops, and conveyance of carriages.

N. Bergier has wrote the hiſtory of the origin, progreſs, and amazing extent, of theſe military roads; which were paved from the gates of Rome to the extreme parts of the empire. See WAY.

MILITELLO, in *Geography*, a town of Sicily, in the valley of Demona, on the N. coaſt; 16 miles S.W. of Pati.

MILITES CANDIDATI. See CANDIDATI.

MILITIA, a collective term, underſtood of the body of ſoldiers, or perſons who make profeſſion of arms.

The word comes from the Latin *miles, a ſoldier;* and *miles* from *mille*, which was anciently wrote *mile*. For in levying ſoldiers at Rome, as each tribe furniſhed a thouſand, *mille*, or *mile, men;* whoever was of that number, was called *miles*.

MILITIA, in its proper and more reſtrained ſenſe with us, is uſed to ſignify the inhabitants, or, as they have been ſometimes called, the *trained-bands*, of a town or county; who are armed on a ſhort warning for their own defence. In which ſenſe militia is oppoſed to regular ſtated forces. Soon after the reſtoration of king Charles II., when the feudal tenures were aboliſhed, it was thought proper to aſcertain the power of the militia, to recognize the ſole right of the crown to govern and command them, and to put the whole into a more regular method of military ſubordination; and the order in which the militia now ſtands by law, is principally built upon the ſtatutes which were then enacted, *viz.* 13 Car. II. cap. 6. 14 Car. II. cap. 3. 15 Car. II. cap. 4.

It is true the two laſt of them are apparently repealed; but many of their proviſions are re-enacted, with the addition of ſome new regulations, by the preſent militia laws; the general ſcheme of which is to diſcipline a certain number of the inhabitants of every county, choſen by lot, for three years, and officered by the lord-lieutenant, the deputy lieutenants, and other principal land-holders, under a commiſſion from the crown. They are not compellable to march out of their counties, unleſs in caſe of invaſion or actual rebellion, nor in any caſe compellable to march out of the kingdom. They are to be exerciſed at ſtated times; and their diſcipline in general is liberal and eaſy; but when drawn out in actual ſervice, they are ſubject to the rigour of martial law, as neceſſary, to keep them in order. This is the conſtitutional ſecurity, which our laws have provided for the public peace, and for protecting the realm againſt foreign and domeſtic violence. and which the ſtatutes 2 Geo. III. cap. 20. &c. 9 Geo. III. cap. 42. declare is eſſentially neceſſary to the ſafety and proſperity of the kingdom. Blackſt. Com. book i.

By the 2 Geo. III. cap. 20. all former acts relating to the raiſing of the militia are repealed, except in ſuch caſes as are therein ſpecially directed to be ſubject to the proviſions of the former acts, or any of them; particularly with regard to the city of London, the Tower Hamlets, and the Cinque Ports. Several ſtatutes were ſubſequently enacted, which it is needleſs to recite; becauſe by the 42 Geo. III. c. 90. the chief former acts relative to the militia are from June 26, 1802, repealed; excepting ſuch as relate to the city of London, Tower Hamlets, the Stannaries, and the Cinque Ports. The militia raiſed under ſuch acts ſhall be ſubject to this act; and all deficiencies under the former militia laws are to be ſupplied, and the men ſo raiſed are to ſerve according to this act. It is firſt provided by this act that the king ſhall appoint lieutenants for the ſeveral counties, &c. with full power to call together, arm, array, and cauſe to be trained and exerciſed ſuch perſons, once in every year; and ſuch lieutenants ſhall appoint 20 or more perſons, duly qualified, to be deputy-lieutenants, and ſhall alſo appoint a proper number of colonels, lieutenant-colonels, majors, and other officers, qualified to train, diſcipline, and command the perſons to be armed and arrayed. The names and ranks of all ſuch officers to be certified to his majeſty, and ſubject to his approbation. Every perſon, appointed to be a deputy-lieutenant, ſhall be either in law or equity, for his own uſe and benefit, in poſſeſſion of a freehold, copyhold, or cuſtomary eſtate for life, or for the life of his wife, ſhe having a freehold, copyhold, or cuſtomary eſtate for her life, or for ſome greater eſtate, or of an eſtate for ſome long term of years determinable on one or more life or lives, in manors, meſſuages, lands, tenements, or hereditaments, in England, Wales, or the town of Berwick-upon-Tweed, of the yearly value of 200*l.* or ſhall be heir apparent of ſome perſon in like manner poſſeſſed to the yearly value of 400*l.*; a colonel, to the yearly value of 1000*l.* or heir apparent to the yearly value of 2000*l.*; a lieutenant-colonel, to the yearly value of 600*l.* or heir apparent to the yearly value of 1200*l.*; a major, to the yearly value of 400*l.* or heir apparent to the yearly value of 800*l.*; a captain, to the yearly value of 200*l.* or heir apparent to the yearly value of 400*l.* or he ſhall be a younger ſon of ſome perſon who ſhall be, or at the time of his death was, poſſeſſed of a like eſtate of the yearly value of 600*l.*; a lieutenant, to the yearly value of 50*l.* or perſonal eſtate alone to the amount of 1000*l.* or real and perſonal eſtate together of the value of 2000*l.* or he ſhall be ſon of ſome perſon who ſhall be, or at the time of his death was, poſſeſſed of a like eſtate of the yearly value of 100*l.* or of a perſonal eſtate alone to the amount of 200*l.* or real and perſonal eſtate together to the value of 3000*l.*; an enſign, to the yearly value of 20*l.* or a perſonal eſtate alone to the amount of 500*l.* or real and perſonal eſtate together of the value of 1000*l.* or he ſhall be ſon of ſome perſon who ſhall be, or at the time of his death was, poſſeſſed of a like eſtate of the yearly value of 50*l.* or who ſhall be, or at the time of his death was, poſſeſſed of a perſonal eſtate alone to the amount of 1000*l.* or of real and perſonal eſtate together of the value of 1500*l.*; one moiety of which ſaid eſtates, excepting of lieutenants and enſigns, ſhall be ſituate within the reſpective counties, ridings, or places, in which they ſhall be appointed to ſerve.

Provided, that the immediate reverſion or remainder of and in manors, meſſuages, lands, tenements, or hereditaments, which are leaſed for one, two, or three lives, or for any term of years determinable on the death of one, two, or three lives, on reſerved rents, and which are to the leſſees of the clear yearly value of 300*l.* ſhall be deemed equal to an eſtate herein before deſcribed, of the yearly value of 100*l.* and ſo in proportion. ſ. 10.

Alſo, a perſon, either at law or equity, for his own uſe and benefit, in poſſeſſion of an eſtate for a term originally granted for 20 years or more, of an annual value (over and above all rents and charges payable in reſpect of the ſame) equal to the annual value of ſuch an eſtate as is required for the qualification of a deputy-lieutenant and commiſſioned officer reſpectively, and ſituate as aforeſaid, ſhall be deemed ſufficiently qualified.

In the counties of Cumberland, Huntingdon, Monmouth, Weſtmorland, and Rutland, and in every county and place in Wales, the qualifications ſhall be as follow, and of the like eſtates as before mentioned:

A deputy-lieutenant's ſhall be of the yearly value of 150*l.* or he ſhall be heir apparent to an eſtate of the yearly value of 300*l.*; a colonel's of the yearly value of 600*l.* or he ſhall be heir apparent to the yearly value of 1200*l.*; a lieutenant-colonel's or major commandant's ſhall be of the yearly value of 400*l.* or he ſhall be heir apparent to the yearly value of 800*l.*; a major's ſhall be of the yearly value of 200*l.* or he ſhall be heir apparent to the yearly value of 400*l.*; a captain's ſhall be of the yearly value of 150*l.* or he ſhall be ſon of a perſon who ſhall be, or at the time of his death was, poſſeſſed of a like eſtate of the yearly value of 300*l.*; a lieutenant's ſhall be of the yearly value of 30*l.* or a perſonal eſtate alone to the amount of 600*l.* or real and perſonal together of the value of 1200*l.* or he ſhall be the ſon of a perſon who ſhall be, or at the time of his death was, poſſeſſed of a like eſtate of the yearly value of 60*l.* or a perſonal eſtate alone to the amount of 1200*l.* or a real and perſonal eſtate together of the value of 2400*l.*; an enſign's, of the yearly value of 20*l.* or a perſonal eſtate alone to the amount of 300*l.* or real and perſonal together of the value of 600*l.* or he ſhall be the ſon of a perſon who ſhall be, or at the time of his death was, poſſeſſed of a like eſtate of the yearly value of 30*l* or of perſonal eſtate alone to the amount of 600*l.* or real and perſonal together of the value of 1200*l.*; of all which reſpective eſtates (except thoſe for the qualifications of lieutenants and enſigns), one moiety ſhall be within the reſpective counties or places in which ſuch officers ſhall be reſpectively appointed to ſerve.

In the iſle of Ely, a deputy-lieutenant's ſhall be of the yearly value of 150*l.* or he ſhall be heir apparent to the yearly value of 300*l.*; a captain's ſhall be of the yearly value of 100*l.* or he ſhall be heir apparent to the yearly value of 200*l.* or he ſhall be a younger ſon of ſome perſon who ſhall be, or at the time of his death was, poſſeſſed of a like eſtate of the yearly value of 300*l.*; a lieutenant's ſhall be of the yearly value of 30*l.* or perſonal eſtate to the amount of 600*l.* or he ſhall be ſon of ſome perſon who ſhall be, or at the time of his death was, poſſeſſed of a like eſtate of the yearly value of 60*l.* or perſonal eſtate to the amount of 1200*l.*; an enſign's ſhall be of the yearly value of 20*l.* or perſonal eſtate to the amount of 300*l.* or he ſhall be the ſon of ſome perſon who ſhall be, or at the time of his death was, poſſeſſed of a like eſtate of the yearly value of 30*l.* or perſonal eſtate to the amount of 600*l.*; one-half of all which eſtates (except thoſe for the qualifications of lieutenants and enſigns), ſhall be ſituate or ariſing within the ſaid iſle of Ely, or ſome other part of the county of Cambridge.

In all cities or towns which are counties within themſelves, and have heretofore uſed to raiſe and train a ſeparate militia within their reſpective liberties, and which are united with and made part of any county for the purpoſes of raiſing the militia only, the lieutenant thereof, or, where no lieutenant, the chief magiſtrate, ſhall appoint the deputy-lieutenants, and alſo the officers of the militia, whoſe number and rank ſhall be proportionable to the number of men which ſuch city or town ſhall raiſe as their quota towards the militia of the county to which they are united for ſuch purpoſes; and all powers and proviſions made with reſpect to counties at large ſhall take place in the ſaid cities or towns. And the qualification for a deputy-lieutenant ſhall be 150*l.* a-year as aforeſaid, or a perſonal eſtate alone, or real and perſonal eſtate together, to the amount or value of 3000*l.* Field officer 300*l.* or perſonal eſtate alone, or real and perſonal together, to the value of 5000*l.* Captain 150*l.* a-year, or perſonal eſtate alone, or real and perſonal together, to the value of 2500*l.* Lieutenant 30*l.* a-year, or perſonal eſtate of 750*l.* Enſign 20*l.* a-year, or perſonal eſtate of 400*l.* One-half of all which real eſtates (except thoſe for the qualification of lieutenants and enſigns) ſhall be within ſuch city or town, or within the county to which ſuch city or town is united for the purpoſes aforeſaid. ſ. 9.

The whole number of private men to be raiſed, excluſive of certain places that are excepted, is 39,572; in various proportions for the ſeveral counties. Such numbers ſhall continue to be the reſpective quotas, until the 25th day of June, 1805, and from thence until other quotas ſhall be appointed by his majeſty's privy council; and the reſpective quotas that ſhall at or after the expiration of the ſaid firſt mentioned period, and alſo from time to time at or after the expiration of every ſucceſſive ten years after ſuch period, be ſo appointed by the privy council, ſhall from the appointment thereof continue until other quotas ſhall be appointed under this act.

By this act proviſion is made for a "Supplementary Militia;" for in caſe of invaſion, or imminent danger of it, and alſo in caſe of rebellion, the king may (the occaſion being firſt communicated to parliament if ſitting, or declared in council, and notified by proclamation, if there be no parliament ſitting) by his proclamation order and direct, in addition to the number of militia-men aforeſaid required to be raiſed under this act, any number of men not exceeding one-half of the aggregate number of the militia to be raiſed and enrolled. Theſe men ſhall, in purſuance of ſuch proclamation, be raiſed by the lieutenants and deputy-lieutenants. His majeſty may alſo, by proclamation, diſembody the ſupplementary militia; and the privates ſo diſembodied, or thoſe enrolled and not embodied, ſhall remain liable to ſerve and to ſupply all vacancies. The lieutenants and deputy-lieutenants ſhall hold meetings, and iſſue precepts for returning liſts, and ſettling of liſts, for proportioning the numbers in the ſeveral hundreds, &c., and the deputy-lieutenants ſhall cauſe the number appointed to ſerve to be choſen by ballot out of the liſt returned for every pariſh, &c. Pariſhes are allowed to offer volunteers without ballotting.

The perſons exempted from ſerving in the militia, or providing ſubſtitutes, are peers of this realm; commiſſioned officers in his majeſty's other forces, or in any of his caſtles or forts; non-commiſſioned officers and private men ſerving in any of his majeſty's other forces; commiſſioned officers ſerving, or who have ſerved four years in the militia; members of either of the univerſities; clergymen; licenſed teachers of any ſeparate congregations; conſtables, or other ſuch peace officers; articled clerks, apprentices, ſeamen or ſeafaring men; perſons muſtering and doing duty in any of his majeſty's dock-yards; perſons free of the company of watermen of the river Thames; perſons employed and muſtered at the Tower of London, Woolwich Warren, the ſeveral gun-wharfs at Portſmouth, Chatham, Sheerneſs, and Plymouth, or at the powder mills, magazines, or the houſes under the direction of the board of ordnance; and poor men who have more than one child born in wedlock. And by 43 Geo. III. c. 123. a perſon ſerving or having found a ſubſtitute in the army of reſerve; and by 44 Geo. III. c. 54. any effective volunteer. Perſons ballotted, that refuſe to ſerve or provide a ſubſtitute, ſhall forfeit 10*l.* which, by 43 Geo. III. c. 50. is increaſed to 15*l.* and at the expiration of five years, be liable to ſerve again, in perſon or by ſubſtitute. Thoſe who have ſerved are to be returned home in due time, ſo that they may reach the county to which they belong, if abſent from it, by the expiration of their term; unleſs they ſhall conſent to ſerve again. The enliſting of perſons enrolled to ſerve in the militia, for ſervice in his majeſty's other forces, ſhall be deemed null and void. The militia are required to be trained and exerciſed by regiment or battalion, once in a year for twenty-eight days together (43 Geo. III. c. 19.): and the penalty of not appearing, or deſerting, is the immediate payment of 20*l.* or impriſonment for ſix months, or till the money is paid. In caſe of actual invaſion, or immediate danger of it, or rebellion in this kingdom, his majeſty, communicating the occaſion to parliament, if ſitting, or declared in council, and notified by proclamation, if parliament be not ſitting, may order the militia to be embodied, put under the command of general officers, and led to any part of the kingdom, but not to go out of it; and they ſhall be ſubject to the acts againſt mutiny and deſertion. And any perſon not appearing, ſhall be liable to be apprehended and puniſhed as a deſerter; and if any perſon ſhall harbour or conceal any ſuch militia man, he ſhall for every ſuch offence forfeit 100*l*. From the date of his majeſty's command for drawing out the militia into actual ſervice, the officers and privates ſhall be entitled to the ſame pay as thoſe of other infantry. Officers of the militia, during the time of ſervice, are exempted from the office of ſheriff, nor does the acceptance of a commiſſion in the militia vacate the ſeat of any member returned to ſerve in parliament (42 Geo. III. c. 90.): and private men from highway duty, from pariſh offices, and ſerving in his majeſty's other forces by ſea or land. Militia men, when ſick, are entitled to relief; and their deſtitute families to a weekly allowance out of the poor rates of the pariſh, &c. to which they belong. If they are maimed or wounded in actual ſervice, they are entitled to the benefit of Chelſea-hoſpital: they may ſet up trades in any part of the kingdom.

As the militia of the city of London are now raiſed and regulated under and by virtue of the 36 G. 3. c. 92. and 39 G. 3. c. 82: And as the militia of the Tower Hamlets are now raiſed and regulated by the 37 G. 3. c. 75. and c. 25. and the ſame are thereby reſpectively made ſubject to certain proviſions in the 26 G. 3. c. 107. by this act repealed; it is enacted, that, from and after the paſſing of this act, all and every the clauſes, proviſions, powers, authorities, puniſhments, bounties, penalties, forfeitures, matters, and things in this act contained, in relation to any perſons, acts, matters, and things as to which the 26 G. 3. c. 107. or any of the clauſes or proviſions thereof, were in force or applicable as to the ſaid reſpective militias, ſhall, from and after the paſſing of this act, be applied, practiſed, and put in full force as to all ſuch perſons, matters, and things, as far as the ſame can be applied, and are not contrary to any of the proviſions of the ſaid reſpective acts, or any or either of them: But nothing in this act contained ſhall be conſtrued to extend to repeal any of the proviſions of the ſaid acts, or either of them, other than ſuch as are in and by the ſaid acts made ſubject to the rules and regulations of the 26 G. 3. c. 107.

Nothing in this act ſhall extend to the tinners in Devon and Cornwall; but the lord warden of the ſtannaries for the time being in purſuance of his majeſty's commiſſion in that behalf, and ſuch as he ſhall commiſſionate and authorize under him, ſhall uſe the like powers, and array, aſſeſs, arm, muſter, and exerciſe the ſaid tinners as has been heretofore uſed, and according to the ancient privileges and cuſtoms of the ſtannaries.

The lord warden of the cinque ports, two ancient towns and their members, and in his abſence his lieutenant or lieutenants, ſhall put in execution within the ſame all the powers and authorities granted by this act, in like manner as his majeſty's lieutenants of counties and their deputy-lieutenants may do; and may keep up and continue the uſual number of ſoldiers in the ſaid ports, towns, and members, unleſs he or they find cauſe to leſſen the ſame; and the militia of the ſaid ports, towns, and members, ſhall remain ſeparate from the militia of the ſeveral counties within which the ſaid ports, towns, and members are ſituate; and the ſaid warden, or his lieutenant or lieutenants, ſhall, in purſuance of orders from his majeſty, in the manner preſcribed by the 13 and 14 Car. 2. notwithſtanding one or more months pay advanced be not reimburſed, raiſe and draw out the ſoldiers into actual ſervice, and cauſe the perſons charged as by the ſaid act to provide their ſoldiers with pay in hand, not exceeding one month's pay, in ſuch manner as if all the pay advanced and provided had been reimburſed; and ſhall uſe the like powers, and array, aſſeſs, and arm, muſter and exerciſe the ſaid ſoldiers, and make aſſeſſments, and iſſue warrants for the aſſeſſments made or to be made for raiſing any trophy money, and for defraying the neceſſary charges of trophies, and other incident expences of the militia of the ſaid ports, towns, and members, as hath been heretofore uſed, and according to their ancient privileges and cuſtoms; any thing in the ſaid act or this act to the contrary notwithſtanding.

By 48 Geo. III. c. 111. and ſubſequent acts, a particular ſpecies of force is ordered to be raiſed under the name of the "Local Militia;" the proviſions of which act regulate the mode of raiſing the ſame kind of force in the Cinque Ports, Stannaries, and ſome other privileged places. The number of men ballotted and enrolled under this denomination in any county, diviſion, or part of any county, ſhall not exceed ſuch number as will, including the effective yeomanry and volunteers then ſerving in ſuch county, &c. excluſive of ſupernumeraries above the eſtabliſhment of ſuch corps, ſerving without pay, who ſhall have been enrolled therein after the 1ſt of April 1808, amount to ſix times the reſpective original quota or proportion of militia of ſuch county, &c. under the 42 Geo. III. c. 90. The deficiencies in effective yeomanry and volunteers in any county, &c. ſhall be ſupplied from time to time by local militia men; ſo that the number in the whole of the local militia under this act, and effective yeomanry and volunteers, ſhall be equal to ſix times the amount of ſuch quota or proportion. Volunteers are allowed to enter, whether any order be given for ſupplying deficiencies or not, until the local militia be completed; and ſuch volunteers ſhall receive two guineas each, payable on their reſpective enrolment. By 49 Geo. III. c. 40, this is repealed, except as to members of volunteer corps. Volunteers tranſferring themſelves into the local militia, are not liable to ſerve in the regular militia, in conſequence of any former ballot. The men to be raiſed under the act 48 Geo. III. c. 111. ſhall be ballotted out of the perſons between the ages of 18 and 30 returned in the liſts now exiſting, or hereafter returned, amended or corrected for the raiſing of the militia; and his majeſty may direct the making out of new liſts; and no perſon ballotted to ſerve in the local militia ſhall be allowed to find any ſubſtitute, or be entitled to any bounty or half bounty. Perſons ballotted are to take a preſcribed oath, and then to be enrolled to ſerve in the local militia of ſuch county as a private local militia man for the ſpace of four years. Perſons unable to ſerve from illneſs or bodily infirmity ſhall be excuſed; and perſons exempted are licenſed teachers of any congregation in holy orders, or pretended holy orders, and not carrying on any other trade, or exerciſing any other occupation for his livelihood, except that of a ſchool-maſter; ſuch medical men actually practiſing as phyſicians, ſurgeons, or apothecaries; no perſon muſtered, trained, or doing duty, or employed in his majeſty's ſervice in the Tower of London, the royal arſenal at Woolwich, or at any gun wharfs, or at any powder mills, powder magazines, or other ſtorehouſes belonging to his majeſty, under the direction of the board of ordnance, ſhall be liable to be ballotted for the local militia, ſo long as they reſpectively continue within any of the aforeſaid deſcriptions; and every perſon who ſhall have ſerved, or is now ſerving in perſon in the additional military force, raiſed under an act paſſed in the forty-third year of the reign of his preſent majeſty, or who ſhall have been ballotted, and have provided any ſubſtitute, or ſhall have paid any fine for not ſerving or finding a ſubſtitute in ſuch additional force, ſhall be exempt from ballot and ſervice in the local militia, in like manner, and for the ſame period, as ſuch perſon was or is exempt from ballot and ſervice in the regular militia during the continuance of the ſaid act of the forty-third year aforeſaid; any thing in any act or acts of parliament to the contrary notwithſtanding.

No perſon having ſerved in the regular militia or ſuch additional force, or provided any ſubſtitute, or paid any fine for not ſerving, or finding any ſubſtitute in the regular militia or ſuch additional force as aforeſaid, ſhall be entitled to exemption from being ballotted under this act, for any longer period than four years after the expiration of his period of ſervice, if he ſhall have ſerved in perſon, or ſix years from the period of any ſuch ſubſtitute being enrolled, or four years after having paid any ſuch fine.

And no articled clerk or apprentice, nor any poor man who has leſs than three children born in wedlock, nor any perſon under the height of five feet four inches, who ſhall be of the height of five feet two inches, or upwards, ſhall by reaſon thereof, reſpectively be exempt under this act, notwithſtanding they may, by reaſon thereof, reſpectively be exempt from the militia.

Provided that nothing in this act contained ſhall extend to authorize any apprentice ballotted under this act, to enliſt in the army, navy, marines, or regular militia, or to enter as a volunteer in the local militia, without the conſent of his maſter; provided alſo, that no ballot, enrolment, and ſervice under this act, ſhall make void or in any manner affect any indenture of apprenticeſhip or contract of ſervice between any maſter or ſervant, notwithſtanding any covenant or agreement in any ſuch indenture or contract, and no ſervice under this act of any apprentice or ſervant ſhall be deemed to be an abſence from ſervice, or a breach of any covenant or agreement as to any ſervice or abſence from ſervice in any indenture of apprenticeſhip or contract of ſervice.

And every perſon claiming to be exempted from ſervice under this act, upon payment of the fine of twenty pounds, or ten pounds, inſtead of thirty pounds, ſhall ſign a declaration that the amount of his income does not exceed two hundred pounds or one hundred pounds as aforeſaid, as the caſe may be, and ſhall deliver the ſame to the deputy-lieutenants before whom he ſhall appear to claim ſuch exemption, or produce a certificate to the like effect, allowed by any commiſſioners under any act relating to the rates and duties ariſing on property, &c. or to any allowances made on any ſuch rates and duties, within twelve months previous to the production of ſuch certificate. Quakers, or united brethren, on production of certain certificates, ſhall not be enrolled, and may be adjudged to pay a proportion of the fines on perſons ballotted, and not appearing. Perſons ſerving in the local militia are entitled to the ſame exemptions as volunteers, and having ſerved four years, are not liable to be ballotted for the regular militia for two years. Local militia officers ſhall not be exempt from ſerving the office of ſheriff.

His majeſty may order the local militia to be called out yearly to be trained; but they are not to be trained for more than 28 days in a year, nor to be ordered to march for that purpoſe further than ſome adjoining county. In caſe of invaſion, or appearance of an enemy in force upon the coaſt of any part of the united kingdom, his majeſty may order the local militia to be embodied and marched to any part of Great Britain, and continue there, ſo embodied, for any period not exceeding ſix weeks after the enemy ſhall have been prevented or repelled, or driven from the coaſt, or after any rebellion or inſurrection ſhall have been ſuppreſſed. Lord lieutenants, &c. may call out the local militia for the ſuppreſſion of riots, and thoſe who do not appear are ſubject to certain penalties; but when ſo called out, they are not to be kept aſſembled for more than 14 days in one year. Local militia aſſembled in time of war are ſubjected to the mutiny act. Every perſon enrolled to ſerve in the local militia ſhall, upon being aſſembled for training and exerciſe, be entitled to receive one guinea for the firſt year of his ſervice, and 10*s.* 6*d.* for each ſucceeding year; and a further ſum of one guinea in caſe ſuch perſon ſhall be embodied under any order of council or proclamation. The local militia, when not drawn out and embodied, ſhall be entitled to the ſame pay, clothing and allowances, as the regular militia are when not embodied; and when drawn out and embodied, ſhall be entitled to the ſame pay, clothing, and allowances, for themſelves and families, as his majeſty's other militia forces when drawn out and embodied. Local militia men may enliſt in the army, navy, or marines, or regular militia of the ſame county; and their vacancies ſhall be ſupplied as other vacancies. No perſon ſhall enliſt a local militia man during the period of training, on penalty of 20*l.* Every county, hundred, or pariſh, is ſubject to a fine of 15*l.* for each man deficient at a certain period, but it ſhall be entitled to a return of part, for every man enrolled within a certain time.

MILITUM CURIA. See CURIA.

MILITUM *Expenſis levandis.* See EXPENSIS.

MILIUM, in *Botany*, an ancient name for a ſort of corn or graſs, remarkable for the abundance of its ſeeds; hence Feſtus, againſt whom we certainly can have no appeal, derives it from *mille*, a thouſand. The plant of the Romans however was either a *Holcus*, or the *Panicum miliaceum*, or both; and our Linnæan genus has obtained this appellation from its reſemblance in ſeed to thoſe.—Linn. Gen. 33. Schreb. 47. Willd. Sp. Pl. v. 1. 358. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 75. Prodr. Fl. Græc. Sibth. v. 1. 44. Ait. Hort. Kew. ed. 2. v. 1. 147. Juſſ. 29. Leerſ. 18. t. 8. f. 7.—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Gen. Ch. *Cal.* Glume of two, nearly equal, ovate, tumid, pointed valves, incloſing a ſingle flower. *Cor.* of two ovate valves, leſs than the calyx, permanent, finally cartilaginous, enfolding the ſeed; one of them ſmaller than the other. Nectary of two ovate, obtuſe leaflets, tumid at the baſe. *Stam.* Filaments three, capillary, ſhort; anthers oblong, verſatile. *Piſt.* Germen roundiſh; ſtyles two, capillary; ſtigmas tufted. *Peric.* none, except the hardened and poliſhed corolla, which cloſely inveſts the ſolitary roundiſh *ſeed*.

Eſſ. Ch. Calyx of two valves, ſingle-flowered, tumid. Seed inveſted with the permanent hardened two-valved corolla.

1. M. *capenſe*. Cape Millet-graſs. Linn. Mant. 185. Willd. n. 1.—"Panicle capillary. Calyx pointed. Corolla with a terminal curved awn."—Native of the Cape of Good Hope. *Stems* four inches high, ſmooth and ſlender. *Leaves* narrow, clothed underneath with ſcattered hairs, and bearded at the top of their ſheath. *Panicle* ſpreading every way; the flower-ſtalks finer than a hair. *Calyx* of two ovate, ſlightly ſwelling, pointed valves, of nearly equal length. *Seed* the length of the calyx. *Awn* terminal, curved, longer than the flower." Such is the deſcription Linnæus gives of this graſs, which no botaniſt has ever been able to aſcertain. Nothing in his herbarium bears this name, and yet there can be no doubt of his having deſcribed a ſpecimen of his own. In writing the ſecond *Mantiſſa*, he was often negligent about marking the plants he deſcribed. There is found in his genus *Avena*, confounded with the Spaniſh *A Loeflingiana*, from which it is very diſtinct, a Cape ſpecimen, which anſwers preciſely to his deſcription of the *Milium* in queſtion, except that the calyx generally con-

tains two florets, each with the twiſted awn of an *Avena*. This however is as good a *Milium* as *M. paradoxum*, and we have no ſcruple in conſidering it as what Linnæus intended. The hairy ſheaths and backs of the *leaves*, as well as the bearded *ſtipula*, are remarkable. The *corolla* is externally hairy. We cannot refer this graſs to any in Thunberg's *Prodromus*.

2. M. *punctatum*. Dotted Millet-graſs. Linn. Sp. Pl. 91. Amoen. Acad. v. 5. 392. Swartz. Obſ. 37. Brown. Prod. Nov. Holl. v. 1. 188.—Panicle of alternate, linear, ſimple cluſters. Lower flowers in pairs; upper ſolitary. Flower-ſtalks jointed. Outer valve of the corolla with a ſhort awn. Native of Jamaica, in moiſt meadows. *Swartz*. Gathered by Mr. R. Brown near Port Jackſon, as well as in the tropical part of New Holland; by Dr. Rottler at Madras. A pale upright graſs, with the habit of a *Leerſia*, or a *Paſpalum*. *Stem* from one to two feet high, ſimple, round, jointed, ſmooth, leafy. *Leaves* broadiſh, ſtriated, ſlightly roughiſh, with long ſmooth ſheaths. *Panicle* a ſpan long, erect, cloſe, with hairy ſtalks. *Flowers* crowded, turned one way, ovate, acute, hairy. *Corolla* included, elliptical; its outer valve tipped, as Dr. Swartz and Mr. Brown obſerve, with a ſhort rough awn. A purple ſtain, like a dark dot, under each flower, ſeems to have given riſe to the ſpecific name.

3. M. *lendigerum*. Panick Millet-graſs. Linn. Sp. Pl. 91. Schreb. Gram. v. 2. 14. t. 23. f. 3. Engl. Bot. t. 1107. Fl. Græc. Sibth. v. 1. 49. t. 65. (Agroſtis auſtralis; Linn. Mant. 30. A. ventricoſa; Gouan. Hort. 39. t. 1. f. 2. Knapp. t. 25. Gramen paniceum ſerotinum, ſpicâ laxâ pyramidali; Moriſ. v. 3. 189. n. 12. *Herb. Bobart.*)—Panicle cloſe, ſomewhat ſpiked. Corolla awned, fringed.—Native of fields in the ſouth of Europe, where water has ſtagnated; rather rare in England. Dr. Sibthorp found it on the ſandy ſea-ſhore of Aſia Minor. It is annual, and flowers in the latter part of ſummer. The tufted fibrous *roots* produce many *ſtems*, from ten to twenty inches high. *Leaves* rough, with ſlightly ſwelling ſheaths, and long, white, torn ſtipulas. *Panicle* pale, erect, acute, from one to four inches long, of innumerable crowded *flowers*; the baſe of their *calyx* tumid, ſmooth and poliſhed. The permanent hardened *corolla*, which inveſts the ſeed, makes this ſpecies more certainly a *Milium*, than an *Agroſtis*.

4. M. *compreſſum*. Compreſſed Millet-graſs. Swartz. Ind. Occ. 183. Willd. n. 4.—Spikes two or three together, linear, on a very long ſtalk. Flowers alternate, cloſe-preſſed, awnleſs. Stem compreſſed, jointed in the middle.—Common in barren, rather alpine paſtures in Jamaica; communicated by Dr. Swartz. *Roots* white, thread-ſhaped, perennial. *Stems* a foot high, or more, ſmooth, compreſſed quite flat, with a downy joint about the middle. *Leaves* long, linear, ſmooth, finely ſtriated, radical; except one from the joint in the middle of the ſtem, which is broader, with a very long compreſſed ſheath, bearded at its orifice. *Flower-ſtalks* from four to eight, from the ſheath of the ſtem-leaf, about a foot long, thread-ſhaped, ſmooth, each bearing a pair of terminal, erect, linear, ſlender *ſpikes*, about two inches long, ſometimes accompanied by a third at ſome diſtance, all together reſembling ſome of the genus *Panicum*. The *common ſtalk* of each is zigzag and acutely angular. *Flowers* ſmall, elliptic-oblong. *Calyx* ribbed, browniſh, minutely fringed.

5. M. *digitatum*. Fingered Millet-graſs. Swartz. Ind. Occ. 181. Willd. n. 5.—Spikes finger-like, about four together, nearly ſeſſile. Florets acute, awnleſs, cloſe-preſſed, in pairs, directed one way. Leaves with cartilaginous ſerratures.—Gathered by Dr. Swartz in barren paſtures, in the ſouth of Jamaica. This appears to be ſtill more akin to *Panicum* than the laſt, having ſometimes a minute third valve to its *calyx*. The *ſtem* is a foot high, ſimple, ſlender, upright, ſmooth. *Leaves* lanceolate, ſhort, ſtriated, with compreſſed bearded ſheaths. *Spikes* terminal, ſlender, ſomewhat ſpreading, two inches long, purpliſh. *Flowers* in pairs, rather unequal, on ſerrated ſtalks.

6. M. *paniceum*. Panick-like Millet-graſs. Swartz. Ind. Occ. 179. Willd. n. 6.—Spikes rather finger-like, alternate, ſpreading, thread ſhaped. Flowers triangular, awnleſs, ſtalked, in pairs, turned one way.—In dry ſandy ground, in the ſouthern part of Jamaica. *Swartz*. *Stem* a foot high, ſimple, ſlender, erect, roundiſh, ſmooth. *Leaves* linear, ſmooth; their ſheaths hairy at the orifice. *Spikes* three or four, ſlender, alternate, but near together, at the top of a long ſlender ſtalk, ſpreading. *Flowers* minute. *Glumes* of the *calyx* ſomewhat fringed; the outer one convex; the inner flat. *Corolla* the ſhape and ſize of the calyx, ſmooth, brown and ſhining, finally blackiſh, containing the very ſmall ſeed.

7. M. *effuſum*. Spreading Millet-graſs. Linn. Sp. Pl. 90. Curt. Lond. faſc. 4. t. 12. Engl. Bot. t. 1106. Knapp. t. 19. Willd. n. 7. (Gramen miliaceum; Ger. em. 6.)—Flowers looſely panicled, awnleſs. Glumes elliptical, pointleſs, ſheaths of the leaves ſmooth.—Native of ſhady groves, where the ground is rather moiſt, throughout Europe, flowering in June or July. *Root* creeping, perennial. *Stems* erect, two or three feet high, leafy, ſmooth. *Leaves* light green, broad, flat, roughiſh at the edges; their ſheaths ſmooth and naked, crowned by an oblong membranous *ſtipula*. *Panicle* erect, lax and widely ſpreading, compoſed of ſeveral alternate faſcicles of variouſly branched capillary flower-ſtalks. *Flowers* ſolitary, pale whitiſh-green, elliptical, rather acute, but not pointed; their *calyx-glumes* even, finely ribbed, generally quite ſmooth, ſometimes minutely roughiſh, never hairy nor fringed. *Corolla* at length horny, quite ſmooth and finely poliſhed.

8. M. *confertum*. Cloſe Millet-graſs. Linn. Sp. Pl. ed. 1. 61. ed. 2. 90. Willd. n. 8. (Gramen paniculatum alpinum latifolium, paniculâ miliaceâ ſparſâ; Scheuchz. Agroſt. 134.)—Flowers cloſely panicled, awnleſs. Glumes elliptical, pointleſs. Sheaths of the leaves ſmooth.—Native of Switzerland. Haller aſſerts under his n. 1525. Hiſt. v. 2. 243, that this proved, on an inſpection of Scheuchzer's ſpecimen, a mere variety of the laſt. We know it not.

9. M. *arundinaceum*. Reed-like Millet-graſs. Sm. Prodr. Fl. Græc. Sibth. v. 1. 45. Fl. Græc. t. 66. (Agroſtis miliacea; Linn. Sp. Pl. 91. Willd. Sp. Pl. v. 1. 363.)—Flowers looſely panicled. Corolla awned, ſmooth. Calyx taper-pointed. Sheaths of the leaves ſmooth. Stipula very ſhort, abrupt.—Native of Siberia, Spain, Portugal, Zante, and the neighbourhood of Athens. The modern inhabitants of Zante call it γξηλαξη. The *root* is perennial, tufted, with tortuous, downy, ſtrong fibres. *Stems* numerous, two feet high, round, ſmooth, moſt knotty in their lower part. *Leaves* ſpreading, acute, roughiſh, with cloſe ſmooth ſheaths. *Panicle* rather turned to one ſide, ſlender, conſtructed much like that of *M. effuſum*, but the *flowers* are only half as large, with ovate, tumid, long-pointed *calyx-glumes*, often reddiſh. *Corolla* ovate, the outer valve tipped with a rough awn, twice its own length. *Seed* coated with the hardened *corolla*, which makes the plant a true *Milium*, its reſemblance to *Agroſtis Spica-venti*, hinted by Linnæus, chiefly regarding its firſt aſpect, and diſappearing on a cloſe examination.

10. M. *anguloſum*. Little Angular-huſked Millet-graſs.—Flowers cloſely panicled, awnleſs. Glumes ovate, acute,

ſtrongly ribbed and furrowed. Sheaths of the leaves hairy.—Gathered in the Sandwich iſlands, by Archibald Menzies, eſq. This has the habit of the three preceding, but is diſtinguiſhed by the hairineſs of the backs of the *leaves*, and of their ſheaths. The joints of the *ſtem* are denſely bearded. *Panicle* rather cloſe, at leaſt in the dried ſpecimen, drooping. *Flowers* ſmaller than even thoſe of *M. arundinaceum*, their glumes ſtrongly ribbed, bluntly pointed, deſtitute of awns, and of all hairineſs.

11. M. *ſetoſum*. Briſtly-huſked Millet-graſs.—Flowers cloſely panicled, pointed, awnleſs. Calyx fringed with long hairs. Sheaths of the leaves hairy.—Gathered in the Sandwich iſlands, likewiſe by Mr. Menzies. *Root* of ſtrong ſmooth fibres, probably annual. *Stem* branched, a foot or more in height, with numerous joints, under each of which it is rough and hairy. *Leaves* and their ſheaths very hairy, light green. *Panicle* much like the laſt, but ſhorter. *Glumes* of the calyx ſtrongly furrowed, with a ſhort but ſtout point, ſcarcely amounting to an awn; they are remarkably fringed, with a few fine long ſpreading hairs, at each ſide. *Corolla* elliptical, awnleſs, very ſmooth, ſmaller than the calyx.

12. M. *tenellum*. Small Tumid Millet-graſs. Cavan. Ic. v. 3. 37. t. 274. f. 1.—Panicle ovate, denſe, awnleſs. Calyx-glumes inflated, almoſt hemiſpherical, very ſmooth. Sheaths of the leaves ſwelling, ribbed, ſmooth.—Gathered in ſandy ground in Spain by the late Abbé Cavanilles, to whom we are obliged for a ſpecimen. This is a little annual vernal graſs, in habit, ſize and colour like *Aira caryophyllea*, along with which it grows. The *ſtems* branch from the bottom, and are clothed with a few ſhort, narrow, involute *leaves*, with long, inflated, ribbed, purpliſh, ſmooth ſheaths. The upper part of each *branch* is naked, round, ſmooth, rigid, purple, bearing an ovate, denſe, glittering *panicle*, an inch long. *Glumes* of the calyx rugoſe at the keel, ovate, almoſt hemiſpherical, concave, encloſing the much ſmaller *corolla*, which latter we have not ſeen in an advanced ſtate, ſo as to judge of the generic character. The aſpect of the glumes of the *calyx* is that of a *Briza*.

13. M. *globoſum*. Globoſe Millet-graſs. Thunb. Jap. 49. Willd. n. 9.—Panicle ſpreading, awnleſs; its partial ſtalks annulated. Calyx-glumes ovate, obtuſe. Sheaths of the leaves fringed.—Gathered by Thunberg in Japan. *Stem* ſimple, erect, a foot high or more. *Leaves* lanceolate, ſtriated, rough, bordered, ſpreading, hardly a finger's length; their ſheaths fringed at the edges and orifice. *Panicle* ſomewhat ovate, ſpreading; its ſtalks capillary, zigzag, marked with a yellow ring near the top. *Calyx* ovate, obtuſe, awnleſs, ſmooth, browniſh-green. *Thunb.*

14. M. *paradoxum*. Black-ſeeded Millet-graſs. Linn. Sp. Pl. 90. Scop. Carn. t. 1. Schreb. Gram. v. 2. 50. t. 28. f. 2. Hoſt. Gram. Auſtr. v. 3. 16. t. 23. Willd. n. 10.—Panicle ſpreading. Calyx ovate, taper-pointed, ribbed. Corolla long-awned, ſmooth. Sheaths of the leaves ſmooth. Stipula elongated, acute.—Native of the ſouth of France, and of Carniola. A tall, ſlender, reed-like graſs, with narrow, ſmooth, rather glaucous, taper-pointed *leaves*, whoſe ſheaths are cloſe and ſmooth, and their *ſtipula* long, white, thin, membranous, acute, torn at the point. *Panicle* with ſolitary, ſpreading, ſlender, compound branches. *Flowers* very large in proportion to all the foregoing, one-third of an inch in length. *Calyx-glumes* purpliſh, ovate, concave, keeled and ribbed, with a long membranous point. *Corolla* half the length of the calyx, finally becoming black hard and poliſhed, its outer valve tipped with a long rough awn.

15. M. *racemoſum*. Racemoſe Millet-graſs.—Flowers in a ſimple upright cluſter. Calyx elliptical, acute, ribbed. Corolla long-awned, hairy. Leaves lanceolate, with ſmooth ſheaths.—Sent by the Rev. Dr. Muhlenberg from Lancaſter in Pennſylvania. The *ſtem* is ſlender, leafy, ſmooth. *Leaves* lanceolate, flat, taper-pointed, half an inch broad. *Flowers* the ſize of the laſt, four or five, in a ſlender, erect, perfectly ſimple *cluſter*, with finely downy ſtalks. *Calyx* many-ribbed, green. *Corolla* at length brown, clothed with a few fine hairs, and not much poliſhed, bearing a long rough awn.

16. M. *cæruleſcens*. Blueiſh Millet-graſs. Desfont. Atlant. v. 1. 66. t. 12. Sm. Prodr. Fl. Græc. Sibth. v. 1. 45.—Panicle ſpreading. Calyx ovate, taper-pointed. Corolla ſmooth, with a ſlight awn ſhorter than the calyx. Sheaths of the leaves ſmooth. Stipula elongated, jagged.—Gathered by Desfontaines in the fiſſures of rocks on mount Atlas, and by Dr. Sibthorp abundantly in the Greek iſles.—This has nearly the appearance of *M. paradoxum*, eſpecially the *panicle*, but the *leaves* are more narrow and glaucous, the *corolla* ſmaller, with only a ſhort deciduous awn.

17. M. *villoſum*. Shaggy-flowered Millet-graſs. Swartz. Prodr. 24. Obſ. 383. Willd. n. 11. (Andropogon inſulare; Linn. Sp. Pl. 1480. (Gramen avenaceum, paniculâ minùs ſparſâ, glumis albâ ſericeâ lanugine obductis; Sloane Jam. v. 1. 43. t. 14. f. 2.)—Panicle ſlightly ſpreading, awnleſs. Calyx clothed with long hairs. Sheaths of the leaves ſmooth.—Native of Jamaica and the Brazils. The *leaves* are lanceolate, roughiſh. *Panicle* of very numerous angular branches. *Flowers* about half the ſize of the laſt, remarkable for the long ſilky hairs that clothe the *calyx*. *Awns* none. This ſpecies ſeems rather to belong to the genus *Saccharum*. We know nothing of its *corolla*.

18. M. *ramoſum*. Branching Millet-graſs. Retz. Obſ. faſc. 6. 22. Willd. n. 12.—Stem branched, compreſſed, decumbent. Flowers cloſely panicled, hairy, uſually in pairs. Sheaths of the leaves ſmooth.—Native of the Eaſt Indies. *Stems* leafy, downy at the joints. *Leaves* linear, narrow, quite ſmooth as well as their ſheaths. *Panicles* ſeveral, on long ſtalks, from the ſheaths of the upper leaves, each a ſpan long, cloſe, ſimply branched. *Flower-ſtalks* thickened and fringed at the top, with a black ring under each flower. *Calyx* lanceolate, hairy. *Corolla* ſmooth, poliſhed, hard, the outer valve with a rigid point ſhorter than the calyx. *Stigmas* long, feathery, brown. The nature of the *corolla* being conſidered, the doubts of the accurate Retzius, whether this graſs ſhould be reckoned a *Milium* or *Agroſtis*, vaniſh.

Milium *Arundinaceum*, a name by which ſome authors call the lachrymæ Jobi, or Job's tears.

Milium *Indicum*, a name by which ſome authors call the maize, or Indian wheat.

MILK, in *Rural Economy*, and *Animal Chemiſtry*, is a white opaque fluid, ſecreted by a certain organ exiſting in all lactiferous animals. This ſecreting apparatus is differently ſituated in different animals. In women it is placed in the anterior part of the breaſt: in the cow, the mare, the ewe, and ſome others, it is ſituated in the lower part of the abdomen. While in the ſow, the bitch, and ſeveral other quadrupeds, it is arranged through the whole courſe of the abdomen. The glandular ſubſtance which conſtitutes this organ is called the mamma: that projecting portion of the mamma, from whence the milk iſſues, being called the papilla, or nipple. The mammæ are more or leſs in number in different animals, according to their number of young, ſome having as many as ten, others but one. In the human ſubject the mammæ are two, each having one nipple. In the cow but one mamma, with four nipples. This organ in all animals appears deſtined to furniſh their young with nouriſhment, till their own digeſtive organs are capable of performing their functions. Hence we find the period of lactation in animals to commence when they bring forth their young. This ſhews a ſtrong connection between the ſecretion of milk, and the uterine action. All this may eaſily take place from the great connection between thoſe branches of nerves which are beſtowed upon the mammæ and the uterus.

At the age of puberty, the ſame nervous connection which may induce the uterine action, may, at the ſame time, be alſo beſtowed upon the mammæ, cauſing them to be enlarged. During pregnancy, the nervous influence which is expended in forming the ſecretions for the growth of the fœtus, is, after delivery, transferred to the mammæ to produce lactation. Since ſecretion is dependent upon nervous influence, all ſubſtances moderately ſtimulating muſt facilitate the formation of milk. Some have ſuppoſed that the mammary artery is too ſmall to furniſh the quantity of milk which is furniſhed during lactation, and have thought that the chyle has been the principal ſource of this fluid. Fourcroy is of opinion, that the more ſubſtantial part of milk only is ſecreted from the blood, and that the aqueous part is furniſhed from the lymphatic veſſels. What renders this idea plauſible is, the very different ſtates in which we find cows' milk from different kinds of food.

Milk, as an article of food, and its products, are of ſuch importance in domeſtic economy, as to render all the improvements in its production and management particularly valuable. Since the milk of the cow is the moſt abundant and in general uſe, we ſhall confine the analyſis of this ſubſtance to cows' milk.

Milk, when drawn from the cow, is of a yellowiſh-white colour, and is the moſt yellow in the beginning of the period of lactation. The viſcidity of milk is ſomething greater than that of water. In this ſtate it has a peculiar but pleaſant odour, which becomes leſs by expoſure to the air, but returns when expoſed to heat. Its taſte is peculiar, rather agreeable, and ſomewhat ſaccharine. This, however, varies in different animals, and in the ſame animal, from particular kinds of food. Cabbage and turnips, when eaten by cows, give each their peculiar flavour to milk; and if they eat the ſmalleſt quantity of wild garlic, the milk and butter become perceptibly flavoured with its peculiar odour.

The ſpecific gravity of milk, on the average, is about 1.035, water being 1. According to Briſſon, whoſe authority on this phyſical property of bodies ſtands high, the following are the ſpecific gravities of the milk of different animals,

Women's milk - - -	1.0203
Cows' - - - -	1.0324
Goats' - - - -	1.0341
Mares' - - - -	1.0346
Aſſes' - - -	1.0355
Ewes' - - - -	1.0409

The ſpecific gravity of cows' milk varies from ſeveral cauſes. It is greateſt at the beginning of lactation. It is the leaſt when the milk appears the thinneſt, or when it is the moſt aqueous. Cows feeding on grains, which is the caſe frequently in large towns, give poor milk, of little ſpecific gravity.

When milk is expoſed, in a cold ſituation more eſpecially, it ſoon becomes covered with a ſubſtance, of greater viſcidity than the milk, of a yellow colour, and having an unctuous feel. This is called cream. The quantity of this ſtratum bears different proportions to the milk under different circumſtances. The milk now loſes ſome of its viſcidity, and becomes of a bluer colour. In this ſtate it is known by the name of ſkimmed milk. See Dairying.

When milk is expoſed to heat, it firſt ſwells, and boils, it is ſaid, at the temperature 199° of Fahrenheit. The ſurface ſoon becomes covered with a pellicle, which, if removed, is ſoon ſucceeded by another. This effect would take place till the reſiduum would become of an aqueous appearance, and incapable of furniſhing any pellicle. This ſubſtance formed on the ſurface, is found no longer to poſſeſs the properties of milk, but is a peculiar ſubſtance called caſeous matter, and is the ſame which conſtitutes the ſolid matter called cheeſe.

When milk is very ſlowly evaporated it forms a kind of thick extract of milk, which is called *franchipane*. This being mixed with ſugar, almonds, and orange flowers, conſtitutes a ſort of ſweetmeat or cuſtard.

When milk is diſtilled, a liquor comes over which has the odour of milk, but does not poſſeſs any other of its properties. It ſoon becomes putrid, depoſiting white flakes. If the heat be raiſed and continued, the thick part of the milk undergoes the deſtructive diſtillation. Empyreumatic oil, zoonic acid, and ammonia, are formed, with the diſengagement of carburetted hydrogen gas. After the proceſs, a voluminous coal is found in the ſtill.

When milk has been expoſed for ſeveral days in a temperature from 60° to 70°, it becomes a thick coagulum, ſo ſolid as not to be capable of pouring. During this change it is found that an acid has been formed which has ſeparated the milk into two portions, the one the coagulable part, called curd, or caſeous matter; the other the ſerous part, called whey. This change is alſo effected by other acids and by alcohol. The mineral acids are not proper for this purpoſe, becauſe they re-diſſolve the curd. Hence the vegetable acids are ſaid to produce more curd than the mineral acids. The ſubſtance generally employed by cheeſemakers to ſeparate the curd, is a ſmall portion of the inner coat of the ſtomach of the calf, which is ſalted, dried, and kept for that purpoſe.

By a particular management milk may be made to undergo the vinous fermentation, by which a quantity of alcohol is formed. It will be eaſy to infer, however, that this change is occaſioned by the ſaccharine matter which it contains.

The Tartars have long been in the practice of making a vinous liquor, from which they diſtilled a ſpecies of brandy. This they procure from mares' milk, which is known to contain more ſugar than that of the cow. By expoſing it in large open veſſels, the fermentation takes place. The maſs being large, no doubt contributes to this change. A quantity both of the lactic and acetic acids are formed at the ſame time, which are ſeparated from the vinous ſpirit by repeated diſtillations. The curdy or caſeous part of milk above alluded to, is preſſed into molds for cheeſe. (See Dairying and Cheese.) Although acids ſeparate the curd when added in ſmall quantity, yet when in conſiderable quantity, the curd becomes re-diſſolved. It is remarkable, that dilute vegetable acids ſeparate the curd without re-diſſolving it, while theſe acids, concentrated, diſſolve the ſame. The curd is, on the contrary, eaſily diſſolved by the dilute mineral acids, but not by theſe acids in their concentrated ſtate.

Many other ſubſtances coagulate milk, ſuch as alcohol, molaſſes, gelatine, and all aſtringent vegetables. The effect is ſuppoſed to ariſe from the affinity of the coagulating ſubſtance to water, the curd, which is principally albumen, having very little affinity for the ſame. The alkalies diſſolve curd with great facility, owing to their great affinity for that ſubſtance. If ammonia be added to milk which has curdled, it will reſtore it to the appearance of milk, by diſſolving the curd. Lime has alſo the power of diſſolving curd. If quick-lime be boiled with curd into the form of pulp, it forms a moſt powerful cement. A ſimilar property may perhaps belong to barytes and ſtrontian.

When curd is freed from cream, kneaded, and preſſed to expel the liquid matter, it becomes very hard with time, aſſumes a degree of tranſparency, and poſſeſſes many of the properties of dried coagulated albumen. Expoſed to heat, it ſoftens and becomes glutinous. The heat being continued, it becomes brown, exhales fumes, which contain ammonia; and laſtly, inflames, leaving a denſe coal behind.

The dried curd does not change by expoſure to the air, but if it contains moiſture, it ſoon putrifies, giving a diſagreeable fetid odour. This change would take place in cheeſe, if it were not for muriat of ſoda, which alſo acts as a ſeaſoning. It is likely that certain proportions of nitre, muriat of ſoda, and ſugar, would make an agreeable ſeaſoning for cheeſe, and would be a better preſervative than ſalt alone.

If curd remains in cold water for a length of time, its properties become changed; it becomes fat, unctuous, and ſoft, having, at the ſame time, a fetid ſmell. It is, doubtleſs, to a certain degree of this change that we may attribute what is called the ripening of cheeſes, by laying them in a damp place, and turning them from time to time. The cheeſes abſorb a quantity of water, and gain much weight. Their bulk is increaſed, and the interior is much altered, and is ſaid to be ripe or mellow. Inſtead of allowing the cheeſe to abſorb water, it is not uncommon for epicures to ſaturate it with port wine, or ſtrong ale.

The white colour of milk, after the cream has been ſeparated, is owing to the curd. This ſubſtance, in numerous minute particles in a ſtate of coagulation, conſtitutes its white opaque appearance, ſince the whey, after the laſt portions of curd and cream have been ſeparated, becomes tranſparent and limpid.

The clear liquor laſt mentioned is what we ſhall now examine under the name of whey, or the ſerum of milk. It differs from the whey of dairies, ſince the latter always contains a portion of oily matter, as well as ſome unſeparated curd. To get the ſerum or whey ſufficiently pure for chemical examination, a ſmall quantity of freſh membrane of the calf's ſtomach muſt be employed to coagulate the milk. This will be more effectually done by boiling them together till the change takes place. Previous, however, to this, the milk muſt be perfectly freed from its cream, by placing it in a cool ſituation, and ſkimming it frequently. When the curd is ſeparated, firſt ſtrain it through a coarſe cloth; afterwards filter it through unſized writing paper.

In this ſtate the whey is limpid, and of a greeniſh-yellow colour. It has a peculiar ſweetiſh ſmell when hot, which it loſes on cooling. Its taſte is rather ſweet, and not diſagreeable. When expoſed to a boiling heat, a whitiſh ſcum riſes to the ſurface, the liquid becoming rather turbid. If it be boiled a little while, and then ſet to cool, that which rendered it turbid falls, leaving the liquor clear, and almoſt as colourleſs as water. This reſiduum laſt named, is a ſmall portion of curd which remained in the whey. The clear liquor thus obtained is of leſs ſpecific gravity than milk, being 1.0193. By ſlow evaporation, it affords cryſtals of a ſubſtance much reſembling ſugar, but much leſs ſoluble. This has been called ſugar of milk. Near the end of the evaporation, cryſtals of the muriats of potaſh and ſoda are depoſited, and ſome phoſphat of lime.

The circumſtance of muriat of potaſh being afforded in this analyſis, is ſtrongly in favour of the idea that milk is not wholly ſecreted from the blood, ſince potaſh is never found in that fluid. The ſugar of milk is in the form of cryſtals of a brown-yellow colour. Theſe, when purified by ſeveral ſucceſſive ſolutions and evaporations, become white, of a priſmatic ſhape, or rather parallelopipedons.

This ſubſtance is ſoluble in about four parts of boiling water, and twelve of cold. It is manufactured and ſold in Switzerland, under the name of ſalt or ſugar of milk.

When treated with nitric acid, with a view to obtain oxalic acid, a ſmaller portion of this acid is obtained than from the ſame weight of ſugar. Scheele, however, who firſt made this experiment, found that a quantity of white powder was ſeparated, which he found to be a peculiar acid, and which he denominated the acid of ſugar of milk. This has been altered into *Saclactic acid*, which ſee. Fourcroy found that the ſame acid was afforded by treating gum arabic with nitric acid. On this account he called it the mucous acid. It was from this latter fact that this ſagacious chemiſt inferred that ſugar of milk was a ſubſtance of a middle nature between gum and ſugar. It is the opinion of Deyeux and Parmentier, that ſugar of milk conſiſts of ſugar combined with the ſaclactic acid.

The mother water, from which the ſugar of milk is obtained, is of a brown colour, and of a thick gluey conſiſtence, which, on cooling, aſſumes the appearance of animal jelly. If this be diluted and ſlowly evaporated a ſecond time, an additional quantity of the muriat of potaſh is ſeparated in cryſtals, and alſo of phoſphats of ſoda and lime. The preſence of phoſphat of lime in the ſerum of milk, may be detected both by precipitating its acid and its baſe. If oxalat of ammonia be poured into the clear whey, a precipitate of oxalat of lime is formed. On the other hand, when nitrat of lead or nitrat of mercury is employed as a teſt, the phoſphats of lead and mercury are precipitated. The great quantity of phoſphat of lime in milk, in order to ſupply oxifying matter, ſo eſſential to young animals, is a remarkable proviſion of nature.

The remaining part of the whey chiefly conſiſts of gelatine. If when whey has been evaporated to the conſiſtency of ſyrup, a quantity of alcohol be poured upon it, a flaky precipitate is formed, conſiſting of gelatine and ſugar of milk. The gelatine may be ſeparated by tannin. Thus we ſee that whey conſiſts of ſugar of milk, gelatine, muriats of potaſh and ſoda, and phoſphats of lime and ſoda, with a certain quantity of water. It is alſo ſaid that whey contains ſulphat of potaſh, and the phoſphats of iron and magneſia.

Whey is exceedingly liable to turn ſour. The acid which is formed, was thought by Scheele to be what he termed the lactic acid; the ſame which is formed when milk coagulates ſpontaneouſly. It is, however, now found to be the acetic acid, ariſing from the acetous fermentation which has ſucceeded the vinous; the latter being induced by the ſaccharine matter which the milk contains.

Having given the analyſis of milk deprived of cream, or the oily part, we ſhall now give ſome account of the latter, which is alſo denominated the butyraceous part of milk.

Cream, the mode of ſeparating which we have already given, gradually thickens by expoſure to the air, and ultimately becomes a ſoft unctuous ſolid, called cream cheeſe. When cream is expoſed to its boiling heat, and oil ſoon appears upon its ſurface, the reſt of the cream conſiſts of caſeous matter and whey. This oil, by the operation of churning, is converted into a ſolid fatty ſubſtance, ſo well known under the name of butter. See BUTTER and DAIRYING.

If milk, when newly taken from the cow, be agitated for ſome time, the oily matter becomes concrete, and is diſperſed through the fluid in ſmall grains. Theſe being collected, conſtitute butter. It was formerly thought, that the agitation of the milk merely collected and preſſed the ſmall particles of butter together. It is now believed that the butter does not exiſt ready formed in the milk, but in a ſtate of oil, which requires to combine with oxygen before it can become hard. This idea is rendered plauſible by ſeveral circumſtances. The more acid the cream has become before churning, the ſooner butter is formed. It has alſo been aſcertained, that the preſence of freſh atmoſpheric air facilitates the formation of butter. The frequent inſtances which occur in practice, of not getting butter at any rate, may doubtleſs be traced to the want of a ſupply of oxygen. This may be a hint of ſome importance in the management of large dairies.

When butter has been obtained from cream, the liquid remaining conſiſts of milk, containing minute particles of butter. If cream has been kept till it ſhall have become ſour, the curd becomes precipitated. In this caſe it becomes of a thicker conſiſtence. This is known by the name of butter-milk.

Butter, prepared as above, is of a yellow colour, and more yellow as the cream has been kept longer. Its taſte is very unlike any other fatty ſubſtance, and extremely agreeable. This, however, is not always the caſe, ſince its flavour is ſometimes altered by the food of the cow. When it has been expoſed to the air for a certain time, it acquires a rancid taſte. Its flavour ſometimes becomes changed, and rendered diſagreeable, by a portion of the butter-milk which has not been waſhed out of it.

Butter, when newly made, fuſes in about 99° of Fahrenheit. Its ſpecific gravity is about .96, water being 1. When it is expoſed to the heat of boiling water in a glaſs tube, a portion of curd and whey is ſeparated from it. By this proceſs the butter becomes almoſt tranſparent; but it will be found to have loſt much of its agreeable taſte. Hence it would ſeem, that its flavour either depends upon the ſmall portion of ſerum and curd, which is always a conſtituent of butter, or that its aroma is expelled by the heat. Butter is not changed by a heat which merely fuſes it.

When butter is diſtilled from a ſmall glaſs retort, ſome drops of water firſt appear, and the greater part of the butter comes over. This is accompanied by a diſagreeable ſmell, and an inflammable gas. A ſmall quantity of coaly matter is left at the bottom of the retort, which contains phoſphat of lime. By repeated diſtillation, the oily ſubſtance which comes over becomes lighter and more volatile. This is probably owing to the ſeparation of carbon. If the retort be large, the oxygen, being more abundant, cauſes the formation of more water with the hydrogen from the butter. Another portion of the hydrogen and a portion of carbon combine with the oxygen, forming ſebacic acid.

Butter combines with moſt of the ſubſtances which combine with fat, ſuch as ſulphur, phoſphorus, the alkalies, and ſeveral metallic oxyds.

By collecting the different parts which have been given, we ſhall find the conſtituents of cows' milk as follows: curd; ſerum or whey, which conſiſts of water; gelatine; ſugar of milk, or mucaceous ſaccharine matter; muriats of ſoda and potaſh; ſulphat of potaſh, and the phoſphats of lime; magneſia and iron; butter, conſiſting of an oxygenated oil, combined with a little ſerum and caſeous matter.

In caſes where the milk of animals is taken away periodically by milking, as in the cow, the ſupply is continued, and hence the great value of that animal, in particular, to man, who is indebted to her for three of the moſt uſeful articles of food, milk, butter, and cheeſe. But in reſpect to the quality of milk, it differs conſiderably in different circumſtances and ſituations, and from the manner in which the cows are fed and managed. In order to have an abundant ſupply, it is neceſſary to have recourſe to conſtant plentiful feeding of the animals with rich luxuriant green food of different ſorts, given in a proper varied manner, as well as other kinds of food. In comparing the qualities of the milk of different cows, the time in which they have been in milk ſhould be fully conſidered, as the milk, ſoon after calving, is always much thinner than it is afterwards. The properties of milk, ſo far as they regard the dairy, and the management of it in reſpect to the making of butter and cheeſe, will be taken notice of in another place. In caſes where the mother is loſt, or the young animal is too feeble to have recourſe to her teats, milk with ſugar, gruel, and a ſmall quantity of ſpice, is ſometimes given as a means of ſupport. See DAIRYING, LACTOMETER, BUTTER, and CHEESE.

The milk of different animals differs conſiderably.

Women's milk is much thinner than cows' milk; is of a bluer colour, and contains more ſaccharine matter. It does not afford butter till ſome time after delivery, although it contains ſome oily matter. It contains leſs curd than the milk of the cow. The milk of women is liable to greater changes from diſeaſe than any other. Spaſms, which are not uncommon to thoſe who ſuckle, ſo change the milk, as to be unpleaſant and unwholeſome to the infant. It is obſerved by Deyeux and Parmentier, that when the milk is drawn from the breaſt at ſhort intervals, it is conſtantly watery and poor, and is of but little ſervice to the infant. They therefore recommend, that the intervals of ſuckling ſhould be as great as poſſible, without inconvenience to the infant or the nurſe.

The milk of the aſs is alſo different from cows' milk: it contains more ſaccharine matter, and, like women's milk, is thinner than that of the cow. There is nothing in this milk more than in others, to warrant the medical qualities which ſome aſcribe to it.

Aſſes' milk is ſaid to be a great beautifier and preſerver of the ſkin. Poppæa, wife of the emperor Nero, uſed it for that purpoſe; having four or five hundred aſſes conſtantly in her retinue, to furniſh her every morning with a freſh bath. The receipt for making what is called artificial aſſes' milk is as follows:

℞ limac. terreſt. contus. xviii. Raſur. C. Cervi, Hordei perlati, Rad. eryngii, ſing. unc. i. aquæ puræ lib. vi. coque leni igne in vaſe figulino vitriato ad lib. iii; dein cola et adde ſyrupi balſamici ſeſcunciam. Capiat æger mane et veſperi quotidie unc. iv. hujus liquoris miſtas cum lactis vaccin. recentis p. æ. Med. Tranſ. vol. ii. p. 341.

Goats' milk is ſomething thicker, and appears richer than even the cows' milk. It has a peculiar aroma, which, from the black goat, is ſo ſtrong as to be diſagreeable. It affords butter and cheeſe: the former is of a whiter colour than that from the cow, and is ſaid to keep longer.

Ewes' milk has the appearance of cows' milk. It affords a much larger quantity of cream, forming a ſoft and very fuſible butter. Its caſeous matter is very ſoft and unctuous, and is ſometimes mixed with that from the cow, to give it a rich appearance.

Mares' milk is the next to women's milk in quantity of ſaccharine matter: it affords little cream; and does not eaſily coagulate. It is from the quantity of ſugar contained in this milk, that it affords alcohol by fermentation.

Milk, in the *Wine Trade.* The coopers know very well the uſe of ſkimmed milk, which makes an innocent and efficacious forcing for the fining down of all white wines, arracks, and ſmall ſpirits; but is by no means to be uſed for red wines, becauſe it diſcharges their colour. Thus, if a few quarts of well-ſkimmed milk be put to a hogſhead of red wine, it will ſoon precipitate the greater part of the colour, and leave the whole nearly white; and this is of known uſe in the turning red wines, when pricked, into white; in which a ſmall degree of acidity is not ſo much perceived.

Milk is, from this quality of diſcharging colour from wines, of uſe alſo to the wine-coopers, for the whitening of wines that have acquired a brown colour from the caſk, or from having been haſtily boiled before fermenting; for the addition of a little ſkimmed milk in theſe caſes precipitates the brown colour, and leaves the wines almoſt limpid, or of what they call a water whiteneſs, which is much coveted abroad in wines as well as in brandies.

Milk-*Abſceſs.* See Abscess *of the Breaſt.*

Milk-*Fever,* a fever frequently attacking women the ſecond or third day after being delivered, occaſioned probably by ſome circumſtance attending the ſecretion of the milk into the breaſts. It is of ſhort duration, and not attended with danger. For the treatment and cure, ſee Labour, *Natural.*

Milk *of the Moon, lac lunæ,* a name given by naturaliſts to foſſil agaric, a white light marle. See Lac *lunæ.*

Some ſay, it is chiefly found in ſilver mines, and that it is a flower ſublimed from the ore of that metal; whence its denomination, *flower of ſilver.*

Milk *of Sulphur, lac ſulphuris,* a preparation of flowers of ſulphur and ſalt of tartar; preſcribed by phyſicians as a ſudorific. See Sulphur *Præcipitatum.*

Milk-*Vetch,* in *Botany.* See Astragalus.

Milk-*Vetch, Baſtard* See Vetch.

Milk-*Vetch,* or *Goat's-thorn,* in the *Materia Medica.* See Tragacanth.

Milk, *Virgin's, lac virginale,* compoſed of roch alum, ſpring-water, litharge, and vinegar; uſed as a coſmetic, to drive in pimples, and check any cutaneous eruptions, by its cooling, reſtringent quality. See Virgin's *Milk.*

Milk-*Water.* See Water.

Milk-*Wood,* in *Botany.* See Trumpet-*flower.*

Milk-*Wort.* See Polygala.

Milk-*Wort,* or *Wart-wort.* See Spurge.

Milk-*Wort, Sea.* See Glaux.

Milk, in *Geography,* a river of Jamaica, which runs into the ſea, four miles N.W. of Maccaree bay.

Milk *Cove,* a creek of Ireland, on the S.E. ſide of the entrance into Roſs bay, near Gully Head.

Milk *Haven,* a ſmall harbour of Ireland, in the county of Sligo, S. of Donegal bay.

Milk *River,* a river of Canada, which runs into lake Erie, N. lat. 42° 28′. W. long. 82° 22′.

MILKING, the means or operation of drawing the milk from the cow or other animal. The proper milking of cows is a matter of much conſequence to the cow and dairy farmer. And it has been obſerved, that more care is neceſſary in this buſineſs than is generally ſuppoſed, in order to obtain the largeſt poſſible quantity of milk. "On the phyſiological principle of the ſecretions of animals being increaſed in proportion as the ſecreted fluid is more frequently withdrawn, it has been, it is ſaid, recommended to have recourſe to more frequent milkings in order to augment the quantity of that fluid in cows. And there can be little doubt but that by accuſtoming the ſecretory organs to a more frequent ſecretion, ſuch a habit may be eſtabliſhed in them as will afford a large proportion of milk in a given time. But in order to effect this in the moſt perfect manner, it will be neceſſary to have the cows highly fed, and to obſerve the greateſt regularity and exactneſs in the periods of milking, and to be careful that every drop of milk is drawn away each time, as without due regard in theſe reſpects the deſired effect will not be produced. This is fully ſhewn to be the caſe by the few experiments that have been inſtituted with the view of deciding the matter; as while the cows were conſuming the more juicy ſpring food, there appears to have been an increaſe in the quantity of milk both by three and four milkings in the day; but in the autumnal ſeaſon there ſeems to have been rather a decreaſe under the ſame circumſtances." But "in order to aſcertain the advantages to be obtained in this way with accuracy, the following experiments were made by Mr. Marco, and the reſults ſtated in the twelfth volume of the Annals of Agriculture to be theſe:

		Pints.
1789—May 21,	Firſt meal - -	$9\frac{1}{2}$
	Second ditto - -	13
		$22\frac{1}{2}$
22,	Firſt meal - -	13
	Second do. - -	8
	Third do. - - -	5
		26
23,	Firſt meal - -	12
	Second do. - -	7
	Third do. - -	6
	Fourth do. - -	1
		26
October 22,	Firſt meal - -	11
	Second do. - -	6
		17
23,	Firſt meal - -	11
	Second do. - -	3
	Third do. - - -	3
		17
24,	Firſt meal - -	10
	Second do. - -	$1\frac{1}{2}$
	Third do. - - -	$1\frac{1}{2}$
	Fourth do. - -	3
		16

But it is evident, that "ſuch trials, to afford any ſatiſfactory concluſions, ſhould have been continued for a much greater length of time, being varied conſiderably in the times of milking, and nicely compared with the nature and quantity of the food employed; as it is only by aſcertaining how much depends upon the ſimple operation of taking away the milk, and how much upon the quality and proportion of food that is taken in, that the queſtion can be fairly decided;

decided. The deterioration of the animal ſhould alſo be conſidered. It is not to be ſuppoſed that merely increaſing the number of milkings for a few days can have much influence in altering the ſtate of the ſecretion in the animals. Some, with the intention of increaſing the quantity of milk, have recommended milking, when the cows are fully fed in the ſummer ſeaſon, three times in the courſe of the day at equal diſtances, as the convenience of the buſineſs will admit as the moſt proper. Early in the morning, about the middle of the day, and in the evening before it is too late. The exact proportion of increaſe in the milk that may be produced in this way over that of milking in the morning and evening only, which is the uſual mode, has not, that we know of, been aſcertained with any degree of accuracy; but ſome ſuppoſe that it may approach to nearly one-half of the whole, while others contend that it cannot be any thing near ſo much. If a third were gained, by ſuch means, it would amply repay the cow-keeper for his additional trouble and expence."

With reſpect to "the method of milking adopted by cow-farmers in moſt caſes, it is only to have their milking performed twice in the courſe of twenty-four hours. In ſuch caſes the moſt proper times would ſeem to be about ſeven o'clock in the morning, and five in the afternoon; but in the neighbourhood of London, according to the Report of Middleſex, and in other large towns, it is the practice to have this work performed from four to half-paſt ſix in the morning, and from half-paſt one to three in the afternoon. It is, therefore, probable, that more frequent milking in the buſineſs of cow-farming, eſpecially when conducted upon an extenſive ſcale, would not only be inconvenient but impracticable. In ſuch caſes it is ſuppoſed, that all that can be done is, perhaps, that of having the operation executed with as much care as poſſible, in reſpect to the whole of the milk being taken away each time, and by perſons who are careful and perfectly accuſtomed to the work. Where this is neglected, much loſs may be ſuſtained not only in the immediate produce of the milk, but in the cows becoming much more quickly dry, as well as their being more ſubject to affections of the udder. The beſt advice is, to have the buſineſs performed in an expeditious manner, in regard to the whole of the animals, and with the utmoſt attention in reſpect to cleanneſs. A ſufficient number of perſons ſhould of courſe be employed in proportion to that of the cows. An expert milker is capable of performing the operation on from ſix to ſeven or eight cows in the courſe of an hour." It is proper that the number of milkers employed ſhould conſtantly be ſuch as to have the buſineſs performed in about the courſe of an hour at the fartheſt. See DAIRY, and DAIRYING.

MILKING *Pail*, in *Rural Economy*, the veſſel made uſe of for containing the milk as it is drawn from the cow. Theſe pails are made of wood, and ſometimes hooped with iron at the bottom. They are made of different ſizes, and ſhould be kept well ſeaſoned by frequent ſcalding.

MILKNESS, a provincial term applied to a dairy. See DAIRY.

MILKOVAIA DERVINA, in *Geography*, a town of Kamtſchatka, ſettled by a colony of Ruſſians; 15 miles N. of Verchnei Kamtſchatka.

MILKY GROTTO. See GROTTO.

MILKY *Way*, *via lactea*, or *galaxy*. See GALAXY.

MILL, JOHN, in *Biography*, a learned Engliſh divine and biblical critic, was born at Shapp, in Weſtmorland, about the year 1645. He was entered of Queen's college, Oxford, where he took his degrees in arts, and of which college he afterwards became a fellow and eminent tutor. As ſoon as he entered into holy orders he diſtinguiſhed himſelf by his pulpit talents, and was much followed as an eloquent preacher. He publiſhed one of his ſermons preached at St. Martin's-in-the-Fields about the year 1676, intended to ſhew that there was no ſort of foundation for the worſhip of the Virgin Mary, and at this period the biſhop of Exeter appointed Mr. Mill one of his chaplains, and gave him a prebend in his cathedral church. In 1680 he took his degree of B.D., and in the following year was preſented by his college to the rectory of Blechingdon, in Oxfordſhire, at the ſame time proceeded doctor in divinity, and was nominated chaplain in ordinary to king Charles II. Dr. Mill had been ſome years employed in preparing for the preſs his valuable edition of the "New Teſtament," which is now as rare as it is excellent. This great work he undertook by the advice and with the encouragement of Dr. Fell, biſhop of Oxford, at whoſe expence it was to be printed. At an early ſtage of the buſineſs the liberal-minded prelate died, and his executors being unwilling to proceed with the work, Dr. Mill, with a noble ſpirit, refunded to them the ſums of money which his departed friend had advanced, and determined to complete it at his own riſk. To this work, which cannot fail to tranſmit his name with diſtinguiſhed honour to poſterity, he devoted the thirty laſt years of his life, with the moſt patient aſſiduity, as well as ſcrupulous care, and he had the ſatisfaction of ſeeing his uſeful labours brought to a cloſe, and the fruits of them preſented to the world. In 1685, Dr. Mill was elected principal of St. Edmund's hall, Oxford, which preferment was the more acceptable, as it gave him an honourable ſettlement in the univerſity, and enabled him to proſecute his deſign to the utmoſt advantage. In 1704 he was, by the intereſt of Dr. Sharp, archbiſhop of York, preſented with a prebendary of Canterbury. His work was publiſhed in 1707, an event which he did not ſurvive more than a fortnight, being carried off by an apoplectic ſtroke in the ſixty-third year of his age. Of his great learning his work gives ample proofs: it is founded upon, and is an improvement of, Robert Stephens' elegant folio edition, publiſhed at Paris in the year 1550, which has in the inner margin the collation of ſixteen manuſcripts, and of biſhop Fell's neat and accurate edition, publiſhed at Oxford in 1675. To the various readings of the former, Dr. Mill added thoſe of ſixteen MSS. out of the Engliſh Polyglot bible. He alſo collated himſelf all the valuable MSS. in England, and procured collations of the moſt eſteemed ones at Rome, Paris, Vienna, and other places, as well as of the ancient tranſlations of the New Teſtament. This edition of the New Teſtament was reprinted at Rotterdam in 1710, in folio, by the learned Kuſter, who augmented it with the collation of twelve new MSS. It was alſo reprinted at Leipſic in 1723. Dr. Mill's labours gave very general ſatisfaction to the learned of this country, and to biblical ſcholars every where; but there were ſome few who doubted if it might not tend to unhinge the minds of people, by countenancing the notion that the text was precarious, as the author had collected thirty thouſand various readings. On this account Dr. Whitby made it the ſubject of an attack, which was ably anſwered by Mr. Whiſton, and ſtill more fully by Dr. Bentley, in the thirty-ſecond ſection of his "Remarks" upon it, under the aſſumed title of "Phileleutherus Lipſienſis." Biog. Brit.

MILL *Bay*, in *Geography*, a bay on the E. coaſt of the iſland of Stronſa. N. lat. 58° 59′. W. long. 2° 20′.

MILL *Creek*, a river of Virginia, which runs into the Ohio, N. lat. 40° 36′. W. long. 80 36′.

Mill *Gaut*, a town of Hindooſtan, in the circar of Hindia, on the left bank of the Nerbudda; 10 miles E. of Hindia.

Mill *Iſlands*, four ſmall iſlands in Hudſon's bay. N. lat. 64° 30′. W. long. 78° 30′ to 79° 40′.

Mill, in propriety, denotes a machine for grinding corn, &c. but, in a more general ſignification, is applied to all machines whoſe action depends on a circular motion.

Of theſe there are ſeveral kinds, according to the various methods of applying the moving power; as water-mills, wind-mills, mills worked by horſes, &c.

Few people are ignorant, that corn is ground by two mill-ſtones, placed one above the other, without touching.

The lower mill-ſtone is immoveable, but the upper one turns upon a ſpindle. The oppoſite ſurfaces of the two ſtones, which act to grind the corn, are not plane or flat; but the upper one is hollow, and the under one ſwells up; each of them being of a conic figure, whoſe axis indeed is very ſhort, in proportion to the diameter of its baſe; for the upper one being ſix feet in diameter, is hollowed but about one inch at its centre; and the lower one riſes but about three-fourths of an inch. Theſe two mill-ſtones come nearer and nearer towards their circumference, whereby the corn that falls from the hopper has room to inſinuate between them as far as two-thirds of the radius, which is the place where it begins to be ground, and where it makes the greateſt reſiſtance that it is capable of; the ſpace between the two ſtones being in that place about but two-thirds or three-fourths of the thickneſs of a grain of corn. But as the millers have the liberty of raiſing or ſinking the upper ſtone a little, they can proportion its diſtance from the lower one, according as they would have the flour finer or coarſer.

In order to cut and grind the corn, both the upper and under mill-ſtones have channels or furrows cut in them, proceeding obliquely from the centre towards the circumference. And theſe furrows are each cut perpendicularly on one ſide, and obliquely on the other, into the ſtone; which gives each furrow a ſharp edge, and in the two ſtones, they come, as it were, againſt one another, like the edges of a pair of ſciſſars; and ſo cut the corn to make it grind the eaſier, when it falls upon the places between the furrows. Theſe are cut the ſame way in both ſtones when they lie upon their backs, which makes them run croſs-ways to each other, when the upper ſtone is inverted by turning its furrowed ſurface towards that of the lower. For if the furrows of both ſtones lay the ſame way, a great deal of the corn would be drove onward in the lower furrows, and ſo come out from between the ſtones without ever being cut. When the furrows become blunt and ſhallow by wearing, the running ſtone muſt be taken up, and both ſtones new dreſt with a chiſſel and hammer. But, by this repeated operation, their thickneſſes, and conſequently their weight, diminiſh; and it is obſerved, that when they come to have but three-quarters, or half of the thickneſs which they had when new, they produce but three-quarters or half the flour which they yielded at the beginning.

The circular motion of the upper mill-ſtone brings the corn out of the hopper by jerks, and cauſes it to recede from the centre towards the circumference, where, being quite reduced to flour, it is thrown out of the mill, by the centrifugal force of the ſtone, through a hole provided on purpoſe.

The diameter of common mill-ſtones, according to Dr. Deſaguliers, is from five to ſeven feet, and their thickneſs, twelve, fifteen, or eighteen inches: they laſt thirty-five or forty years, and when they have been long uſed, ſo that their thickneſs is conſiderably diminiſhed, they are cut anew, to give their ſurface a contrary figure to what they had before: ſo that the upper mill-ſtone is made the lower.

In water-mills, the momentum of the water is the moving power, and the attrition of the two ſtones in grinding is the force to be overcome. Of theſe there are two kinds, *viz.* thoſe where the force of the water is applied above the wheel, and thoſe where it is applied below the wheel; the former being called over-ſhot, and the latter under-ſhot mills: and to theſe we may add a breaſt-mill, where the water ſtrikes againſt the middle of the wheel.

In a common breaſt-mill, where the fall of water may be about ten feet, A A, (*Plate* XXIII. *Mechanics*, *fig.* 1.) is the great wheel, which is generally about ſeventeen or eighteen feet diameter, from *a* the outermoſt edge of any float board, to *b*, that of its oppoſite float. To this wheel the water is conveyed through a channel, and falling upon the wheel, turns it round. On the axis B B, of this wheel, and within the mill-houſe, is a wheel D, about eight or nine feet diameter, having ſixty-one cogs, which turn a trundle E, containing ten upright ſtaves or rounds; and when this is the number of cogs and rounds, the trundle will make 6$\frac{1}{10}$ revolutions for one revolution of the wheel. The reaſon of adding an odd cog, called the hunting cog, to the wheel, is this; that, as every cog comes to the trundle, it may take the next ſtaff or round behind the one which it took in the former revolution, and thus it will wear all the parts of the cogs and rounds which work upon one another equally, and to equal diſtances from one another in a little time; and make a true uniform motion throughout the whole work. The trundle is fixed upon an iron axis called the ſpindle, the lower end of which turns in a braſs foot, fixed at F, in the horizontal beam S T, called the bridge-tree; and the upper part of the ſpindle turns in a wooden buſh fixed into the lower mill-ſtone, which lies upon beams in the floor Y Y. The top part of the ſpindle above the buſh is ſquare, and goes into a ſquare hole in a ſtrong iron croſs, *a b c d*, (*fig.* 2.) called the rynd; under which, and cloſe to the buſh, is a round piece of thick leather upon the ſpindle, which it turns round at the ſame time as it does the rynd. The rynd is let into grooves in the under ſurface of the running mill-ſtone G, (*fig.* 1.) and ſo turns it round in the ſame time that the trundle E is turned round by the cog-wheel D. This mill-ſtone has a large hole quite through its middle, called the eye of the ſtone, through which the middle part of the rynd and upper end of the ſpindle may be ſeen; whilſt the four ends of the rynd lie hid below the ſtone in their grooves.

The end T of the bridge-tree T S (which ſupports the upper mill-ſtone G upon the ſpindle) is fixed into a hole in the wall; and the end S is let into a beam Q R called the brayer, whoſe end R remains fixed in a mortiſe: and its other end Q hangs by a ſtrong iron rod P, which goes through the floor Y Y, and has a ſcrew-nut on its top at O; by the turning of which nut, the end Q of the brayer is raiſed or depreſſed at pleaſure; and, conſequently, the bridge-tree T S and upper mill-ſtone. By this means the upper mill-ſtone may be ſet as cloſe to the under one, or raiſed as high from it, as the miller pleaſes. The nearer the mill-ſtones are to one another, the finer they grind the corn; and the more remote from one another, the coarſer.

The upper mill-ſtone G is incloſed in a round box H, which does not touch it any where; and is about an inch diſtant from its edge all around. On the top of this box ſtands a frame for holding the hopper *k k*, to which is hung the ſhoe I, by two lines faſtened to the hind-part of it, fixed upon hooks in the hopper, and by one end of the crook-ſtring K faſtened to the fore-part of it at *i*; the other end being twiſted round the pin L. As the pin is turned one way, the ſtring draws up the ſhoe cloſer to the hopper, and ſo leſſens the aperture between them; and as the pin is turned the other way, it lets down the ſhoe, and enlarges the aperture.

If the ſhoe be drawn up quite to the hopper, no corn can fall from the hopper into the mill; if it be let a little down, ſome will fall: and the quantity will be more or leſs, according as the ſhoe is more or leſs let down. For the hopper is open at bottom, and there is a hole in the bottom of the ſhoe, not directly under the bottom of the hopper, but forwarder towards the end *i*, over the middle of the eye of the mill-ſtone.

There is a ſquare hole in the top of the ſpindle, in which is put the feeder *e* (*fig.* 2.); this feeder (as the ſpindle turns round) jogs the ſhoe three times in each revolution, and ſo cauſes the corn to run conſtantly down from the hopper, through the ſhoe, into the eye of the mill-ſtone, where it falls upon the top of the rynd, and is, by the motion of the rynd and the leather under it, thrown below the upper ſtone, and ground between it and the lower one. The violent motion of the ſtone creates a centrifugal force in the corn going round with it, by which means it gets farther and farther from the centre, as in a ſpiral, in every revolution, until it be thrown quite out; and, being then ground, it falls through a ſpout M, called the mill-eye, into the trough N. When the mill is fed too faſt, the corn bears up the ſtone, and is ground too coarſe; and beſides, it clogs the mill ſo as to make it go too ſlow. When the mill is too ſlowly fed, it goes too faſt, and the ſtones, by their attrition, are apt to ſtrike fire againſt one another. Both which inconveniencies are avoided by turning the pin L backwards or forwards, which draws up or lets down the ſhoe; and ſo regulates the feeding as the miller ſees convenient.

Sometimes, where there is a ſufficient quantity of water, the cog-wheel in *fig.* 1. turns a large trundle, on whoſe axis is fixed a horizontal wheel, with cogs all around its edge, turning two trundles at the ſame time; whoſe axis or ſpindles turn two mill-ſtones. When there is not work for them both, either may be made to lie quiet, by taking out one of the ſtaves of its trundle, and turning the vacant place towards the horizontal cog-wheel. And there may be a wheel fixed on the upper end of the great upright axle of this wheel for turning a couple of boulting-mills; and other work for drawing up the ſacks, fanning and cleaning the corn, ſharpening of tools, &c. As the water acts upon an over-ſhot mill both by impulſe and weight, ſo does it likewiſe upon a breaſt-mill, or that where the water comes upon the breaſt or middle part of the wheel: and here, though the weight of the water is not ſo great as in the over-ſhot mill, being contained in the buckets of the lower quarter only; yet the impulſe of the water is much greater, the height of the water being increaſed nearly the ſemi-diameter of the great wheel, all other things being equal. If the height of the water remain the ſame, the aperture of the penſtock muſt be enlarged to nearly twice the area, that the force may be the ſame; ſo that to produce the ſame effect, twice as much water is neceſſary for the breaſt-mill as for an over-ſhot one, every thing elſe being the ſame.

Mr. Ferguſon obſerves, that where there is but a ſmall quantity of water, and a fall great enough for the wheel to lie under it, the bucket or over-ſhot wheel is always uſed. But where there is a large body of water, with a little fall, the breaſt or float-board wheel muſt take place. As to the under-ſhot mill, it is evident there can be only the impulſe from the water; and therefore, the height of the water remaining the ſame, there muſt be a larger aperture of the penſtock for the diſcharge of a greater quantity of water in the ſame time, in order to produce the ſame effect as the over-ſhot or breaſt-mill; whence a greater expence of water will be made here than in any other mill, and can only be ſupplied for a conſtancy by a river; and where this can be had, the under-ſhot is the eaſieſt, cheapeſt, and moſt ſimple ſtructure, of which a mill is capable. Dr. Deſaguliers, having had occaſion to examine many under-ſhot and over-ſhot mills, generally found that a well made over-ſhot mill ground as much corn, in the ſame time as an under-ſhot mill with ten times leſs water; ſuppoſing the fall of water at the over-ſhot to be twenty feet, and at the under-ſhot to be about ſix or ſeven feet: and he generally obſerved, that the wheel of the over-ſhot mill was of fifteen or ſixteen feet diameter, with a head of water of four or five feet, to drive the water into the buckets with ſome momentum.

Mr. Ferguſon has given the following directions how to conſtruct water-mills, ſo as to be in the greateſt degree of perfection; and alſo a table calculated from his rules, for the ſake of thoſe mill-wrights who either cannot calculate, or do not like to take the trouble.

When the float-boards of the water-wheel move with a third part of the velocity of the water that acts upon them, the water has the greateſt power to turn the mill: and when the mill-ſtone makes about ſixty revolutions in a minute, it is found to do its work the beſt. For, when it makes but about forty or fifty, it grinds too ſlowly, and when it makes more than ſeventy, it heats the meal too much, and cuts the bran ſo ſmall, that a great part thereof mixes with the meal, and cannot be ſeparated from it by ſifting or boulting. Conſequently, the utmoſt perfection of mill-work lies in making the train ſo, as that the mill-ſtone ſhall make about ſixty turns in a minute when the water-wheel moves with a third part of the velocity of the water. To have it ſo, obſerve the following rules:

1. Meaſure the perpendicular height of the fall of water, in feet, above the middle of the aperture, where it is let out to act by impulſe againſt the float-boards on the loweſt ſide of the under-ſhot wheel.

2. Multiply this conſtant number 64.2882, by the height of the fall in feet, and extract the ſquare root of the product, which ſhall be the velocity of the water at the bottom of the fall; or the number of feet the water moves *per* ſecond.

3. Divide the velocity of the water by 3; and the quotient ſhall be the velocity of the floats of the wheel in feet *per* ſecond.

4. Divide the circumference of the wheel, in feet, by the velocity of its floats; and the quotient ſhall be the number of ſeconds in one turn or revolution of the great water-wheel on whoſe axis the cog-wheel that turns the trundle is fixed

5. Divide 60 by the number of ſeconds in a turn of the water-wheel or cog-wheel; and the quotient ſhall be the number of turns of either of theſe wheels in a minute.

6. By this number of turns divide 60 (the number of turns the mill-ſtone ought to have in a minute) and the quotient ſhall be the number of turns the mill-ſtone ought to have for one turn of the water or cog-wheel. Then,

7. As the required number of turns of the mill-ſtone in a minute is to the number of turns of the cog-wheel in a minute, ſo muſt the number of cogs in the wheel be to the number of ſtaves in the trundle on the axis of the mill-ſtone, in the neareſt whole number that can be found. By theſe rules the following table is calculated; in which the diameter of the water-wheel is ſuppoſed to be 18 feet, (and conſe-

quently its circumference $56\frac{4}{7}$ feet,) and the diameter of the mill-ſtone to be five feet.

Perpendicular height of the fall of water in feet.	Velocity of the water in feet *per* ſecond.	Velocity of the wheel in feet *per* ſecond.	Number of turns of the wheel in a minute.	Required number of turns of the mill-ſtone for each turn of the wheel.	Neareſt number of cogs and ſtaves for that purpoſe.		Number of turns of the mill-ſtone for one turn of the wheel by thoſe cogs and ſtaves.	Number of turns of the mill-ſtone in a minute by theſe cogs and ſtaves.
					Cogs.	Stav.		
1	8.02	2.67	2.63	21.20	127	6	21.17	59.91
2	11.40	3.72	4.00	15.00	105	7	15.00	60.00
3	13.89	4.63	4.91	12.22	98	8	12.25	60.14
4	16.04	5.35	5.67	10.58	95	9	10.56	59.87
5	17.93	5.98	6.34	9.46	85	9	9.44	59.84
6	19.64	6.55	6.94	8.64	78	9	8.66	60.10
7	21.21	7.07	7.50	8.00	72	9	8.00	60.00
8	22.68	7.56	8.02	7.48	67	9	7.44	59.67
9	24.05	8.02	8.51	7.05	70	10	7.00	59.57
10	25.35	8.45	8.97	6.69	67	10	6.70	60.09
11	26.59	8.86	9.40	6.38	64	10	6.40	60.16
12	27.77	9.26	9.82	6.11	61	10	6.10	59.90
13	28 91	9.64	10.22	5.87	59	10	5.90	60.18
14	30.00	10.00	10.60	5.66	56	10	5.60	59.36
15	31.05	10.35	10.99	5.46	55	10	5.40	60.48
16	32.07	10.69	11.34	5.29	53	10	5.30	60.10
17	33.06	11.02	11.70	5.13	51	10	5.10	59.67
18	34.02	11.34	12.02	4.90	50	10	5.00	60.10
19	34.95	11.65	12.37	4.85	49	10	4.80	60.61
20	35.86	11.92	12.68	4.73	47	10	4.70	59.59
1	2	3	4	5	6		7	8

Example.—Suppoſe an under-ſhot mill is to be built where the perpendicular height of the fall of water is nine feet: it is required to find how many cogs muſt be in the wheel, and how many ſtaves in the trundle, to make the mill-ſtone go about 60 times round in a minute, while the water-wheel-floats move with a third part of the velocity with which the water ſpouts againſt them from the aperture at the bottom of the fall.

Find 9 (the height of the fall) in the firſt column of the table; then againſt that number, in the ſixth column, is 70, for the number of cogs in the wheel, and 10 for the number of ſtaves in the trundle: and by theſe numbers, we find in the eighth column that the mill-ſtone will make $59\frac{57}{100}$ turns in a minute, which is within half a turn of 60, and near enough for the purpoſe; as it is not abſolutely requiſite that there ſhould be juſt 60 without any fraction: and throughout the whole table the number of turns is not quite one more or leſs than 60.

The diameter of the wheel being eighteen feet, and the fall of water nine feet, the ſecond column ſhews the velocity of the water at the bottom of the fall, to be $24\frac{5}{100}$ feet *per* ſecond; the third column the velocity of the float-boards of the wheel to be $8\frac{2}{100}$ feet *per* ſecond; the fourth column ſhews that the wheel will make $8\frac{52}{100}$ turns in a minute; and the ſixth column ſhews that for the mill-ſtone to make exactly 60 turns in a minute, it ought to make $7\frac{5}{100}$ (or ſeven turns and five hundred parts of a turn) for one turn of the wheel.

Dr. Barker has invented a water-mill, that has neither wheel nor trundle: this is repreſented in *fig.* 3, in which A is a pipe or channel that brings water to the upright tube B. The water runs down the tube, and thence into the horizontal trunk C, and runs out through holes at *d* and *e* near the ends of the trunk on the contrary ſides thereof.

The upright ſpindle D is fixed in the bottom of the trunk, and ſcrewed to it below by the nut *g*; and is fixed into the trunk by two croſs-bars at *f*: ſo that if the tube B and trunk C be turned round, the ſpindle D will be turned alſo.

The top of the ſpindle goes ſquare into the rynd of the upper mill-ſtone H, as in common mills; and as the trunk, tube, and ſpindle turn round, the mill-ſtone is turned round thereby. The lower, or quieſcent mill-ſtone, is repreſented by I; and K is the floor on which it reſts, and wherein is the hole L for letting the meal run through, and fall down into a trough which may be about M. The hoop or caſe that goes round the mill-ſtone reſts on the floor K, and ſupports the hopper, in the common way. The lower end of the ſpindle turns in a hole in the bridge-tree G F, which ſupports the mill-ſtone, tube, ſpindle, and trunk. This tree is moveable on a pin at *h*, and its other end is ſupported by an iron rod N fixed into it, the top of the rod going through the fixed bracket O, and having a ſcrew-nut *o* upon it, above the bracket. By turning this nut forward or backward, the mill-ſtone is raiſed or lowered at pleaſure.

Whilſt the tube B is kept full of water from the pipe A, and the water continues to run out from the ends of the trunk; the upper mill-ſtone H, together with the trunk, tube, and ſpindle, turns round. But if the holes in the trunk were ſtopt, no motion would enſue; even though the tube and trunk were full of water. For,

If there were no hole in the trunk, the preſſure of the water would be equal againſt all parts of its ſides within. But, when the water has free egreſs through the holes, its preſſure there is entirely removed; and the preſſure againſt the parts of the ſides which are oppoſite to the holes, turns the machine. See Deſaguliers's Exp. Phil. vol. ii. p. 417, &c. p. 431, &c. p. 459, &c. Ferguſon's Mechanics, p. 45, &c. 4to. ed. and Supp. p. 10. See alſo on this ſubject, an elaborate paper of Mr. Smeaton, containing an account of a number of experiments, in order to eſtimate the natural powers of water and wind to turn mills, in the Phil. Tranſ. vol. li. art. 18 p. 100, &c.

The deſcription of a mill, which we have given above in the words of the late ingenious Mr. Ferguſon, is very correct. The improvements of late years, which have been made in mills for grinding corn, relate to the manner of their conſtruction, and the proportions of the wheel-work, for giving motion to the mill-ſtones, by which the grinding is performed in the manner deſcribed. The late Mr. John Smeaton, F.R.S., was celebrated for his accuracy and judgment in the proportions of his mills, particularly thoſe turned by water. We ſhall, under the article WATER-*Wheels*, give ſome account of his principles; and under this head we ſhall deſcribe a ſteam flour-mill, which was erected from his deſigns, at the victualling houſe for the navy at Deptford, in 1781. This was before the ſteam-engine of Mr. Watt was brought to the perfection it has ſince attained; and as the old atmoſpheric engine was thought to be unfit for producing a rotatory motion, Mr. Smeaton erected a common ſteam-engine to pump up water for the ſupply of a large overſhot water-wheel, which actuated the mill. *Fig.* 1. of *Plate* XXXIV. *Mechanics*, repreſents the whole mill, by a longitudinal ſection of the houſe; and *fig.* 2, another ſection, taken perpendicular to the former. The mill is double, that is, the water-wheel, A A, is ſituated between two buildings, only one of which is repreſented in *fig.* 2 ; and the wall, B B, of the other is one ſide of a houſe, containing exactly the ſame machinery as that which is delineated. Over the water-wheel two large ciſterns, or troughs, C, D, are placed, communicating with each other by a large iron pipe E, *fig.* 1 ; and one of theſe troughs, C, has a pipe or trough, leading water into it, from the pump of the ſteam-engine ſupplying the water for the mill : in the other trough, D, is a ſhuttle *a*, which being raiſed up, permits the water to iſſue from a hole in the end of the trough, and fly forwards horizontally through a proper ſhute, or pentrough, into the buckets of the wheel A. The form of theſe buckets is ſhewn by *fig.* 1, a portion of the wheel being repreſented in ſection for that purpoſe. The buckets, which are thus filled at the top of the wheel, deſcend by their weight, turning the wheel round, till they come to the loweſt part of the wheel; and here, by the buckets becoming inverted, the water is diſcharged from them, and they go up empty to the top of the wheel, where they are filled again from the trough. In this manner, one ſide of the wheel being always loaded by the buckets full of water, and the other ſide being empty, it has a conſtant tendency to turn round. The axis of the wheel has a large ſpur-wheel, E, fixed upon its extreme end, which being furniſhed with a double row of cogs, as ſhewn in *fig.* 2, communicates motion to the lanterns or trundles, F, G, one above, and the other below it : the latter, G, is fixed upon the end of an horizontal ſhaft H H, extending beneath the mill-ſtones, ſituated at I I and L : it actuates the upper ſtone of each pair, by means of crown or face-wheels K, which turn the pinions fixed at the lower ends of the reſpective ſpindle *d d*. The upper trundle, F, is fixed upon a ſhaft, which carries two face-wheels, *e*, *f*: the teeth of theſe wheels are oppoſite to each other, and either of them can be made to work a pinion, *g*, *fig.* 1, fixed upon the end of an axis *h*, which at the other end has a cog-wheel turning a pinion at *k*, on the end of the ſpindle of a machine, M, for dreſſing flour. This machine conſiſts of a hollow cylinder or frame, covered with wire-cloth of different degrees of fineneſs; the fineſt being at the end A, which is the moſt elevated, for the axis of the cylinder is inclined in the direction of the dotted line : every one of the lengths, as it goes towards the other end, is covered with a coarſer kind of wire-cloth, for ſifting the flour. Within this cylinder, which is ſtationary, a reel is ſituated ; its axis being exactly in the centre of the cylinder, and turned round by the pinion *k* : the rails of this reel are provided with hair bruſhes, which, as they revolve, bruſh againſt the interior wire ſurface of the cylinder. The machine is provided with a ſhoe or jigger, very ſimilar to that of the mill-ſtones, to bring down the flour or meal through a trough, from the floor above, where it is kept after being ground : the meal, being by this means gradually fed into the cylinder, is, by the motion of the bruſhes on the reel, ſifted or rubbed through the wire : the fineſt of the flour will of courſe go through at the upper end, but no other kind ; the ſecond through the next diviſion, and ſo on till the bran falls out at the end of the cylinder, being too coarſe to go through any of the wires. The cylinder is encloſed in a tight and cloſe box M, to prevent waſte by the flour flying about ; and the box has partitions, which divide it into as many lengths as the cylinder has different kinds of wire. Thus each diviſion of the box receives a different quality of flour ; and ſpouts being fixed, which go down into the floor beneath, ſacks can be filled at them without waſte or inconvenience.

The pinion *g*, for turning the dreſſing machine, can be made to turn either way about, by engaging it with the teeth of either of the cog-wheels *e*, *f*, which acting on the oppoſite ſides of the pinion *g*, give the means of turning it in either direction at pleaſure. The pinion is of ſuch a diameter, that it cannot be engaged with both wheels at once ; and the upright lever *r*, which ſupports the pivot of its axis *h*, can be thrown to either ſide, as is ſhewn in *fig.* 2 : for its lower end moves on a centre at the floor, and at top it is guided by a groove in a piece of wood, fixed to the ceiling, and can be faſtened at either ſide by a pin, ſo as to throw the pinion in gear with either *e* or *f*. The object of this contrivance is, that when the machine, M, has for a long time been running in one direction, and its bruſhes become worſe, or bent on one ſide, its motion may be reverſed, to give them an equal wear on the oppoſite ſide. The wheel, *e*, has another fixed to it at the back (ſee *fig.* 2.), which actuates a cog-wheel N, upon the end of a roller R, having a rope wound round it, for drawing up ſacks of corn or flour from one floor of the mill to another. This rope paſſes upwards from the roller to the roof of the building, where it paſſes over a pulley, and thence deſcends through ſquare holes in the ſeveral floors to the ground. Theſe holes are covered by double doors, opening upwards, ſo that a ſack, being drawn up, opens the door, which falls down as ſoon as it has paſſed. The wheel, N, of the ſack-roller can be diſengaged at pleaſure from the cog-wheel, *e*, which turns it ; and then the rope can be unwound and run down again, to fetch up another ſack. This diſengagement of the wheel is effected by the ſame means as deſcribed of the upright lever *r* ; and a line being conducted from the top of the lever, over proper pullies, into various parts of the mill, the miller can, by pulling this line, diſengage the roller at pleaſure, to draw up or let down a ſack. A pinion and ſhaft, ſimilar to *g* and *h*, *fig.* 1, may be placed on the oppoſite ſide of the wheels, *e* and *f*, to work another dreſſing machine at the oppoſite ſide of the mill, or what is called a bolting machine. This is rather of a different conſtruction, being the original flour-dreſſing machine : it conſiſts of a reel like the former, but without any bruſhes ; and upon this, inſtead of a wire-cylinder, a cloth like a ſack, cut open at the bottom, is faſtened, and revolves with it ; the flour, being introduced by a feeding-ſhoe into this, is ſifted round in the revolving cloth, and the fine flour paſſes through. To prevent the flour accumulating at any one ſide of the cloth into a bag, and ſwinging round with it, without ſifting, four rails are fixed in the machine, parallel to the axis ; and if the cloth ſwings out by the weight of the flour within it, the cloth ſtrikes againſt theſe rails, and the flour is thus ſhaken through it into the cheſt or caſe of the machine.

The lower figures of the plate contain the developement of the parts of the mill, tending to explain their conſtruction. *Figs.* 3, 4, and 5, ſhew the caſt-iron axis for the water-wheel ; N is the cylindric ſhaft, and *h*, *h*, its two necks, which lay on bearings in the wall of the mill, and bear the weight : beyond theſe necks the axis has a ſquare box, O O, at each end, for framing the great cog-wheels upon. The manner of attaching the arms of the great water-wheel to the ſhaft is this : two circular plates or flaunches, P, P, *fig.* 3, are caſt upon the axis ; and againſt each of theſe 12 arms, Q, Q, are bolted : they are placed againſt the flaunch, tending to the centre, and the ſpaces between them are filled up by wooden pieces, as ſhewn by *r*, *r*, *r*, *fig.* 4 : two iron rings, R and S, are placed over the arms, and a bolt put through each arm, to attach it to the flaunch, and to the axis ; the wooden pieces, *r*, *r*, are kept in their places by a wedge driven through each, within the great hoop R, and by means of theſe wedges the pieces, *r*, *r*, can at any time be drawn up towards the centre, to hold all the arms faſt in their places.

This method of framing water-wheels was uſed with great ſucceſs by Mr. Smeaton in many inſtances, and was found to anſwer the purpoſe extremely well, being a great improvement upon the old method of mortiſing the arms into a wooden ſhaft.

Figs. 6, 7, and 8, ſhew one of the ſpindles for the mill-ſtones H and L, *fig*. 2: it is a ſtraight iron axis, *d*, formed to a pivot, *s*, at the lower end, which reſts and turns in a piece of braſs: near the upper end of the ſpindle another neck or pivot, *t*, is formed, and runs in a collar, in the centre of the nether or lower mill-ſtone, whilſt the upper one is hung upon the arms of an iron croſs T: ſee alſo *fig*. 7, fitted with a ſquare upon the top of the ſpindle. On the lower part of the ſpindle the pinion Z, which gives it motion, is fixed: it has a ſquare hole through it, fitting on the ſquare ſpindle, and iron croſſes are fixed both at top and bottom of the block of wood forming the body of the pinion: in this iron are two ſcrews (ſee *fig*. 8.), which, being ſcrewed faſt, fix the pinion firmly to the ſpindle, its weight being ſupported by a wedge, *v*, put through a hole in it; but when this wedge is withdrawn, and the ſcrews ſlackened, the pinion falls down ſo low upon the ſpindle, that its teeth are clear of the teeth of the cog-wheels *k*, *fig*. 2, and in this ſtate the ſpindle and mill-ſtone upon it will ſtand ſtill, though the mill is going. The ſpindle foot, *s*, reſts in a braſs ſocket, fixed in a lever *w*, *figs*. 1 and 2, called the bridge-tree: its fulcrum is in the ſolid wall, W, *fig*. 1, at one end, and the other reſts on the middle of a ſecond lever X, perpendicular to the former, called the brayer, one end of which has a fulcrum in the framing, *fig*. 2, and the other is ſupported by a ſcrew, which the miller turns round, to elevate or depreſs the upper ſtone, and adjuſt the diſtance between them at pleaſure, according as he wiſhes to grind finer or coarſer flour. The upper part of the mill before us is uſed as a ſtore-houſe for corn, which is drawn up in ſacks by the tackle into the roof, and there emptied into binns, or different compartments, of the upper floor: from theſe it is let down to the mill-ſtones, and ground into meal. The ſpouts from the ſtones lead the meal into ſacks, which, when full, are drawn up to the top of the houſe again, and emptied out into a flour binn, ſituated over the dreſſing machine M, which ſeparates it into various qualities for uſe.

The mills which grind for the London market uſe three dreſſing machines: the fineſt flour is that which has been paſſed through a wire-cloth of 64 *per* inch, when the meal is dreſſed the firſt time; the other part of the cylinder is coarſe wire, which ſuffers a coarſe meal, called middlings, to paſs through it; but the bran and coarſe pollard fall out at the end of the cylinder. The middlings are ground over again in a pair of mill-ſtones, which are rather dull, and become unfit for grinding corn, without dreſſing them again: then, after this ſecond grinding, the meal is dreſſed in the cloth machine, called the bolting cloth, which takes out the ſecond flour, and the pollard comes out at the end of the cloth: the bran and the pollard together are now put into the clearing-off machine, which is a coarſe wire-cylinder of the kind we have deſcribed, and by it is ſeparated into hog pollard, which is the fineſt ſort; 2d, horſe pollard; and, 3d, bran. A pair of mill-ſtones will grind five buſhels of wheat *per* hour, when in good condition; but require to be taken up and dreſſed once a week, if uſed conſtantly. This dreſſing is done by picking the ſurface of the ſtone over with the mill-pick, to cut the grooves and furrows ſharp, that they may grind and cut the corn between them.

Perſons riotouſly aſſembling and deſtroying, or maliciouſly burning, any wind-ſaw mill, wind-mill, or water-mill, &c. ſhall be guilty of felony, without benefit of clergy, by 9 Geo. III. c. 29. Proſecution to be commenced within eighteen months after the offence committed. By 41 Geo. III. c. 24. the damages occaſioned by demoliſhing any ſuch mill by perſons riotouſly aſſembled, may be ſued for and recovered in the manner provided for by 1 Geo. ſtat. 2. c. 5. reſpecting the demoliſhing of churches and other buildings. (See Riot.) By 43 Geo. III. c. 58. any perſon who ſhall maliciouſly ſet fire to any mill in the poſſeſſion of any other perſon, or of any body corporate, ſhall be guilty of felony, without benefit of clergy.

Water-mills have long been great nuiſances to agriculture, by preventing the uſe of the ſtreams on which they ſtand, in many caſes, in irrigating and flooding the adjoining lands, by which much improvement is kept back, that would otherwiſe take place. They are alſo injurious by obſtructing and damming up the water in numerous inſtances, ſo as to render it ſtagnant on the ground above. Wind and ſteam may, however, be applied as the moving powers of mills without producing any ſuch effects, and are, of courſe, the moſt proper powers to be employed.

The ancient feudal cuſtom of obliging tenants to grind at the lord's mills, is now almoſt wholly done away. Draining or lifting-mills are often extremely uſeful in diſcharging water from low flat lands in many ſituations. The moving power in theſe is commonly wind. See Mill, in *Mechanics*.

By an ancient ordinance the toll for grinding ſhall be taken either to the 20th or 24th corn; and yet, in ſome places, millers claim and take the 16th part: but Mr. Dalton ſays, that the miller ſhould take but one quart for grinding one buſhel of hard corn, and if he carry back the griſt to the owner he may take two quarts of ſuch corn, *i. e.* wheat rye, and meſlin, (wheat and rye mixed.) For malt he ſhall take half as much as for hard corn. By Holt ch. juſt. the toll of a mill muſt be regulated by cuſtom, and if the miller take more than the cuſtom warrants, it is extortion: but if it be a new mill, the miller is not reſtrained to any certain toll. (1 L. Raym. 149.) In ſome places the tenants are bound to have their corn ground at the lord's mill. When a miller, upon information given on oath to any magiſtrate, is ſuſpected of adulterating meal or flour, the houſe, mill, &c. of ſuch miller may be entered under the authority of a warrant of a magiſtrate, at all ſeaſonable times of the day, to ſearch for diſcovery, and if ſuch adulterated meal or flour be found, it may be ſeized by the officer executing the warrant, ſeized by the magiſtrate to whom it is carried, and diſpoſed of at his diſcretion. (31 Geo. III. c. 29.) A miller who hath corn given him to grind, and who charges for that which is bad, is indictable; and he may be guilty of felony by taking away any part with an intent to ſteal it. (Hawk. c. 33.) Millers are not to be common buyers of any corn, with a view to ſell the ſame again, either in corn or meal. (Dalt. c. 122.) By 36 Geo. III. c. 85, every miller ſhall keep balances and weights according to the ſtandard of the exchequer, which may be examined by a perſon appointed for this purpoſe by 35 Geo. III. c. 102; and in default thereof the miller ſhall forfeit not exceeding 20*s*. &c. &c. Millers may be required to weigh corn, and, on refuſal, ſhall forfeit not exceeding 40*s*. Millers are to deliver the whole produce of corn when ground, if required, allowing for waſte in grinding and dreſſing, and for toll when taken; and if ſuch corn ſhall weigh leſs than the full weight, ſuch miller ſhall, for every buſhel of corn deficient in weight, forfeit not exceeding 1*s.* and alſo treble the value of ſuch deficiency. When toll is taken, it ſhall be deducted before the corn ſhall be put into the mill. No miller ſhall demand corn for toll, but in lieu thereof ſhall be entitled to payment in money, under penalty of forfeiting not exceeding 5*l.*: excepting when perſons ſhall not have money to pay for grinding, and alſo, that this ſhall not extend to mills called "Soke-mills," or ſuch ancient mills as are eſtabliſhed by cuſtom and the law of the land, which mills ſhall continue to take toll as they have been accuſtomed to do. Every miller is required to put up in his mill a table of the prices in money, or of the amount of toll or multure, on pain of forfeiting 20*s.* for every ſuch offence.

MILLS, *Wind*, are, with reſpect to their working parts, little different from thoſe of water-mills; but they are turned by the force of wind gathered in their ſails.

Of theſe, ſome are called *vertical*, others *horizontal*, according to the poſition of the ſails; or, rather, according to the direction of their motion, with regard to the horizon.

For the beſt form of horizontal ſails, and alſo for determining the poſition of the axis of wind-mills, ſee WIND-*mill* and MECHANICS.

MILLS, *Portative* or *Hand*, are thoſe kept in motion by the hand; or elſe whoſe mill-ſtones are turned, or piſtons driven by the force of horſes or other beaſts. Thus, if the cog-wheel D, (*Plate* XXXIII. *Mechanics, fig.* 1.) be made about eighteen inches diameter, with thirty cogs, the trundle as ſmall in proportion, with ten ſtaves, and the mill-ſtones be each about two feet in diameter, and the whole work be put into a ſtrong frame of wood, as repreſented in the figure, the engine will be a hand-mill for grinding corn or malt in private families. And then it may be turned by a winch inſtead of the wheel A A; the mill-ſtone making three revolutions for every one of the winch. If a heavy fly be put upon the axle B, near the winch, it will aſſiſt greatly in regulating the motion.

If the cog-wheel that turns the trundle or trundles of a mill be placed horizontally, horizontal levers may be fixed into its vertical axis, and horſes applied to theſe for turning the mill; which is often done where water cannot be had for that purpoſe.

The uſe of mills and mill-ſtones, according to Pauſanias, was firſt invented by Myla, ſon of Meleges, firſt king of Sparta; though Pliny attributes the invention of every thing belonging to bread and baking, to Ceres: Polydore Virgil was not able to diſcover the author of ſo uſeful a machine. It is doubted whether or not water-mills were known to the Romans, there being no mention made, in the Digeſt, but of mills turned by ſlaves and aſſes. Salmaſius, however, and Gothofred, will not allow water-mills to have been unknown to the ancient Romans, though they were not in ordinary uſe. Wind-mills are of much more modern invention; the firſt model of theſe was brought from Aſia into Europe in the time of the holy wars.

MILL is alſo uſed for any machine, which being moved by ſome external force, ſerves to give a violent impreſſion on things applied to it.

Mills, in this ſenſe, are machines of vaſt uſe in the manufactures, arts, and trades; for the making and preparing divers kinds of merchandizes. The principal are thoſe which follow.

MILL, *Colour*. Colours for the uſe of painters, paper-ſtainers, &c. are prepared, in the large way, by grinding them, either with oil or water, in mills worked formerly by horſes, but now frequently ſteam-engines are uſed for ſuch purpoſe in London. Theſe colour-mills conſiſt of a large toothed-wheel, or cog-wheel, worked by the horſes, or ſteam-engine, &c. which gives motion to ſeveral trundles and upright ſpindles of ſmall mill-ſtones placed round its circumference. The conſtruction and uſe of theſe will be readily comprehended from the following deſcription of a ſingle pair of ſtones to be worked by hand, *Plate* XXXV. *fig.* 1. The winch-handle A gives motion, by the labour of a man, to the ſpindle B and fly-wheel C, fixed thereon; and which alſo carries a ſmall ſpur-wheel D, having eighteen bevelled teeth, which work into thoſe of the crown-wheel E E, of twenty-ſix teeth, fixed upon the upright ſpindle F, working in a braſs collar at top, fixed to the piece of wood G, which is adjuſtable by means of the wedge H, ſo as to keep the teeth of the wheels properly in geer: the bottom of the ſpindle works in the end of a braſs ſcrew R, working in the bottom framing of the machine, and paſſing up through the centre of the lower ſtone, the turning of which ſcrew, occaſionally, adjuſts the diſtance of the ſtones, which are of the common conſtruction, exactly like thoſe for grinding flour, but ſmaller, each being ſixteen inches diameter and three inches thick. The upper ſtone I is ſupported on the upright ſpindle F by a ſhoulder and crow, the ſame as mill-ſtones in general; it has a hopper K affixed to it, and which revolves with it, into which the ſemi-fluid colours intended to be ground are put, and when ground they are protruded through a ſpout from the tub M, nineteen inches diameter, which contains the ſtones.

After the above proceſs, colours for the uſe of painters, &c. were ground by hand with oil or water, on a poliſhed marble ſlab with a pebble muller; but this proceſs being tedious and expenſive, as well as highly prejudicial to the health of the workman, Mr. James Rawlinſon of Derby, ſome years ago contrived a mill for this purpoſe, which is repreſented in *fig.* 2, a model of which he preſented to the Society of Arts in the Adelphi, London, in 1804. A is a roller or cylinder of black marble, truly formed and well poliſhed, 16½ inches diameter and 4½ inches broad; B is a concave muller, covering one-third of the roller, of the ſame kind of marble, well poliſhed, and fixed in the wooden caſe or frame *b*, which is hung on hinges at *i*, for uſe when the muller requires to be lifted off the cylinder. C is a crooked bar of iron, about an inch broad, moveable on a pin at *f*, in order to turn down out of the way when the muller is to be lifted off: near the end of this bar is a thumb-ſcrew *c*, whoſe end acts in a hole in the wooden caſe *b*, and ſerves to keep that and the muller ſteady, and to increaſe the preſſure of the muller as occaſion may require. D is a ſcraper or taker-off, made of a piece of clock-ſpring fixed in an iron frame K, in the manner of a frame-ſaw, and turning on centres *d d*, ſo that when in uſe the taker-off lies in an inclined poſition againſt the cylinder, and at other times is turned back out of the way. H is a plate ſet under the taker-off to catch the colour when ſufficiently ground, which ſtands upon a ſliding board that can occaſionally be drawn out, to remove any colour which may accidentally drop from the cylinder. F is a drawer under the mill for holding curriers' ſhavings, for cleaning the cylinder and muller, when a freſh colour is wanted to be ground. The colour, roughly ground in a large colour-mill above deſcribed, is applied in proper quantities, by means of a knife, to the front of the cylinder above the taker-off, and by means of the winch-handle G the mill is worked, until the colour, by paſſing between the revolving ſtone and muller, is ſufficiently ground; when the taker-off D, which during the operation lay back, is turned againſt the ſtone, the winch-handle is turned the reverſe way for a few revolutions, in order to ſcrape off the colour which falls into the diſh H.

In the Philoſophical Tranſactions, No. 87, a mill is deſcribed as having been uſed by Dr. Langelot, for grinding leaf gold to powder, for the fanciful purpoſe of preparing *Aurum potabile*: the principles of this mill were, ſome years ago, found applicable to the grinding of dry indigo in Mr. Taylor's manufactory at Mancheſter, and were alſo found by Mr. Rawlinſon, above mentioned, to be the beſt adapted for finely pulverizing the dry colours intended to be ground with oil or water in his colour-mill. This ſimple mill is repreſented in *fig.* 3, where L is a marble mortar, nicely formed and poliſhed; M is a muller nearly in the form of a pear, having an iron axis fixed into its upper end, which is bent into the form of a crank at P to ſerve as a handle for turning the muller: the axis is fixed, when in uſe, into two collars O, O, in beams of wood N N, ſo as to revolve eaſily and truly in the axis of the mortar. This muller is ſhewn ſeparately at *fig.* 4, which ſhews a ſlit that is made through it, almoſt dividing it into two parts: this ſlit is of uſe in collecting the colour which is grinding, and bringing it continually under the muller. A circular board in two halves, with a centre-hole to fit the axis, is uſed to lay over the mortar, to prevent the duſt of the colours from flying out, to waſte the ſame and injure the health of the workmen. By means of the flat perforated weights R, on the top of the axis, any required preſſure can be applied upon the muller.

For preſerving the health of ſuch colour-men and painters as ſtill prefer the common ſtone and muller for grinding their colours, M. Boulard, in the Journal de Phyſique, recommends an apparatus repreſented in *fig.* 5, wherein the ſtone, and its table A B, is ſurrounded by a cloſe-ſided caſing of boards C, C, fitted to the floor of the room, and leaving a ſpace of about $\frac{1}{10}$th of an inch wide all round the table ſupporting the ſtone; this is for emitting a current of freſh air, which is to be ſupplied by a pipe D D extending from a hole in the floor under the caſe, to the outward air in ſome moſt convenient place. Over the ſtone a glazed pyramid E E and metal tube F is ſupported by the irons G and braces H, H, H, or by other more convenient means, ſo that the pyramid E E projects, on all ſides, about three inches beyond the ſtone; and at a height above the ſame no greater than is ſufficient for the free admiſſion of the workman's arms to work the muller, and with his pallet knife to ſcrape together the colour when requiſite, and which he will be able perfectly to ſee to do, through the glaſs in the frame, without inhaling the vapour from the colours, but which are to be made to aſcend through the tube F, and paſs off into the open air through the tube M M, by means of a ſmall ſtove I I cloſely jointed to the tubes F and G, which is to be kept burning during the hours of work, in order to produce a current between the pipes D and M, that may effectually carry off the contaminated air which has been in contact with the colours on the ſtone, along with their effluvia. K repreſents the door of the fire-place, and L that of the aſh-hole of the ſtove, both contrived to ſhut very cloſe. In the pipe F a regiſter N ſhould be made for regulating the burning of the ſtove, by the admiſſion of more or leſs air thereto through the pipe F. If deſirable, the cloſe pipe F may be conducted into the fire-place of any ſtove or fire in the apartments above, or it may even deſcend by a proper curvature, ſo as to admit of the ſtove I I being placed on the ground, and applied to any uſeful purpoſe, as the boiling of oil, or heating an adjoining room, &c.

MILL, *Cotton.* See MANUFACTURE *of Cotton.*

MILL, *Flood,* that ſort of mill which is contrived for the purpoſe of raiſing water in order to diſcharge it from fens, marſhes, and other ſimilar kinds of land.

MILLS, *Forge,* turned by water, ſerve to raiſe and let fall one or more huge hammers, to beat and form the iron into bars, anchors, and other maſſive works. They are alſo called tilt-mills. See FORGE, IRON, and STEEL.

MILL, *Fulling,* is a water-mill which raiſes and beats down large wooden piſtons in proper veſſels called *pools,* or *troughs;* in order to full, ſcour, and cleanſe woollen ſtuffs. See FULLING-*Mill.*

MILL, *Gunpowder,* is that uſed to pound and beat together the ingredients whereof gunpowder is compoſed.

This is done in a kind of iron or braſs mortar, by means of iron peſtles wrought by a wheel without-ſide the mill, turned by the water falling on it. See GUNPOWDER.

MILLS, *Leather,* are uſed to ſcour and prepare with oil, the ſkins of ſtags, buffaloes, elks, bullocks, &c. to make what they call *buff-leather,* for the uſe of the ſoldiery.

This is effected by means of ſeveral large piſtons, riſing and falling on the ſkins, in large wooden troughs, by means of a wheel without-ſide, turned by the force of water.

MILLS, *Linen,* do not differ much from fulling-mills. Their uſe is, to ſcour linens, after their having been firſt cleanſed when taken out of the lixivium, or ley. Some of theſe go by water, and the generality by horſes.

MILLS, *Oil,* when turned by men, water, hand, or horſe, ſerve to bruiſe or break the nuts, olives, and other fruits and grains, whoſe juice is to be drawn, by expreſſion, to make oil. See OIL.

MILL, *Paper,* a water-mill, furniſhed with engines containing cylinders furniſhed with teeth which cut and grind the rags or cloth in a kind of wooden trough; and thus, by reducing them to little pieces, turn them into a kind of pulp, by means of water conveyed into the troughs by a pipe for that purpoſe. See PAPER.

MILL, *Sawing,* is a water-mill, ſerving to ſaw ſeveral planks or boards at the ſame time.

Theſe are frequent in France, eſpecially in Dauphiné.

They were lately prohibited in England, where they were begun to be introduced, from a view to the ruin of the ſawyers, which muſt have enſued. See SAWING, alſo MACHINERY, *Block.*

There are alſo *ſilk* mills, for ſpinning, throwing, and twiſting ſilks; which are large round machines in form of turrets, five or ſix feet high, and ſix yards in diameter; which, being turned, either by the force of water or that of men, work at the ſame time an infinity of bobbins faſtened thereto, whereon the ſilk had been wound to be here ſpun and twiſted.

There are abundance of mills of this kind in France, eſpecially about Lyons and Tours, ſome of which are ſo diſpoſed, as that three of them will go at the ſame time, and by the ſame wheel wrought by water or by ſtrength of hand. That in the Hôpital de la Charité at Lyons, is wonderful, a ſingle man working no leſs than 48 of theſe mills. See SILK, and WINDING *of Silk.*

MILL, *Stamping.* See STAMPING.

MILL, *Sugar,* is a machine that ſerves to bruiſe the ſugar-canes, and expreſs the liquor or juice contained therein. The ſugar-mills are very curious contrivances. Of theſe there are four kinds, being turned either by water, wind, men, or horſes.

Thoſe turned by the hand were firſt in uſe; but they are now laid aſide, as being an intolerable hardſhip on the poor negroes who were doomed thereto, beſides the ſlowneſs of their progreſs.

Wind-mills are the moſt modern: but they are yet ſomewhat rare, excepting in St. Chriſtopher's and Barbadoes, and among the Portugueſe. Theſe make good diſpatch, but have this inconvenience, that they are not eaſily ſtopped; which proves frequently fatal to the negroes who feed them. See Sugar.

Mills, *Tan* or *Bark*, wrought by water or horſes, ſerve to cut certain barks into a coarſer ſort of powder, proper for the tanning of hides, &c.

Mills *for Sword-blades* are likewiſe moved by water. They are frequent at Vienne, in Dauphiné. By working heavy hammers they forge thoſe excellent ſword-blades, called *blades of Vienne*.

The uſes and operations of theſe ſeveral mills, more at large, ſee under Paper, Fulling, Sugars, &c.

Mill, *Threſhing*, ſuch a machine as is contrived for the purpoſe of threſhing grain or other ſorts of ſeed crops. See Threshing *Machine*.

Mill, in *Coinage*, is a machine uſed to prepare the laminæ, or plates of metal, and to give them proper thickneſs, hardneſs, and conſiſtence, before they be ſtruck, or ſtamped.

This machine has not been long known among us; but is of ſome ſtanding in Germany. It conſiſts of ſeveral wheels dented like thoſe of clocks, &c. which move two cylinders of ſteel, between which the metal is paſſed to be brought to its proper thickneſs. It was firſt turned with water, ſince with horſes. See Coinage.

Mill, in *Commerce*, a money of account in the United States of America; 1000 mills being = 100 cents = 10 deniers = a dollar.

Mill, among *Gold Wire Drawers*, is a little machine conſiſting of two cylinders of ſteel, ſerving to flatten the gold or ſilver wire, and reduce it into laminæ, or plates. See Gold *Wire*.

They have alſo mills to wind the gold wire or thread on the ſilk: theſe are compoſed of ſeveral rows of bobbins all turned at the ſame time.

Mill-*Reek*, in *Medicine*, an appellation given by the miners, employed at the Leadhills in Scotland, to thoſe affections of the bowels, and of the nervous ſyſtem, which are occaſioned by the poiſon of the lead. The melting-houſes, in which the operations are carried on, are called *mills*, becauſe the bellows there are worked by water-wheels; and the *reek*, or ſmoke, ariſing from the melted lead, is believed to be the chief cauſe of the diſeaſe: whence the term *mill-reek* has been appropriated to the malady. See Eſſays and Obſ. Phyſ. and Liter. vol. i. art. xxii. Edinburgh.

Mill-*Dams*, in *Rural Economy*, the baſons which contain the water for ſupplying mills. A very firm way of making theſe in a quick or running ſand, which is uſually found a very troubleſome circumſtance in the making of them, is by laying the foundation with unſlaked lime; which, by ſlaking among the ſand, runs together into a hard ſtone, which gives a very firm and ſure foundation. Plott's Staffordſhire, p. 336.

Mill-*Holms*, a term applied to the low meadows, and other fields in the vicinity of mills, or watery places about mill-dams. The ſoils in theſe caſes are generally of a good quality.

Mill-*Pool*, a ſtock or pond of water, by the force of which the motion of a water-mill is effected.

The dam of a mill-pool is raiſed much in the ſame manner as directed for *fiſh-ponds*; which ſee.

Mill-*Stones*, in *Rural Economy*, the prepared ſtones made uſe of in grinding grain and other ſubſtances, which are of different kinds, according to the purpoſes for which they are employed, but thoſe chiefly uſed in grinding wheat into flour, were formerly imported from France, and termed *burrs*. Lately, however, ſtones proper for this uſe have been diſcovered in different parts of this kingdom, as in Wales and Scotland. In the firſt of theſe places they were found by Mr. Bowes, in a quarry which is "ſituated within the corporation liberties of Conway: the ſtone appears within a quarter of a mile of that town, and extends from eaſt to weſt for the diſtance of two miles, appearing in moſt places upon the ſurface within that diſtance. Such an immenſe body of the ſtone has been left bare and expoſed to view, that the induſtry of ages would ſcarcely leſſen it. A deep chaſm intervenes at the end of two miles; and, on examining the ſame line acroſs this valley, he found the ſtone mixed up with various other foſſil ſubſtances, to which it ſeems to bear no relation. In the next riſe of mountains it reſumes its quality, and takes a ſoutherly direction, paſſing through a range of hills to the diſtance of two miles more, where the vein diſappears. It is every where the higheſt ſtratum; and when diſengaged from the quarry where now worked, it tumbles down the ſide of the mountain to the plain within five hundred yards of the ſhipping-place, where ſmall veſſels may lie ſafely in all weathers at a natural quay, completely calculated for this buſineſs." The quarry lies on the decline of a hill: the vein now is about eight yards wide; but he has reaſon to ſuppoſe it wider below. At the depth he has ſunk, which is at leaſt twenty-five feet, the ſtone mends in quality. When firſt taken from the quarry it is much ſofter and eaſier wrought into ſhape, than when expoſed to the air: even a day makes a difference. The vein appears to him quite inexhauſtible, and contains every variety of the ſtone, cellular, cloſe, hard, or ſoft. The right in this tract of country has been preſented to him, by Mr. Sneyd of Staffordſhire, under the hope that he might be able to make this diſcovery, and carry it vigorouſly into effect, in which he has not been diſappointed.

It would appear from the evidence ſent to the Society for the Encouragement of Arts, &c. that the ſtones raiſed from this quarry are capable of being employed in moſt caſes where thoſe imported from France have been in uſe, and that the ſtone, from its external appearance, ſeems to be conſtituted of quartz and cherts.

And in the latter of the above ſituations ſtones fit for this uſe were diſcovered by James Brownhill, miller, "who, when the late unfortunate war had rendered the getting of the French burr extremely difficult, as he was paſſing by the great baſaltic rock of the Abbey Craig, near Stirling, examined the texture of ſeveral maſſes of the ſtones; and found one ſpecies, which appeared to him fit for the grinding of wheat, and brought home a ſample of them, which he ſhewed to Mr. Alexander Ball, agent of the Alloa Mills, who agreed to make trial of a pair. They were built under his direction in the ſame manner as the French burr; and, on their being put to work, gave ſuch ſatisfaction to the cuſtomers of the mills, as induced the Alloa Mill company to have another pair built, and totally lay aſide the French burr mill-ſtones." It is ſuggeſted, that "the French burr ſtones are ſo porous, as to make it neceſſary to fill up the cavities with a preparation of alum: this conſiderable expence is ſaved by the uniform texture of the baſaltes; and their ſuperior excellence is ſo apparent, that upwards of 60 pair are now at work in ſeveral parts of the kingdom, and the demand for them is daily increaſing." In addition it is ſtated, that "the baſaltes mill-ſtones are not only excellent for manufacturing of flour, but for all kind of griſt. The diſtillers give them a decided preference, and they grind oats in a very complete ſtyle, as the meal is returned quite free of ſand, which is a great deſideratum for thoſe places where oat bread is in uſe. The diſcoverer of this uſe of the baſaltes, builds mill-ſtones of all ſizes on moderate terms, and is careful, from his experience as a miller, to build them of ſuch a grain as is moſt ſuitable for the particular purpoſes for which they are intended.

The following remarks are offered by Mr. Ferguſon on the ſize and velocity of mill-ſtones. The diameter of the upper ſtone is generally about ſix feet, the lower ſtone about an inch more; and the upper ſtone, when new, contains about 22½ cubic feet, which weighs ſomewhat more than 19,000 pounds. A ſtone of this diameter ought never to go more than 60 times round in a minute; for if it turns faſter, it will heat the meal. But according to Mr. Imiſon, the mill-ſtone ſhould turn twice round in a ſecond of time, and ſhould only be four feet and a half in diameter. It may probably be imagined, that the meal will be much heated by ſuch a rapid motion as he has recommended, but the effect is counteracted by diminiſhing the ſize of the mill-ſtone from ſix feet to four and a half. The velocity of the circumference of the ſmall mill-ſtone moving twice round in a ſecond, is only one-third greater than the velocity of the large mill-ſtone moving once round in a ſecond.

It may be noticed, that in the former of the above quarries mill-ſtones are raiſed which are of much larger ſizes than the French burrs, which may probably be an advantage in ſome caſes.

The modes of preparing mill-ſtones for the purpoſe of grinding have been deſcribed already, and *fig.* 6. of *Plate* XXXV. repreſents the ſurface of the under grinding mill-ſtone, the way of laying out the wads or channels: the wooden buſh is fixed into the hole in the middle, in which the upper end of the iron ſpindle turns round; and the caſe or hoops that ſurround the upper one, which ought to be two inches clear of the ſtone all round its circumference. B ſhews the upper grinding mill-ſtone, and iron croſs or rynd in its middle, in the centre of which is a ſquare hole that takes in a ſquare on the top of the iron ſpindle, to carry the mill-ſtone round: when the working ſides or faces of the mill-ſtones are laid uppermoſt, the wads muſt lie in the ſame direction in both, that when the upper ſtone is turned over, and its ſurface laid on the under one, then the channels croſs each other, which aſſiſts in grinding and throwing out the flour; the wads are alſo laid out according to the way that the upper ſtone revolves. In theſe the running mill-ſtone is ſuppoſed to turn *ſunways*, or what is called a right-handed mill; but if the ſtone revolves the other way, the channels muſt be cut the reverſe of this, and then it is termed a left-handed mill. See MILL.

The mill-ſtones which we find preſerved from ancient times, are all ſmall, and very different from thoſe in uſe at preſent. Thoreſby mentions two or three ſuch found in England, among other Roman antiquities, which were but twenty inches broad; and there is great reaſon to believe that the Romans, as well as the Egyptians of old, and the ancient Jews, did not employ horſes, or wind, or water, as we do, to turn their mills, but made their ſlaves and captives of war do this laborious work; they were in this ſervice placed behind theſe mill-ſtones, and puſhed them on with all their force.—Sampſon, when a priſoner to the Philiſtines, was treated no better, but was condemned to the mill-ſtone, in his priſon. The runner, or looſe mill-ſtone, in this ſort of grinding, was uſually very heavy for its ſize, being as thick as broad. This is the mill-ſtone which it is expreſsly prohibited in Scripture to take in pledge, as lying looſe it was more eaſily removed. The Talmudiſts have a ſtory, that the Chaldæans made the young men of the captivity carry mill-ſtones with them to Babylon, where there ſeems to have been a ſcarcity at that time; and hence, probably, their paraphraſe renders the text "have borne the mills, or mill-ſtones;" which might thus be true in a literal ſenſe. They have alſo a proverbial expreſſion of a man with a mill-ſtone about his neck; which they uſe to expreſs a man under the ſevereſt weight of affliction. This alſo plainly refers to this ſmall ſort of ſtones.

MILL-*Work*. Under this head we intend to treat of the parts and mechanical contrivances uſed in mills. Under the article MACHINERY, the reader will find obſervations of a ſimilar nature to thoſe of the preſent article, but applied to ſmaller and more delicate machines than thoſe which are uſually denominated mills.

The object of this article will therefore be, to give a general account of the moſt important pieces of mill-work, as cog-wheels, ſhafts, bearings, &c.; which parts being common to mills of all kinds, would, if minutely deſcribed under every head where they are employed, introduce a great many needleſs repetitions.

The different firſt movers of mills will be treated of, and deſcribed under their ſeveral heads of STEAM-*Engine*, WATER-*Wheels*, and WIND-*Mill*; and the acting machines of ſeveral kinds of mills, as clay-mill, grinding-mill, under CUTLERY; fulling-mill, flour-mill, iron-mill, under MANUFACTURE *of Iron*; oil-mill, cotton-mill, under MANUFACTURE *of Cotton;* rolling-mill, ſpinning-mill, ſilk-mill, thraſhing-mill, water-mill, ſawing-mill, under MACHINERY *for manufacturing Ships' Blocks at Portſmouth*; TILT *Mill*, &c. &c.

Cog-wheels are the moſt important and numerous parts of mill-work, few mills being without them, to modify the direction, and adapt the power of the firſt mover, which actuates the mill, to the working point, or the machine which performs the operations the mill is intended for. Moſt mills contain ſeveral different kinds of machines, or operative parts, all deriving their motions from the ſame ſource, or firſt mover. Thus, a flour-mill contains ſtones for grinding; dreſſing machines for ſifting the flour; ſack tackle, for drawing up the ſacks, &c.; all which are moved by the ſame firſt mover as a water-wheel, wind-mill, ſteam-engine, or horſe-wheel. But each of theſe machines requires to be moved with a different velocity to perform its work in the beſt manner; and it is the object of the mill-work to obtain theſe different velocities from the ſame firſt mover, chiefly by the means of wheels; which, therefore, from their importance, deſerve the firſt notice. There are a variety of cog-wheels, as ſpur-wheels, (or *gear* in the technical phraſe,) bevil-wheels, face-wheels or crown-wheels, pinions or nuts, trundles or lanterns; with a variety of other names which are local, but have the ſame ſignification with ſome of the above.

Spur-wheels are thoſe in which the teeth project from the periphery of the wheel, in the direction of radials (ſee *Plate* I. *fig.* 1. *of Mill-work*): they are ſo called, from the reſemblance to the rowel of a ſpur. A ſpur-wheel is uſed to communicate motion by its teeth to another, ſituated in the ſame plane; conſequently, the axes of the two are parallel to each other. The ſpur-wheel, at other times, works with *a pinion*, or nut (ſee *fig.* 2.), which is in fact a ſpur-wheel of ſmall ſize: at other times with a *trundle* or *lantern*. This is a pinion of peculiar conſtruction, conſiſting of two circular boards A, A, (*fig.* 3.) fixed, at ſome diſtance apart, upon its axis of motion or ſhaft B B, and united by a number of cylindrical pins *a*, *a*, called ſtaves, or rounds, which are arranged in a circle, and fixed parallel to the axis of the trundle between the two boards of it. The teeth of the wheel act upon theſe rounds to give motion to the trundle; the rounds, therefore, muſt be the ſame pitch or diſtance aſunder as the cogs of the wheel. The number of the rounds of the trundle of courſe determine its diameter. Trundles have of late years fallen into diſuſe among mill-wrights, caſt iron pinions being found much more preferable: they were ſometimes uſed to work with ſpur-wheels, but more commonly with

Face-wheels, ſee *fig*. 4. In theſe, the teeth or cogs are fixed perpendicularly to the plane of the wheel, parallel, therefore, to its axis: they were uſed to work with another ſimilar wheel, or with a trundle with a ſpur-wheel, or with a pinion, when the two axes were required to be perpendicular to each other, as ſhewn in *figs*. 3 and 4.

The crown or face-wheel has of late years been almoſt wholly ſuperſeded by bevil-wheels, which, in all ſituations where a wheel is required to turn another in a direction perpendicular or inclined to itſelf, are found vaſtly ſuperior.

Bevilled or *Mitre-wheels*, ſee *fig*. 5. of the plate, have their teeth formed upon a conical ſurface, the angle of the cone being the ſame as the angle the axes C, D, of the two wheels A, B, make with each other. The introduction of this claſs of wheels into machinery is a very eſſential improvement, which has been wholly made within theſe thirty years. Bevil-wheels are of courſe always uſed to work with others of the ſame kind.

The manner of ſetting out the teeth of cog-wheels, in ſuch a form that they ſhall act in the moſt equable manner upon each other, and with the leaſt friction, has been a ſubject of much inveſtigation among mathematicians and theoretic mechanics; but the practice and obſervation of the mill-wrights have produced a method of forming cog-wheels, which anſwers nearly, if not fully as well in practice, as the geometrical curves which theory has pointed out to be the moſt proper. This they have effected by making the teeth of the modern wheels extremely ſmall and numerous. In this caſe, the time of action in each pair of teeth is ſo ſmall, that the form of them becomes comparatively of ſlight importance; and the practical method of the mill-wrights (uſing arcs of circles for the curves) approximates ſo nearly to the truth, that the difference is of no conſequence: and this method is the beſt, becauſe it ſo eaſily gives the means of forming all the cogs exactly alike, and preciſely the ſame diſtance aſunder, which, by the application of any other curve than the circle, is not ſo eaſy. The method, which is extremely ſimple, is explained by *fig*. 1. The wheel being made, and the cogs fixed in much larger than they are intended to be, a circle, *a a*, is deſcribed round the face of the rough cogs upon its *pitch diameter*, that is, the geometrical diameter, or acting line of the cogs; ſo that when the two wheels are at work together, the pitch circles, *a*, *a*, of the two are in contact. Another circle, *b b*, is deſcribed within the pitch circle for the bottom of the teeth, and a third, *d d*, without it, for the extremities. After theſe preparations, the pitch circle is accurately divided into the number which the wheel is intended to have: a pair of compaſſes are then opened out to the extent of one and a quarter of theſe diviſions, and with this radius arcs are ſtruck on each ſide of every diviſion, from the pitch line *a* to the outward circle *d d*. Thus, the point of the compaſſes being ſet in the diviſion *e*, the curve *f g* on one ſide of the cog, and *n o* on one ſide of the other, are deſcribed; then the point of the compaſſes being ſet on the adjacent diviſion *k*, the curve *l m* is deſcribed. This completes the curved portion of the cogs *e*, and this being done all round completes every tooth: the remaining portion of the cog within the pitch circle, *a*, is bounded by two ſtraight lines drawn from the points *g* and *m* towards the centre; this being done to the cogs all round, the wheel is ſet out, and the cogs, being dreſſed or cut down to the lines, will be formed ready for work, every cog being of the ſame breadth; and the ſpace between every one and its neighbour is exactly equal to the breadth, provided the compaſſes are opened to the extent of one diviſion and a quarter, as firſt deſcribed.

Many different methods of forming teeth have been propoſed, among them the following: Let the tooth *a* (*fig*. 6.) preſs on the tooth *b* in the point C; and draw the line F C D E perpendicular to the touching ſurfaces in the point C: draw A F, B E, perpendicular to F E, and let F E cut the line A B in D. It is plain from the common principles of mechanics, that if the line F E, drawn in the manner now deſcribed, always paſs through the ſame point D, whatever may be the ſituation of the acting teeth, the mutual action of the wheels will always be the ſame. It will be the ſame as if the arm A D acted on the arm B D. In the treatiſes on the conſtructions of mills, and other works of this kind, are many inſtructions for the formation of the teeth of wheels; and almoſt every noted mill-wright has his own noſtrums. Moſt of them are egregiouſly faulty in reſpect to mechanical principle. Indeed, they are little elſe than inſtructions how to make teeth clear each other without ſticking. Dr. Hooke was, we think, the firſt who inveſtigated the form of teeth which procured this conſtant action between the wheels; and in a very ingenious diſſertation, publiſhed among the Memoirs of the Academy of Sciences at Paris, 1668, this gentleman ſhews that this will be enſured by forming the teeth into epicycloids. Mr. Camus, of the ſame academy, has publiſhed an elaborate diſſertation on the ſame ſubject, in which he proſecutes the principles of M. De la Hire, and applies it to all the varieties of caſes which can occur in practice. There is no doubt as to the goodneſs of the principle, and it has another excellent property, "that the mutual action of the teeth is abſolutely without any friction." The one tooth only applies itſelf to the other, and rolls on it, but does not ſlide or rub in the ſlighteſt degree. This makes them laſt long, or rather does not allow them to wear in the leaſt. But the conſtruction is ſubject to a limitation which muſt not be neglected. The teeth muſt be ſo made, that the curved part of the tooth *b*, is acted on by a flat part of the tooth *a*, till it comes to the line A B in the courſe of its action; after which the curved part of *a* acts on a flat part of *b*, or the whole action of *a* on *b* is either completed, or only begins at the line A B, joining the centres of the wheels.

Another form of the teeth ſecures the perfect uniformity of action without this limitation, which requires very nice execution. Let the teeth of each wheel be formed by evolving its circumference; that is, let the acting face G C H of the tooth *a* have the form of a curve traced by the extremity of the thread F C, unlapped from the circumference. In like manner, let the acting face of the tooth *b* be formed by unlapping a thread from its circumference. It is evident that the line F C E, which is drawn perpendicularly to the touching ſurfaces in the point C, is juſt the direction or poſition of the evolving threads by which the two acting faces are formed. This line muſt, therefore, be the common tangent to the two circles or circumferences of the wheels, and will, therefore, always cut the line A B in the ſame point D. This form allows the teeth to act on each other through the whole extent of the line F C E, and, therefore, will admit of ſeveral teeth to be acting at the ſame time; (twice the number that can be admitted in Mr. De la Hire's method.) This, by dividing the preſſure among ſeveral teeth, diminiſhes its quantity on any one of them, and, therefore, diminiſhes the dents or impreſſions which they unavoidably make on each other. It is not altogether free from ſliding or friction, but the whole of it can hardly be ſaid to be ſenſible. The whole ſide of a tooth three inches long, belonging to a wheel of ten feet diameter, acting on the tooth of a wheel of two feet diameter, does not amount to $\frac{1}{60}$th of an inch, a quantity altogether inſignificant. Conical wheels, or bevilled gear, may be conſidered as conſiſting of two cones rolling on the ſurfaces of each other: let B and C, (*fig.* 7.) be the baſes of two cones turning on their centres, having teeth cut on them diverging from the apex A to the baſes B and C. Theſe teeth will work freely into one another from the apex A to the baſes B and C, when turned round; but the teeth near the point of the cone being ſmall and of little uſe, may be cut off at G and H. Theſe teeth may be made of any breadth, according to the ſtreſs they are intended to bear; and this is of vaſt importance, becauſe by this method they may be made to overcome a much greater reſiſtance, and work ſmoother than a face-wheel and trundle of the common form. Beſides, theſe kind of wheels are of ſingular uſe to communicate motion in any direction, or to any part of a building, with leſs trouble and friction than wheels of any other conſtruction.

We ſhall now venture ſome remarks upon the manner of conſtructing wheel-work. Cog-wheels were formerly made of wood, and ſome are ſtill conſtructed of that material; but of late years caſt-iron wheels have been ſubſtituted, and found much ſuperior in ſtrength, accuracy, and durability. Wooden wheels are framed together in ſegments uſually of three thickneſſes, to break the joints upon each other. (See *fig.* 1.) The middle thickneſs is made in ſix or eight pieces, and left on the inſide with ſtraight ſides, *x*, *x*, into which the arms are fitted, and bolted againſt it. On each ſide this middle thickneſs, another is (X X, *fig.* 1.) placed with break joints, and all the three are bolted together to make a ſolid rim, in which the cogs are to be fixed by mortiſes, the tenons or tails of the cog being held in their places by a pin driven through each. The arms of wooden wheels are made in different ways; ſometimes they are mortiſed through the ſhaft, and the ends are notched in the middle of the ſides of the octagonal pieces *x*, *x*, and laying againſt the face of them behind, are bolted to them to make all faſt. This manner of uniting the arms with the rim is ſhewn at *l* (*fig.* 4.); but this method is not the beſt, becauſe the mortiſes weaken the ſhaft very materially, and it is difficult to get ſuch a wheel off if ever it is required, on a failure of the ſhaft, &c. On this account, the method called claſp arms is much preferable: it is ſhewn in *fig.* 1. Four arms E E, F F, are uſed, which are halved into each other, and form a frame as in the figure, leaving a ſquare opening in the centre, and holding the rim of the wheel by their ends, which are bolted to the middle thickneſs of the rim, as ſhewn in *fig.* 4. To fit on ſuch a wheel as this, the ſhaft is made up to a ſquare, by fixing pieces of wood upon its ſides; and the wheel being hung upon this, is made faſt by wooden wedges driven in all round, the ſquare formed between the arms being rather larger than the ſhaft, by which means the wheel can be adjuſted to come quite true by the wedging. Face-wheels, like *fig.* 4, have ſometimes ſtays or braces proceeding from the back of the rim to ſome diſtance along the ſhaft, where they are received in mortiſes, as ſhewn by the dotted lines: theſe make the wheel exceedingly ſtrong, and keep it very ſtiff in the ſquare upon its axis, which is very neceſſary, as the action of the teeth of a face-wheel meeting a trundle, is to throw the wheel back upon its ſhaft, which tendency theſe ſtays effectually counteract. At other times, two ſets of claſp arms are uſed for the ſame end, one bolted on each ſide of the middle thickneſs of the wheel, by the ſame bolts which paſs through both, as well as the wheel, and unite the two ſets like one, but of conſiderable depth, ſo that the wedging will have a greater effect to keep the wheel in the ſquare. Small wheels are frequently made of plank, ſolid, without any arms. In this caſe the middle thickneſs is made of four pieces, leaving a ſquare hole between them, and they are kept together by a circular ring of ſegments, bolted on at each ſide all round, and the joints overlapped. The conſtruction of trundles (*fig.* 4.) has been ſufficiently explained, except that they uſually have an iron hoop fitted round the circular boards to prevent them from ſplitting: indeed many large face-wheels have the ſame. Small pinions are made out of one block of wood, and the cogs are fitted into it much in the ſame manner as the ſpokes are let into the nave of a coach-wheel. Iron-wheels either have the cogs caſt in the ſame ſolid piece with the rim, or mortiſes are left in the caſtings for the reception of wooden cogs, as theſe are found to work much better. The wheel and its arms are ſometimes caſt in one piece, but for large wheels the rim and its arms are formed in two ſeparate pieces and ſcrewed together. The reaſon of this is, that in caſting a large and extended piece of iron, it frequently happens that ſome parts will cool in the mould, and become ſolid before the others; conſequently, from their contraction, theſe parts will be ſhorter than others which have retained their heat and fluidity longer. This circumſtance happening to the arms of a wheel, will either warp the rim out of a true circle, or ſet the metal of one part upon a ſtrain againſt another, ſo that the ſlighteſt blow or jar will cauſe them to ſnap in ſuch parts. All this danger is avoided by making them in ſeparate pieces, as in *fig.* 8: the end of each arm, as A B, has a flat expanded part, which lays againſt a proper ſocket withinſide of the rim C D, and is bolted to it. One-half of this wheel is delineated, with wooden cogs fitted in, at C D; and the other half, F F, ſhews the form of a rim, where the cogs and the arms *e f* are caſt all in one piece. In the latter caſe the rim has a rib *g* withinſide it for ſtrength, in the ſame manner as all the arms have, and which is evidently ſhewn by the figure. In ſome ſituations it is neceſſary to fix wheels upon long ſhafts while they are in their places, and cannot conveniently be taken down: in this caſe ſuch wheels may be made in two halves bolted together. *Fig.* 9. is drawn as if it were two halves of different kinds put together in this manner; the joint being up the middle of the arms L, L, and the connecting bolts are plainly ſhewn. By this method one wooden pattern, if very accurately made, will ſerve for caſting both halves of the wheel. Cog-wheels are found to work with leaſt friction, wear, or noiſe. When one has wooden, and the other iron cogs, dreſſed exceedingly ſmooth and true, the ſmall wheel is uſually made with the iron teeth, and the large one with the wooden ones. When ſuch wheels are firſt ſet to work, the cogs are ſmeared with black lead mixed with tallow: this gives them a gloſſy ſurface, which greatly diminiſhes the friction. Hornbeam is found to be the beſt wood for the cogs, as it is not liable to ſplit or ſplinter away by long wear. The cogs are held in by a pin driven through the tenon or tail, withinſide the rim of the wheel. The wooden cogs are dreſſed by chiſſels to the marks ſet out, in the ſame manner as wooden wheels; but the iron cogs are firſt chipped with a cold chiſſel and hammer, and then filed true. The great labour of doing this induced Meſſrs. Boulton and Watts, ſome years ago, to erect machinery for dreſſing cogs. The wheel was provided with apparatus to hold it faſt at the ſeveral diviſions, and a ſtrong ſlider, with a chiſſel fixed in it, was forced between the rough cogs by the revolution of a camm or heart, with a ſufficient power to cut away a ſhaving, and form the cog perfectly at twice repeating the operation. Some mechanics diſpute the propriety of dreſſing iron cogs at all; they ſay, that the exterior ſurface of the caſtings have a kind of caſe-hardening, which is removed by the dreſſing, and a ſofter ſubſtance of metal expoſed for the acting ſurfaces. This is true, and the objection would have its full force, if it were poſſible to make caſtings of wheels perfectly true in the circle, and all the cogs preciſely the ſame ſize: but as the preſent ſtate of the founder's art cannot inſure this, it is beſt to chip and file the cogs; accuracy in the form of the teeth being a ſuperior conſideration to any quality of their ſubſtance. The wheel being made in either of theſe methods, muſt next be fixed, or *hung*, upon its ſhaft. Wheels are generally fixed faſt upon their ſhafts or axles before their teeth are ſet out; or, if this is not convenient, they are fixed on a temporary ſpindle to ſet them out. When the wheel is made of wood, it is fixed upon the ſhaft, or a temporary axis, and turned round upon its pivots, while a chiſſel is laid on ſome fixed ſupport to cut or turn its circumference to a true circle, or elſe to make a mark to which its rim may be reduced all round. The circumference is then divided, and mortiſes cut out for every cog; and when theſe are fixed in they are much larger than they are intended to be, that they may be ſet out, as above directed, and reduced to their true figure, without abſolutely depending upon the accuracy of the mortiſes which receive them. Iron wheels are, as before-mentioned, treated in a different manner, being caſt in the impreſſion of a truly circular pattern made of wood; the cogs caſt ſolid, with the rim or elſe mortiſes left all round for the reception of the wooden cogs: in either caſe the rim is a true circle, and muſt be fixed upon the ſhaft exactly by its centre, inſtead of forming the circumference to the centre, as in the wooden wheel. To do this, the centre hole through the iron wheel is made much larger than the ſhaft which is to go through it, and the ſpace all round is filled up by iron wedges driven in; ſo that by means of theſe the wheel can be fixed exactly true in the centre (or in the round), and alſo in the flat that is truly perpendicular to the axis. The manner of arranging the wedges is ſhewn in *fig.* 8, where eight wedges are ſhewn by *a*, *a*, *a*, *a*, &c. round the ſhaft R. It is needleſs to explain how the wheel can, by means of theſe, be ſet exactly true, when it is found by turning round upon the pivots of its ſhaft that any one ſide of the circumference is farther from the centre than another. For the purpoſe of ſetting it ſquare upon the ſhaft, each wedge-hole is provided with two wedges, one driven in from each ſide of the wheel, the two laying over each other in the notch or hole in the manner ſhewn at G. Thus, by gently driving one in, and the other a little outwards, the wheel may be very correctly rectified, if it has any deviation from the perpendicular. This is the uſual manner of hanging wheels, and for large wheels it is the only applicable method. *Plate* II. *figs.* 9 and 10, is a far ſuperior plan for ſuch iron wheels as are not too large or heavy to be turned in a lathe upon a chuck, ſo that the centre is expoſed, and may be bored through with a truly circular hole, and rather conical: of courſe the wheel is fixed upon the chuck, ſo that its circumference runs truly; and at the ſame time the centre is bored, the pitch circle is deſcribed upon the cogs, and ſometimes the ends of the cogs are turned to reduce them to a true circle, and alſo the ſides, that they may be exactly flat: for, as we have before obſerved, iron wheels, however true their teeth may be caſt, ſhould always have their cogs rather too large, and then be ſet out and dreſſed, by chiſſeling and filing, to make them perfectly correct to the lines thus deſcribed. But to return to *fig.* 9; the wheel being prepared, and its centre bored out, the ſhaft is turned, as uſual, to form its pivots, and, at the ſame time, the part which is to receive the wheel is turned conical, to fit the hole through the wheel, which being jambed thereon will certainly be true at once: and to prevent it from ſlipping round upon its axis various means are in uſe; ſometimes a mortiſe is formed through the ſhaft A, at the ſmall part of the cone, and a wedge *r* driven through, which is received in notches at the ſides of the hole through the central part of the wheel, ſo that it holds the wheel from turning round on the ſhaft, at the ſame time that it drives it hard, and fixes it upon the conical fitting. Another method is to cut a channel along the conical part of the ſhaft parallel to the axis of it, and another ſimilar one withinſide of the hole through the wheel; then a fillet or feather of iron *s*, (*fig.* 10.) being inſerted into the two grooves, effectually prevents the wheel from turning, unleſs the ſtrain is ſo great as to cut the feather in two through its whole length, which is eaſily prevented by making it of a proper thickneſs. Another method of fixing a wheel is to have a flaunch, or flat ſhoulder, formed upon the ſhaft, and the wheel is drawn up againſt this by two, three, or four ſcrew-bolts going through it, and alſo through the central part of the wheel, parallel to its axis. This plan is neither ſo neat, ſimple, nor ſtrong as the former. When a wheel is required to be ſometimes diſengaged from its axis, the conical or cylindrical fitting is very convenient. In this caſe, the wheel ſhould fit up againſt a flat ſhoulder, as *a*, in *fig.* 11, and at the oppoſite ſide ſhould have a collet, or ring *b*, to confine it, and kept up by a key going through to the ſhaft R. In this way the wheel will ſlip round freely upon its axis, and communicate no motion thereto, though it is in conſtant motion itſelf: but when they are required to be connected, a locking bayonet, or clutch-box, is uſed. Theſe pieces of mechaniſm are conſtructed in different forms; one of them is ſhewn in the figure. Strong arms A, A, are fixed faſt on the ſhaft R, juſt before the wheel either by a circular fitting with a fillet, by a ſquare, or they may be caſt with it. Through the extremities of theſe arms holes are drilled to receive the ſhanks *f*, *f*, of the locking bayonet, which are fixed by nuts faſt to an arm D, very nearly ſimilar to A A, but it ſlides on the ſhaft, and has a central part *g*, with a circular groove round it, in the manner of a pulley, and a fork embracing the central piece in this groove gives the means of ſliding the bayonets *f f*, and D, upon the ſhaft, ſo that the points of its ſhanks intercept the arms of the wheel, ſo as to carry it round with them and the ſhaft; but when the points of *f f* are drawn back clear of the arms of the wheel, it ſlips round freely upon the ſhaft. The clutch-box is rather different from this; it is a piece fitted upon the ſhaft with a fillet, ſo that it cannot ſlip round, but will ſlide endways upon it. The end of the piece is formed with ſeveral notches, or indentations acroſs its face, which meet ſimilar indentations in the face of the central part of the wheel, and thus unites the wheel and the ſhaft when the clutch is ſlid up to it; but the wheel is diſengaged when the clutch is drawn from it. The conſtruction of *bearings* for the ſupport of pivots at the ends of ſhafts or ſpindles, is a matter of great importance in mill-work. The old kind of bearing called braſſes is ſhewn in *fig.* 12. A lump of braſs *a*, with a ſemicircular notch in it, was let into the piece of timber A, which was to ſupport it; and two ſcrew-bolts *b*, *b*, were fixed through the timber, being half received in notches formed in the ſides or ends of the braſs *a*: the upper braſs, *b*, was exactly ſimilar to the lower, and over it a plate of iron, *d*, was placed, with two holes through it to receive the two bolts *b*, *b*, and keep them together: the nuts *c*, *c*, upon the tops of the bolts confined the upper braſs down, and made all faſt and tight. This kind of braſs is not ſufficiently ſtrong or ſteady for all purpoſes, and, therefore, the bearing ſhewn in *fig.* 13. has taken its place: in this, *aa* is a caſt-iron plate, which is held by two or more bolts *r*, *r*, down upon the timber or framing of the mill: this piece of caſt-iron has two pieces *b*, *b*. riſing up from it, between which a piece of braſs, *l*, is bedded, and has a ſemicircular notch in it. Another ſimilar piece of braſs is fixed into the caſt-iron cap-piece B, which is fitted into the ſpace between the two pieces *b*, *b*, and is drawn down by nuts upon the two bolts *c*, *c*. The braſſes are prevented from getting out ſideways by ſmall fillets projecting from the middle of them, which are received into proper notches in the caſt-iron work. In the ſame manner the cap B is fitted between the pieces *b*, *b*, with a tongue or fillet, and groove, ſo that it cannot deviate ſideways, and then the bolts have only to draw the braſſes down together. Sometimes a bearing of this kind is fitted up, ſo that it is adjuſtable in its poſition a little to adjuſt two wheels to work accurately with each other, or for other purpoſes where nicety is required. In this caſe, an iron plate, D, is bolted down to the framing, and the bearing, *aa*, lays upon it, the ſame bolts *r*, *r*, going through both, and alſo through the framing beneath; but the holes through which they paſs in the piece *aa* are oblong, to admit the whole bearing being adjuſted ſideways. This is done by two wedges *o*, *o*, inſerted at the ends of the piece *aa*, between the two ends of D, which riſe up for the purpoſe, as at *nn*. The bearing reſts upon two wedges at *g*, *g*, and is drawn down upon them by the bolts *r*, *r*. By theſe two wedges it can be raiſed up at pleaſure, and by the other two, *o*, *o*, at the ends, it can be adjuſted endways to ſet the bearing in the exact poſition required; and the bolts *r*, *r*, when ſcrewed faſt, hold all tight. The beſt way to make the interior ſurface of the braſſes for a bearing exactly true, is to have them caſt ſolid, that is, the two halves of the braſs in one, with a notch which very nearly, but not quite ſeparates them. In this ſtate it can be chucked in a chuck-lathe, and the inſide bored or turned out true: then it may be ſawn in two halves, and put into its place, to which it ſhould have been previouſly fitted. Sometimes the bearing is all fitted together and ſcrewed down in its place, and a borer is uſed to bore or broach out the hole for the braſſes, the ſame as is employed to bore pump barrels. Braſs is found, by experience, to be the beſt ſubſtance to form bearings for a caſt-iron gudgeon, having the leaſt friction, and, conſequently, leaſt wear, of any other ſubſtance which can be uſed. To diminiſh this friction ſtill farther, friction-wheels are ſometimes uſed. The manner of conſtructing theſe, when merely required to ſupport a gudgeon, leaving its own weight to keep it down in its place upon them, is ſhewn in *fig.* 14. Here A A is an iron plate, which is to be bolted down upon the framing: it has holes through it to receive the friction-wheels B, B, and ſupports bearings *a*, *a*, for their pivots raiſed up to a proper height, and provided with ſockets for braſſes, in which the pivots of the friction-wheels are to lie. The two friction-wheels B, B, as is evident, lie by the ſide of each other, and the gudgeon, D, of the ſhaft they are to bear lies upon and between them, ſo that when it turns round it rolls upon them, or rather, their circumferences move with it, and, conſequently, the pivots of the friction-wheels move ſo ſlowly, as to diminiſh the friction very materially, the proportion depending on the relation between the diameters of the wheels B and the gudgeon D. This is not the beſt kind of friction-wheels, though the ſimpleſt. *Plate* II. *fig.* 15. *of Mill-work*, contains a view of another kind, called friction-rollers: here A A is an iron plate bolted down to the framing, and an iron ring, B, riſes up from it, all caſt in one piece. The interior ſurface of this ring is turned in the lathe with the greateſt accuracy, and the pivot or gudgeon C, which is alſo turned true, reſts in the centre thereof, being ſupported by ſix rollers *a*, *a*, &c. arranged at equal diſtances round it, and of ſuch a diameter as to exactly fill up the ſpace all round between the gudgeon and the ring. The rollers, it is evident, muſt be made all of one exact diameter, and extremely true, and they muſt fill up the ſpace: then the gudgeon being turned round acts upon theſe rollers, and turns them round alſo at the ſame time by this motion. As they have no fixed centre, they alſo roll round within the ring B, in the ſame direction as the motion of the gudgeon, but with a very ſlow motion, which will be in proportion to the relative diameters of the gudgeon C and the ring B. By this means nearly all the friction is avoided, nothing like the ſliding of a gudgeon round upon its bearing taking place here; it is all rolling of one ſurface upon another: and as the contact of two cylinders, ſuppoſing them hard, is but a line, the friction, or more properly adheſion, is exceedingly ſmall; and at the ſame time that the gudgeon is as ſtrongly ſupported as poſſible: but this depends upon the hardneſs of the matter of the gudgeon, the rollers, and the ring B. If the ring and gudgeon are made of hard caſt iron, and the rollers of ſteel at a ſpring temper, it will act extremely well, though the ſtrain or weight upon the rollers be very great. For light ſtrains ſofter ſubſtances might be uſed, but not to ſo good an effect.

The manner of keeping all the rollers at their relative diſtances from each other, in the ring B, that they may not run againſt each other, is yet to be explained. Each roller, as ſhewn at *z*, has a groove turned in it in the middle of its length, ſo as to reduce it to a ſmall neck in the centre: then an iron ring, L, is provided, which has ſix holes drilled in it, in the proper poſitions for the centres of the rollers, that is at equal diſtances round a circle, which is as much leſs than the ring E as the diameter of the rollers, or the ſame quantity larger than the diameter of the gudgeon C. Theſe holes are made to fit the ſmall neck in the centre of the rollers, and to get them in, the holes are cut open from the outſide of the ring, ſo as to become notches; then the rollers being put into them, are all in one cluſter, and in this ſtate are introduced into the ring E. They will now be kept at their proper diſtances aſunder, and when the gudgeon C is introduced between them, they will all take their proper places, and lie truly parallel. It is to be obſerved that the holes or notches in the ring L, do not exactly fit the necks of the rollers, which have therefore conſiderable play, and but very little friction, for it is not eſſential to keeping the rollers at their relative diſtances that this ring ſhould be uſed, but it will prevent the danger of their getting wrong by accident. To prevent any duſt or dirt getting in, which would completely deſtroy the action of this ingenious mechaniſm, a circular iron plate is fitted into the ring B, on each ſide, and both are fixed by ſmall ſcrews going through the ring. One of the plates N muſt of courſe have a hole through the middle, to admit the gudgeon. The joints of theſe plates ſhould be water tight, and then a quantity of oil being poured in, will remain in the bottom of the ring B, and every roller, as it paſſes, will be kept oiled; though this is no ways neceſſary to their action. The end plate, which is not perforated, will make a ſtop to prevent the gudgeon moving endways, and the two plates will keep the rollers from ſhifting their poſition on end; but to prevent friction, if ever they come in contact, the ends of the roller ſhould be rather convex, as ſhewn at *z*, that they may touch in the centre rather than the outſides; but they will never bear hard againſt the plate, having no drift that way.

A patent was taken out for theſe friction rollers many years ago, and a large manufactory was eſtabliſhed for making them for various purpoſes, as carriage and waggon-wheels, the gudgeons of heavy water-wheels, &c.: they were found to poſſeſs great advantages, having ſcarcely any ſenſible friction when in motion, but were liable to get out of order chiefly from the entrance of duſt, which occaſioned the rollers to wear out of the round more on one ſide than the others; and if once by this accident the rollers ſtood ſtill for an inſtant, the gudgeon wore a flat place in the two rollers beneath it, and they would never run round again: a very little time would wear this flat ſide ſo deep as to ſtop the rollers, becauſe of the very ſmall ſurfaces in contact with the gudgeons. For delicate purpoſes, where hardened ſteel can be employed for all the rollers and the ring, they are a moſt admirable contrivance, and the above objections will then apply very ſlightly; but, as before mentioned, their perfection and durability will ultimately depend upon the hardneſs of the ſubſtances employed.

Fig. 16. repreſents a ſuit of friction rollers for ſupporting the weight of a heavy vertical ſhaft, as a horſe-wheel, a horizontal wind-mill, a capſtan ſugar-mill, &c. A A is a plate ſupporting the weight of the ſhaft; it has a conical eminence upon it, and a hole in the centre of this, which exactly fits the pivot or gudgeon *c*, at the bottom of the ſhaft R: upon this gudgeon a conical plate B is formed, exactly of the ſame ſhape and ſize as the conical part of the plate A, and between theſe two plates three or four rollers *a*, *a*, are ſituated, and bear the weight of the ſhaft R, or whatever preſſes upon the plate B. The rollers are kept at proper diſtances aſunder by a ring, ſhewn ſeparate at L, with three arms, *n*, projecting from it, which being formed into ſpindles, paſs through the centres of the rollers *a*, and have collets and croſs keys to keep them on. In this manner, as the gudgeon and plate B turn round, the plate rolls upon the rollers *a*, *a*, keeping always in the true centre, by the end of the gudgeon *c* fitting the hole in the centre of the plate A A; but the weight is ſupported by the rollers *a*, *a*, which, at the ſame time that the upper plate rolls upon them, they roll upon the lower, and thus very conſiderably diminiſh the friction which any other kind of gudgeon would have in ſuch a ſituation.

Shafts.—In almoſt all modern mills, the ſhafts or ſpindles for the conveyance of motion, and ſupport of wheels, are made of iron, either wrought or caſt. Square ſhafts are the moſt common, but ſometimes octagon and round ones are uſed; and if they are very large, they are caſt hollow, like pipes, and the gudgeons fixed in at the ends by wedges; but the pivots ſhould always, if poſſible, be formed of the ſame piece of metal, as the ſlighteſt poſſible deviation from the ſtraight line cauſes them to ſtrain, and work very irregularly in their bearings. In wooden ſhafts this is impracticable, and it is one of the greateſt objections to the uſe of them. The beſt method of fixing gudgeons into wooden ſhafts is ſhewn in *fig.* 17. Here A is the gudgeon, made in caſt iron, turned true; it has four leaves, *a*, *b*, *c*, *d*, forming a croſs, which is let into the end of the wooden ſhaft R: the front edge of each leaf is conſiderably thinner than the back, ſo that a pair of ſtrong iron hoops *r r* being driven tight on the end of the ſhaft, cloſes the wood round the croſs, and holds it faſt, and the back of the leaves being wider than the front, it will not come out. As an additional ſecurity, ſcrews are ſometimes put in: theſe are put through holes in the arms of the croſs, which are then made flat the other way, and do not go ſo far into the wood. The ſcrews go into the timber a conſiderable diſtance, where a mortiſe is cut into the wood, to meet the end of the bolt, and an iron nut is dropped in, to ſcrew the bolt into, when it is turned round by a ſcrew driver. By this contrivance a gudgeon may be fitted into a wooden ſhaft very faſt, but ſtill it will never come into competition with iron ſhafts, when the gudgeon is made all in one ſolid piece with the whole of the ſhaft. A judicious mechanic will never make more than two bearings upon any one ſhaft, if it can be avoided, becauſe if the three, by any means, as the warping of the frame work, or other cauſe, get the ſmalleſt poſſible quantity out of the ſtraight line, they can never work well afterwards, but will always ſtrain and wear the bearings with great friction. In very extenſive mills, ſuch as woollen and cotton mills, breweries, &c. when the buildings are of great length, it becomes neceſſary to join ſeveral ſhafts together in length, to reach from one end to the other of a mill. The manner of making the joinings is of ſome conſequence: it is neceſſary that every ſhaft ſhould have a bearing at each end, and conſequently that the connection of the ends of every one ſhould be made by uniting the ends of the ſhafts which project beyond their bearings. This can be done in various ways: one is by having the ends of each of the ſhafts provided with circular heads (ſee A B *fig.* 18.), which have teeth in one, and correſponding indentations in the other, to receive them, and thus one is made to turn the other about, at the ſame time that if any ſlight ſettlement of the building or other cauſe depreſſes one of the bearings, or raiſes another, ſo as to put the two ſhafts out of the perfect ſtraight line they ought always to preſerve; theſe joints will admit the ſlight flexure, and ſtill communicate the motion of one ſhaft to the other.

As this accidental ſettlement in large buildings is almoſt unavoidable in ſome degree, care ſhould be taken to make ſuch joints as will admit of a trifling bending. Sometimes the ends of the ſhaft are made circular, and turned quite true in the lathe; then a metal tube or collar is fitted truly upon both to cover the joint, and connect them, a bolt being put through each end, which unites both ſhafts with the collar, and thus by means of it cauſes one to turn the other round. This method is ſometimes uſed to ſave the great expence of having a bearing at each end of every length of ſhaft, one bearing to each length being then ſufficient, the other end of the ſhaft being ſupported by this collar, connecting it with the end of the adjacent length juſt where it projects beyond its bearing. But this is not a good method, as the ſhafts are apt to bend and work with ſo much friction in the bearings, if they get the leaſt out of the ſtraight line, becauſe theſe kind of joints will not admit any flexure of the ſhaft, or if they do, they will only bend on one ſide, whereas it is neceſſary for the joint to bend ſucceſſively on all ſides, when the bearings are not preciſely in a ſtraight line. *Plate* III. *fig.* 19. repreſents a coupling-box, uſed by Mr. Murray of Leeds, for connecting the lengths of a long line of ſhaft which are to carry a heavy ſtrain: it is ſo made that it will communicate the motion in the manner of an univerſal joint, if they ſhould be out of the line. Let A, B, be the two ſhafts to be united; C, D, their necks or collars which lay in the bearings: the ends projecting beyond theſe have boxes E, F, fixed on them, either by a ſquare with wedges, or by a round part with a fillet: one of theſe boxes, E, has a piece projecting from the inſide of it on each ſide, and extending into the other box, as is ſhewn at *a a*, (No. 2.), which is an inſide view: the other box, F, has two ſimilar pieces projecting from it at *b b* into the other box E: within the boxes an iron croſs *c c d d* is ſituated; it has ſcrews fixed into the ends of the croſs, and by theſe the motion is communicated: thus, the pieces *a*, *a*, when the ſhaft A and box E are turned round in the direction of the arrow (No. 2.) act againſt the ſcrews *c*, *c*, of the croſs, and turn it about: at the ſame time the other two ſcrews *d*, *d*, at the other arms of the croſs preſs againſt the pieces *b*, *b*, which belong to the box F and ſhaft B, thus turning them round: the croſs is placed quite detached in the boxes, and thus acts as an univerſal joint, to communicate the motion of one to the other: the ſcrews *c c*, *d d*, at the ends of the croſs are only put in that the acting points may be made of ſteel, and made ſmooth to have but little friction in theſe parts. Another method of uniting ſhafts by Mr. Murray is ſhewn at *fig.* 20: it has the advantage of requiring only one bearing for every length of ſhaft, whereas the above method requires one for each end of every length. A, B, repreſent the two ſhafts; each has a pivot formed at the end: theſe pivots are fitted into a coupling piece C D E, which is bored out truly to fit them inſide, and the outſide turned true, with a neck D D, which is received and fitted into a bearing: the two ſhafts A, B, are connected with the coupling piece D, at C and E, by means of a croſs key *l m*, put through each ſhaft, and the ends of them received in notches made withinſide of the coupling piece at C and E, where it receives the ends of the ſhafts. It is to be obſerved that the ſhafts do not fit tight in theſe parts E and C, but only in the pivots *a*, *b*, within, by which means they have liberty of a little motion, and this without ſtraining the bearing in which D runs, becauſe it is only the ſhort coupling piece which is received therein; and conſequently, any trifling deviation from the ſtraight line will not ſtrain it, becauſe of the play allowed in the fittings.

The univerſal joint, called alſo Hooke's joint, from its inventor Dr. Hooke, is a method of uniting ſhafts, which permits them to be rather inclined to each other. This is ſhewn in *fig.* 21, where A, B, are the two ſhafts, with necks to be received in bearings: each ſhaft beyond this is formed into a fork, as C and D; and theſe are united by a croſs of iron E, or ſometimes a ring, in which four pins are inſerted, and paſs through holes in the ends of the forks. On one or other of theſe pins the joint will bend in any direction, on the ſame principle as a compaſs hangs in its gombals, and will communicate a rotative motion from one ſhaft to the other, when they are rather inclined; but this inclination ſhould be ſmall, or elſe the joint will not act well, or without great friction, and irregularity of motion. If an angle of more than 15 degrees from the ſtraight line is required, a pair of ſlightly bevilled wheels are beſt.

The regulation of the velocity of a mill is a matter of conſiderable importance, to preſerve an uniformity of motion, either when the force of the firſt mover is fluctuating, or when the reſiſtance or work of the mill varies in its degree: either or both of theſe cauſes will occaſion the mill to accelerate or diminiſh its velocity; and in many inſtances it will have a very injurious effect upon the operations of the mill. Thus, in a mill for ſpinning cotton, wool, flax, &c. driven by a water-wheel, are a multiplicity of movements, many of which are occaſionally diſengaged, in different parts of the mill, for various purpoſes. This tends to diminiſh the reſiſtance to the firſt mover, and the whole mill accelerates. Or, on the other hand, the head of water, which drives the wheel, may be liable to riſe and fall ſuddenly, from many cauſes, which great and rapid rivers are ſubject to, and cauſe ſimilar irregularities in the ſpeed of the wheel. For ſuch caſes, judicious mechanics have adopted contrivances, or regulators, which counteract all theſe cauſes of irregularity; and a large mill, ſo regulated, will move like a clock, with regard to its regularity of velocity. Theſe regulators are uſually termed *governors*, and are made on different principles. Thoſe moſt generally uſed are called flying-balls, operating by the centrifugal force of two heavy balls, which are connected and revolve with a vertical axis. *Fig.* 22. repreſents the ſimpleſt form of this ingenious apparatus: A A is the vertical axis, which is conſtantly revolving by the machinery; at *a a* two arms or pendulums, *a b*, *a b*, are jointed, and carry at their extremities a heavy metal ball each, as *b b*; from the pendulums two chains or iron rods, *d*, *d*, proceed, and ſuſpend a collar *e*, which ſlides freely up and down the axis, and has a groove formed all round it, in which the end of a forked lever, D, is received; and thus the riſing and falling of the collar, *e*, produces a correſponding motion of the end of the lever D; but the collar is always at liberty to turn round with the axis freely within the fork, at the extremity of the lever. The operation of the governor is this: when the vertical axis is put in motion, the centrifugal force of the balls, *b*, *b*, cauſes them to recede from the centre; and as this is done both together, they cauſe the collar, *e*, and the end of the lever to riſe up: the balls fly out to a certain height, and there they continue as long as the axis preſerves the ſame velocity; as it is the property of a pendulous ball, like *b*, to make a greater effort to return to the perpendicular, in proportion as it is removed farther from it, in conſequence of the ſuſpending rod being more inclined, and bearing leſs of its weight. The weight of the balls to return to the axis may be conſidered as a conſtantly increaſing quantity; while the quantity of the centrifugal force, cauſing them to recede from the axis, depends exactly upon the velocity given them. But this velocity increaſes as they open out, (independently of any increaſed velocity of the axis,) in conſequence of their deſcribing a larger circle. The combination of theſe oppoſitely acting forces cauſes the governor to be a moſt ſenſible and delicate regulator. Thus: ſuppoſe the balls hanging perpendicular, put the axis in motion with a certain velocity, the centrifugal force will cauſe the balls to fly out; and this increaſing their velocity, (by putting them farther from the centre, and cauſing them to revolve in a larger circle,) gives them a greater centrifugal force, which would carry them ſtill farther from the centre, but for the counteracting force, *viz.* the weight of the balls tending to return. This is, as before ſtated, an increaſing quantity, and conſequently theſe oppoſite forces come to a point where they balance each other; that is, the balls fly out till their weight to return balances the centrifugal force. But if the ſlighteſt alteration takes place in the velocity of the axis, the equilibrium is deſtroyed by the increaſe or diminution of the centrifugal force, and the balls alter their diſtance from the centre accordingly, and by elevating or depreſſing the end of the lever, operates upon ſome part of the mill to rectify the cauſe of the irregularity. In a ſteam-engine, the lever acts upon a vane or door ſituated in the paſſage of the ſteam from the boiler to the cylinder; and if the mill loſes in velocity, from an increaſe of reſiſtance, the balls fall together a little; and the conſequent fall of the lever opens the door or throttle valve a little wider, and gives a ſtronger ſupply of ſteam to reſtore the mill to its original velocity. On the other hand, if the mill accelerates, the balls open out and then cloſe the vane, ſo as to moderate the ſupply of ſteam. See a more full deſcription of this under STEAM-*Engine*.

A water-wheel is not ſo eaſily regulated by the governor, becauſe the ſhuttle of a large wheel requires a much greater force to raiſe or lower it, when the water is preſſing againſt it, than the lever, D, can at any time poſſeſs; it therefore becomes requiſite to introduce ſome additional machinery, which has ſufficient power to move the ſhuttle, and this is thrown, in or out of action, by the flying balls. The ſimpleſt contrivance, and that which we believe was the regulator firſt uſed for a water-wheel, was erected at a cotton mill at Belper, in Derbyſhire, belonging to Mr. Strutt.

A ſquare well, or large ciſtern, was ſituated cloſe by the water-wheel: it had a pipe leading from the mill-dam into it, to admit water; and another pipe from it to the mill-tail, to take the water away: both were cloſed at pleaſure by cocks or ſluices. Within the well was a large floating cheſt, very nearly filling up the ſpace: it of courſe roſe and fell with the water in the ciſtern, and had a communication by rack and wheel-work with the machinery for drawing the ſhuttle, ſo that the riſe and fall of the floating cheſt elevated and depreſſed the ſhuttle of the wheel. The lever of the governor was connected with the cocks in the two pipes, in ſuch a manner that when the mill was going at its intended velocity, both of the cocks were ſhut; but if the water-wheel went too ſlowly, the falling of the balls and deſcent of their lever, D, opened the cock in the pipe of ſupply, and, by letting water into the well, raiſed the float, and, with it, the ſhuttle, to let more water upon the wheel, till it acquired ſuch a velocity that the balls began to open out again, and thus ſhut the cock: on the other hand, if the mill went too faſt, the balls opened the pipe of exit from the well, and then the ſinking of the float cloſed the ſhuttle till the true velocity was reſtored.

Since this firſt application of the regulator to the water-wheel, the manner of its operation has been greatly varied; and as the ſame mechaniſm is applicable to any kind of mill-work, we ſhall give a ſlight ſketch of it. Suppoſe A, *fig.* 23, an axis, receiving its motion from the mill by wheel-work; it is provided with a pair of governors, *a b*, *a b*, conſtructed like thoſe before deſcribed; and at the lower part of the ſpindle is a bevilled wheel, R, turning two others, B and C, ſituated upon one ſpindle, D, which goes away, and communicates motion to the racks of the ſhuttle; the wheels, B and C, are neither of them fixed to the ſpindle D, but both ſlip round freely upon it, turning in contrary directions, as they receive motion from the oppoſite ſides of the wheel R. A locking clutch, *d*, is fitted upon the ſpindle between theſe two wheels, B, C, and can, by moving it one way or the other, be made to lock either one of the wheels to the ſpindle D, at the ſame time that it leaves the other diſengaged. The locking-box is moved by means of a lever, ſhewn in *fig.* 24; the arm *m*, having a fork to embrace a groove in the box; the lever is fixed on a vertical axis *n*, which has at the upper end two other levers, *o*, *p*: theſe lay one on each ſide of the vertical axis A, but at different heights, as is evident from the figure. The collar *e*, which is raiſed up when the balls fly out, is fitted upon a ſquare part of the ſpindle A, and is formed like a ſnail or camm, which will act upon either of the levers, *o* or *p*, according to the height at which it hangs upon its ſpindle. Now when the mill is going with its true velocity, this camm, *e*, is at ſuch a height that it is beneath one lever, *o*, and above the other, *p*, ſo as to interfere with neither; conſequently the locking-box, *d*, remains detached: but on any alteration in the velocity of the mill and the axis A, the balls open or ſhut, as before explained, and the camm, *e*, either riſes or falls, and then it preſſes againſt one of the levers, *o* or *p*, and by puſhing it away from the axis, it moves the lever *m*, and the locking-box *d*, up to one of the wheels, B or C, which it locks to the axis D, and turns it round in the direction of that wheel's motion, by which it either raiſes or depreſſes the water-wheel's ſhuttle, as is required. This apparatus may, it is plain, be applied to any other kind of mill-work.

Governors or flying-balls are very frequently uſed in the wind-mills employed for grinding flour: the variable force of this firſt mover renders ſome ſuch regulator neceſſary, to increaſe the reſiſtance, by allowing a greater feed of corn, when the mill moves too quickly, and thus in ſome degree counteracting the irregularity. If the mill moves too ſlowly, the balls tend to diminiſh the feed, and at the ſame time they raiſe the upper ſtone, to ſet them at a greater diſtance aſunder, that they may require leſs power to drive them, and conſequently ſuffer the mill, as nearly as it can, to retain its full velocity, though the motive force is greatly diminiſhed. This application of the governor was, we believe, firſt made by the ingenious captain Hooper of Margate, who invented the horizontal wind-mill. (See Wind-*Mill.*) It is a very great advantage, and no wind-mill ſhould be without them. Many wind-mills are provided with flying-balls, which, by very ingenious mechaniſm, clothe and unclothe the ſails juſt in proportion to the ſtrength of the wind.

In many mills it is of conſequence to be able to detect ſmall variations in the velocity, and to aſcertain the quantity of them; for the governor only corrects the irregularities, without ſhewing any ſcale of them. In caſes where this is required, it may be done by a very ingenious inſtrument, invented by Mr. Bryan Donkin of Fort-Place, Bermondſey. He received a gold medal from the Society of Arts, Manufactures, and Commerce, in 1810, for this inſtrument, which he calls a tachometer.

A front view of this inſtrument is repreſented in *fig.* 25, and a ſide view in *fig.* 26, of *Plate* II. X Y Z, *fig.* 25, is the vertical ſection of a wooden cup, made of box, which is drawn in elevation at X, *fig.* 26. The whiter parts of the ſection, in *fig.* 25, repreſent what is ſolid, and the dark parts what is hollow. This cup is filled with mercury up to the level L L, *fig.* 25. Into the mercury is immerſed the lower part of the upright glaſs tube A B, which is filled with coloured ſpirits of wine, and open at both ends, ſo that ſome of the mercury in the cup enters at the lower orifice, and, when every thing is at reſt, ſupports a long column of ſpirits, as repreſented in the figure. The bottom of the cup is faſtened by a ſcrew to a ſhort vertical ſpindle D, ſo that when the ſpindle is whirled round, the cup (whoſe figure is a ſolid of revolution) revolves at the ſame time round its axis, which coincides with that of the ſpindle.

In conſequence of this rotation, the mercury in the cup acquires a centrifugal force, by which its particles are thrown outwards, and that with greater intenſity, according as they are more diſtant from the axis, and according as the angular velocity is greater. Hence, on account of its fluidity, the mercury riſes higher and higher as it recedes from the axis, and conſequently ſinks in the middle of the cup; this elevation of the ſides and depreſſion in the middle increaſing always with the velocity of rotation. Now the mercury in the tube, though it does not revolve with the cup, cannot continue higher than the mercury immediately ſurrounding it, nor indeed ſo high, on account of the ſuperincumbent column of ſpirits. Thus the mercury in the tube will ſink, and conſequently the ſpirits alſo; but as that part of the tube which is within the cup is much wider than the part above it, the depreſſion of the ſpirits will be much greater than that of the mercury, being in the ſame proportion in which the ſquare of the larger diameter exceeds the ſquare of the ſmaller.

Let us now ſuppoſe, by means of a cord paſſing round a ſmall pulley F, and the wheel G or H, or in any other convenient way, the ſpindle, D, is connected with the machine whoſe velocity is to be aſcertained. In forming this connection, we muſt be careful to arrange matters, ſo that when the machine is moving at its quickeſt rate, the angular velocity of the cup ſhall not be ſo great as to depreſs the ſpirits below, C, into the wider part of the tube. We are alſo, as in the figure, to have a ſcale of inches and tenths applied to A C, the upper and narrower part of the tube, the numeration being carried downwards from zero, which is to be placed at the point to which the column of ſpirit riſes when the cup is at reſt.

Then the inſtrument will be adjuſted, if we mark on the ſcale the point to which the column of ſpirits is depreſſed when the machine is moving with the velocity required. But, as in many caſes, and particularly in ſteam-engines, there is a continued oſcillation of velocity; in thoſe caſes we have to note the two points between which the column oſcillates during the moſt advantageous movement of the machine.

Here it is proper to obſerve, that the height of the column of ſpirits will vary with the temperature, when other circumſtances are the ſame. On this account the ſcale ought to be moveable, ſo that, by ſlipping it upwards or downwards, the zero may be placed at the point which the column reaches when the cup is at reſt, and thus the inſtrument may be adjuſted to the particular temperature with the utmoſt facility, and with ſufficient preciſion. The eſſential parts of the tachometer have now been mentioned, as well as the method of adjuſtment; but certain circumſtances remain to be ſtated.

The form of the cup is adapted to render a ſmaller quantity of mercury ſufficient than what muſt have been employed either with a cylindrical or hemiſpherical veſſel. In every caſe two precautions are neceſſary to be obſerved. Firſt, that when the cup is revolving with its greateſt velocity, the mercury in the middle ſhall not ſink ſo low as to allow any of the ſpirits in the tube to eſcape from the lower orifice; and that the mercury, when moſt diſtant from the axis, ſhould not be thrown out of the cup. Secondly, that when the cup is at reſt, the mercury ſhall riſe ſo high above the lower end of the tube that it may ſupport a column of ſpirits of the proper length

Now, in order that the quantity of mercury, conſiſtent with theſe conditions, may be reduced to its minimum, it is neceſſary, firſt, that if M M (*fig.* 1.) is the level of the mercury at the axis when the cup is revolving with the greateſt velocity, the upper part M M X Y of the cup ſhould be of ſuch a form as to have the ſides covered only with a thin film of the fluid; and ſecondly, that, for the purpoſe of raiſing the ſmall quantity of mercury to the level L L, which may ſupport a proper height of ſpirits when the cup is at reſt, the cavity of the cup ſhould be, in a great meaſure, occupied by the block K K, having a cylindrical perforation in the middle of it for the immerſion of the tube, and leaving ſufficient room within and around it for the mercury to move freely, both along the ſides of the tube and of the veſſel.

The block, K K, is preſerved in its proper poſition in the cup or veſſel X Y Z, by means of three narrow projecting ſlips or ribs, placed at equal diſtances around it, and is kept from riſing or floating on the mercury by two or three ſmall iron or ſteel pins inſerted into the underſide of the cover, near the aperture through which the tube paſſes. It would be extremely difficult, nor is it by any means important, to give to the cup the exact form which would reduce the quantity of mercury to its minimum; but we ſhall have a ſufficient approximation, which may be executed with great preciſion, if the part of the cup above, M M, is made a parabolic conoid, the vertex of the generating parabola being at that point of the axis to which the mercury ſinks at its loweſt depreſſion, and the dimenſions of the parabola will be determined in the following manner. Let V G (*fig.* 27.) repreſent the axis of the cup, and V the point to which the mercury ſinks at its loweſt depreſſion: at any point, G, above V, draw G H perpendicular to V G; let n be the number of revolutions which the cup is to perform in $1''$, at its quickeſt motion; let v be the number of inches which a body would deſcribe uniformly in $1''$, with the velocity acquired in falling from reſt through a height = to G V, and make $GH = \frac{v}{314n}$. Then the parabola to be determined is that which has v for its vertex, V G for its axis, and G H for its ordinate: at G the cup has a lid to prevent the mercury from being thrown out of it, an event which would take place with a very moderate velocity of rotation, unleſs the ſides were raiſed to an inconvenient height; but the lid, by obſtructing the elevation of the ſides of the cup, will diminiſh the depreſſion in the middle, and, conſequently, the depreſſion of ſpirits in the tube: on this account, a cavity is formed in the block immediately above the level L L, where the mercury ſtands when the cup is at reſt, and thus a receptacle is given to the fluid which would otherwiſe diſturb the centrifugal force, and impair the ſenſibility of the inſtrument.

It will be obſerved, that the lower orifice of the tube is twined upwards. By theſe means, after the tube has been filled with ſpirits, by ſuction, and its upper orifice ſtopped with the finger, it may eaſily be conveyed to the cup, and immerſed in the quickſilver, without any danger of the ſpirits eſcaping, a circumſtance which otherwiſe it would be extremely difficult to prevent, ſince no part of the tube can be made capillary, conſiſtently with that free paſſage to the fluids which is eſſentially neceſſary to the operation of the inſtrument.

We have next to attend to the method of putting the tachometer in motion, whenever we wiſh to examine the velocity of the machine. The pulley F, which is conſtantly whirling during the motion of the machine, has no connection whatever with the cup, ſo long as the lever, Q R, is left to itſelf. But when this lever is raiſed, the hollow cone T, which is attached to the pulley, and whirls along with it, is alſo raiſed, and, embracing a ſolid cone on the ſpindle of the cup, communicates the rotation by friction. When our obſervation is made, we have only to allow the lever to drop by its own weight, and the two cones will be diſengaged, and the cup remain at reſt.

The lever, Q R, is connected, by a vertical rod, to another lever S, having at the extremity, S, a valve, which, when the lever, Q R, is raiſed, and the tachometer is in motion, is lifted up from the top of the tube, ſo as to admit the external air upon the depreſſion of the ſpirits. On the other hand, when the lever, Q R, falls, and the cup is at reſt, the valve at S cloſes the tube, and prevents the ſpirits from being waſted by evaporation.

It is, laſtly, to be remarked, that both the ſenſibility and the range of the inſtrument may be infinitely increaſed; for, on the one hand, by enlarging the proportion between the diameters of the wide and narrow parts of the tube, we enlarge, in a much higher proportion, the extent of ſcale correſponding to any given variation of velocity; and, on the other hand, by deepening the cup, ſo as to admit, when it is at reſt, a greater height of mercury above the lower end of the tube, we lengthen the column of ſpirits which the mercury can ſupport, and, conſequently, enlarge the velocity which, with any given ſenſibility of the inſtrument, is requiſite to depreſs the ſpirits to the bottom of the ſcale. Hence the tachometer is capable of being employed in very delicate philoſophical experiments, more eſpecially as a ſcale might be applied to it indicating equal increments of velocity. But, in the preſent account, it is merely intended to ſtate how it may be adapted to detect, in machinery, every deviation from the moſt advantageous movement.

MILLAH, in *Geography*, a mountain of Algiers; 15 miles S.W. of Tiffeſh.

MILLAINS, according to Mr. Wingate, are the third ſubdiviſion of the primes in Gunter's line; and expreſs the thouſandth part of ſuch primes.

MILLAR, John, in *Biography*, profeſſor of law in the univerſity of Glaſgow, was born, in 1735, in the pariſh of Shotts, in Lanerkſhire. He received his grammar education at the ſchool of Hamilton, whence he was removed at the age of eleven to Glaſgow. He was deſigned for the church, but the freedom of his enquiries having inſpired him with a diſinclination to fetter himſelf by ſubſcription to articles of faith, he turned his thoughts to the bar, and his father acquieſced in the change. After he had finiſhed his ſtudies at Glaſgow, he paſſed about two years in the family of lord Kames as tutor to his ſon, and derived much information and improvement from his connection with that eminent lawyer. At this period he contracted an acquaintance with David Hume, to whoſe metaphyſical opinions he became a convert, though he materially differed from him upon political topics. In 1760 Mr. Millar began to practiſe at the bar. He was regarded as a riſing young lawyer, when he thought proper to terminate his profeſſional career by becoming a candidate for the vacant profeſſorſhip of law at Glaſgow. To this poſt he was appointed in 1761, and immediately began to execute its duties. Previouſly to his appointment the ſtudents of the law-courſe ſeldom exceeded four or five in number, but his reputation produced ſuch an acceſſion in a few years, that they frequently amounted to forty, and the pupils upon his lectures on government were much more numerous. He lectured in Engliſh, and ſpoke fluently with the aſſiſtance of mere notes only. By this method his lectures were rendered full of variety and animation, and at the concluſion of each he was accuſtomed to explain the difficulties and objections that had preſented themſelves to his pupils, in a free and familiar converſation. His buſineſs as profeſſor was that of commenting upon the inſtitutions and pandects of Juſtinian, but to this he ſubjoined a courſe of lectures on juriſprudence, or the general principles of law, as exiſting in the codes of all civilized nations: he likewiſe employed an hour thrice a week in lectures on government, and twice a week on the law of Scotland. A ſpirit of inveſtigation had given birth to a literary ſociety among the clergy and profeſſors of Glaſgow, of which Mr. Millar became an active member. Few men were more ready at diſcuſſions of the philoſophical kind, and all the branches of ſcience connected with the ſtudy of the human mind were extremely familiar to him. In 1771 he publiſhed a treatiſe on "The Origin of the Diſtinction of Ranks," which contained a view of the changes produced in the ſeveral relations of ſociety by the gradual progreſs of civilization and improvement. It was well received by the public, and has gone through ſeveral editions. The copy now before us is one of the third edition, and was publiſhed in 1781. The treatiſe is divided into diſtinct chapters, which are ſubdivided into ſeveral ſections, and in theſe ſubjects of much intereſt and great importance are diſcuſſed. The firſt chapter treats "Of the Rank and Condition of Women in different Ages;" the ſecond "Of the Juriſdiction of a Father over his Children:" the third and fourth "Of the Authority of Chiefs and Sovereigns:" the fifth "Of the Changes produced in the Government of a People, by their Progreſs in Arts and in poliſhed Manners:" the ſixth "Of the Authority of a Maſter over his Servants."

Mr. profeſſor Millar's enquiries into the Engliſh government, which made an important part of his lectures, together with a zealous attachment to the principles of liberty, led him to publiſh in the year 1787 the firſt volume of an "Hiſtorical View of the Engliſh Government," in which he traces the progreſſive changes in the property, the ſtate of the people, and the government of England, from the ſettlement of the Saxons to the acceſſion of the houſe of Stuart. This volume, which is replete with ingenious and profound ſpeculations, would have been followed by a ſecond, bringing down the hiſtory to the preſent time, had not the events which, ſoon after the publication of this work, paſſed on the theatre of Europe, ſo completely arreſted the attention of the public, as almoſt to ſink the importance of paſt forms of government, in the ſuperior intereſt of thoſe which were *expected* to ariſe!

Mr. Millar was an early, active, and perſevering advocate for the abolition of the ſlave-trade, which, in his opinion, could never be palliated, far leſs juſtified, by any regulations, either reſpecting the tranſport of ſlaves from Africa to the Weſt Indies, or their treatment, however mild, after their arrival. While he conſidered domeſtic ſlavery as the greateſt curſe that can befal a nation; as equally ſubverſive of the morals of all ranks in ſociety, he was by no means indifferent to the evils of political ſlavery. He viewed the attempt to tax America, as an attack on the juſt rights of the Colonies, and he dreaded the ſubjugation of that country, as a deciſive ſtep towards the overthrow of Britiſh freedom. When the French revolution, to which we have already alluded, aſtoniſhed the world, he was one of thoſe who, without entering into the wild ſpeculations it occaſioned, ſaw in proſpect the benefits it apparently promiſed to Europe; and on that account hailed it as the happieſt event that could have happened to the human race. To the deep regret, excited by ſucceeding horrors, there was, we are told, always joined in his mind, a ſentiment of the moſt profound indignation againſt that coalition of continental kings, to which he thought they might be juſtly aſcribed.

Among the parties that have divided the preſent reign, Mr. Millar attached himſelf to that of the Whigs, and particularly to that branch of them which had firſt the marquis of Rockingham, and afterwards Mr. Fox at their head. He always warmly ſupported their principles through all the viciſſitudes of adminiſtration and public opinion. He was ever ſuſpicious of power, and was a zealous friend to all attempts for reſtraining the increaſe of the power of the crown. It was probably in conſequence of his jealouſy of authority, that, in the limited degree in which he ſtill followed the profeſſion of an advocate, he made it a conſtant practice to appear on the circuits as counſellor for criminals; and few pleaders ſurpaſſed him in the acuteneſs with which he examined evidence, and the force with which he addreſſed the feelings of juries. Mr. Millar's reſearches were by no means confined to politics and law. He was an able and profound metaphyſician: his acquaintance with the works of imagination, both ancient and modern was alſo very extenſive, and his criticiſms were at once ingenious and ſolid, evincing an admirable union of acuteneſs of underſtanding with an elegant and correct taſte. He died on the 30th of May 1801, at the age of 69, leaving behind him ſeveral manuſcripts, from which, in 1803, were printed, in two volumes, his poſthumous works, conſiſting of an hiſtorical view of the Engliſh government from the acceſſion of the houſe of Stuart, and ſome ſeparate diſſertations connected with the ſubject. Of the ſtyle of Mr. Millar's works, it is ſufficient praiſe to ſay in the words of his biographer, that, "perhaps it would be impoſſible to find a ſentence which can require a ſecond peruſal to be diſtinctly underſtood." Monthly Magazine, vol. ii. See alſo "An Account of the Life and Writings of John Millar," eſq. prefixed to the fourth edition "Of the Origin of the Diſtinction of Ranks."

MILLARES, or Millas, in *Geography*, a town of Spain, in the province of Valencia, on the Xucar; 18 miles N.W. of St. Felipe.

MILLAS, a town of France, in the department of the Eaſtern Pyreneés, and chief place of a canton, in the diſtrict of Perpignan; 9 miles W. of Perpignan. The place contains 1361, and the canton 7029 inhabitants, on a territory of 137½ kiliometres, in 9 communes.

MILLEA, in *Botany*, a genus named by Cavanilles in honour of Mr. Julian Milla, head gardener of the Royal Botanical Garden at Madrid.—Cavan. Ic. v. 2. 76. Willd. Sp. Pl. v. 2. 62.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Lilia*, Juſſ.

Gen. Ch. *Cal.* Perianth none. *Cor.* of one petal, funnel-ſhaped; tube elongated, ſtraight; limb ſpreading, deeply cloven into ſix, ovate ſegments, the alternate ones narrower, and tipped with a ſhort, hooked appendage. *Stam.* Filaments ſcarcely diſcernible; anthers ſix, oblong, erect and approaching each other, almoſt ſeſſile, oppoſite to the ſegments of the corolla, and inſerted into the upper part or throat of the tube. *Piſt.* Germen ſuperior, on a very long ſtalk, triangular, incloſed in the tube; ſtyle thread-ſhaped, prominent; ſtigmas three, globular, covered with thick hairs. *Peric.* Capſule oblong, triangular, of three valves and three cells. *Seeds* many in each cell, ovate, pointed, compreſſed into the ſhape of a little bag.

Obſ. Cavanilles ſays that the germen being ſuperior, the tube elongated and ſtraight, the anthers nearly ſeſſile and approaching each other, added to the deficiency of a calyx and nectary, are ſufficient marks to render our preſent plant diſtinct from *Pancratium*, *Amaryllis*, *Crinum* and *Agapanthus*, to all which genera in other reſpects it ſeems to have ſome affinity.

Eſſ. Ch. Corolla funnel-ſhaped; with a flat limb, deeply ſix-cleft. Anthers inſerted into the throat of the tube. Germen ſtalked. Capſule of three cells, with many ſeeds.

1. M. *biflora*. Willd. n. 1. Cavan. Ic. v. 2. t. 196.—A native of Mexico. It flowers and bears ſeed in the garden at Madrid in October. *Root* an ovate bulb, with very fleſhy oblong fibres, covered with a thin, reddiſh ſkin. *Radical-leaves* a foot high or more, awl-ſhaped, ſometimes furrowed on the inner ſide, ſmooth and generally longer than the ſcapus. *Stalks* ſcarcely a foot high, round, ſtiff, generally forked and two-flowered. *Bracteas* at the diviſion of the ſtalk, three, ſhort, acute, withering. *Corolla* white, each ſegment of the limb ſtreaked at the lower part with green. *Seeds* numerous, black. The analogy of the *Tigridia Pavonia* helps us to underſtand this root, which Cavanilles appears to have incorrectly deſcribed.

MILLEFOLIUM, Millefoil or Yarrow, ſo denominated from *mille*, a thouſand, in alluſion to the multitude of diviſions which compoſe its leaves. (See Achillea.) The name is likewiſe, for the ſame reaſon, applied to an aquatic genus, called Water Millefoil. See Myriophyllum.

MILLENARII, Millenarians, in *Eccleſiaſtical Hiſtory*, a ſect among Chriſtians, chiefly in the primitive church, who hold that Jeſus Chriſt is to come again, and reign on earth for the ſpace of a thouſand years; during which time, the faithful are to enjoy all manner of temporal bleſſings; and at the expiration of this term, the day of judgment is to take place.

The Millenarii are alſo called *Chiliaſts*, *Chiliaſtæ*, from the Greek χιλιας, *mille, a thouſand*.

This opinion of the Millenarii is very ancient, and may be traced back almoſt as far as the time of the apoſtles. It had its origin from a paſſage in the Apocalypſe too literally underſtood, in which mention is made of Chriſt's reign on earth, &c.

The opinion of S. Papias, in the ſecond century, to whom Euſebius aſcribes the origin of this notion of a millennium, ſays M. Launoy, touching the new kingdom of Jeſus Chriſt on earth, after the reſurrection, was held for near three centuries, before it was charged as erroneous; as appears from eccleſiaſtical hiſtory. It was allowed of, and followed, under various interpretations, by ſeveral of the greateſt men among the primitive fathers, as Irenæus, Juſtin Martyr, Lactantius, Tertullian, &c. Papias, to whom this opinion is aſcribed, is repreſented by Euſebius himſelf a very credulous perſon, and it is certain his authority deſerves no implicit confidence. From the ſecond dialogue of Juſtin Martyr with Trypho, we have evidence that the doctrine of the millennium had not in his time the univerſal reception which Mr. Gibbon the hiſtorian, with a view of ſerving his own purpoſe, has ſuppoſed. Many Chriſtians of pure and pious principles rejected it. This appears from the teſtimony of Juſtin, in a paſſage which has been miſunderſtood by Mede and Tillotſon in conſequence of the ſubſtitution of ȣ for αν. See Thirlby's ed. of Juſtin, A.D. 1722, and Jebb's ed. A.D. 1719.

Towards the cloſe of the ſecond century, the credit of this opinion began to decline, principally through the influence and authority of Origen, who oppoſed it with the greateſt warmth, becauſe it was incompatible with ſome of his favourite ſentiments.

Nepos, an Egyptian biſhop, endeavoured to reſtore this opinion to its former credit, in a book written "againſt the Allegoriſts," for ſo he called, by way of contempt, the adverſaries of the millenarian ſyſtem. But Dionyſius of Alexandria, a diſciple of Origen, ſtopped the growing progreſs of this doctrine by his private diſcourſe, and alſo by two learned and judicious diſſertations concerning the "divine promiſes." Jerom is alſo ſaid to have oppoſed this millenary reign of Chriſt. The ancient Millenarians generally held, according to the account of the learned Dr. Whitby, that the temple, or the city of Jeruſalem, ſhould be rebuilt, and that the land of Judea ſhould be the habitation of thoſe riſen ſaints, who were to reign on earth a thouſand years; that this reſurrection was not to be confined to the martyrs only, but that all the juſt were then to riſe and reign with Chriſt; and that this reign ſhould alſo extend to the juſt who were found alive at this firſt reſurrection; that Jeſus Chriſt ſhall then come down from heaven, and be ſeen on earth, and there reign with his ſervants; and that they ſhall then fare deliciouſly, and enjoy the richeſt wines and moſt delicious fruits, build houſes, plant vineyards, and eat the fruits of them, and propagate their ſpecies.

Dr. Whitby has clearly proved, that this opinion of the millennium was never generally received in the Chriſtian church, and that there is no juſt ground to think it was derived from the apoſtles. Indeed, if we examine their writings critically and candidly, we ſhall find that they never predicted this event to others, nor cheriſhed the expectation of it in themſelves. The paſſages which ſeem to countenance this opinion are contradicted by others, which are altogether inconſiſtent with it; ſo that the apoſtles never entertained the delightful hope of ſeeing their maſter coming again into the world. It is evident that St. John, who ſurvived all the other apoſtles, could not have had any ſuch expectation; ſince in the book of the Revelation the future events of the Chriſtian church, which were not to take place, many of them, till a long period of years after his death, and ſome of which have not yet been accompliſhed, are there minutely deſcribed. St. Peter likewiſe ſtrongly intimates, that the day of the Lord might be ſaid to be at hand, though it was at the diſtance of a thouſand years, or more. St. Paul, in his ſecond epiſtle to the Theſſalonians, labours to remove the erroneous opinion that had been adopted by ſome, who expected the ſpeedy coming of Chriſt; he deſcribes a great corruption of the Chriſtian church, which was to happen before the day of the Lord, and this appears by the expreſs language of his prophecy to comprehend circumſtances, which did not occur till many ages after they were predicted. But allowing, ſays biſhop Watſon, that the apoſtles did expect that Chriſt would come in their own time, their miſtake in this reſpect ought not in anywiſe to diminiſh their authority as preachers of the goſpel. They might be proper witneſſes of the life and reſurrection of Chriſt, though they were not acquainted with every thing which might have been known, though, in particular, they were ignorant of the preciſe time when our Lord would come to judge the world. It can be no impeachment, either of their integrity as men, or their ability as hiſtorians, or their honeſty as preachers of the goſpel, that they were unacquainted with what had never been revealed to them; that they followed their own underſtandings, where they had no better light to guide them; ſpeaking from conjecture, when they could not ſpeak from certainty; of themſelves, when they had no commandment of the Lord. There is therefore no ground for the reflections of Mr. Gibbon, tending to invalidate the truth of Chriſtianity and the doctrine of a future ſtate, and founded on what he conceives to have been the opinion of the apoſtles and of ancient Chriſtian writers, concerning the millennium. Watſon's Apology for Chriſtianity.

The millennium, according to the learned commentator Dr. Whitby, is a glorious ſtate of the church, commencing after the fall of antichriſt; and the ſubſequent converſion of the Jews to the Chriſtian faith, in which it ſhall flouriſh in peace and plenty, in righteouſneſs and holineſs, and in a pious offspring, for a thouſand years, under the undiſturbed, though not perſonal government of Chriſt, over both Jews and Gentiles, which ſhall then be united into one church.

MILLENBACH, or MILBACH, in *Geography*, a town of Tranſylvania; 20 miles W. of Hermanſtadt. N. lat. 46° 6'. E. long. 23° 14'.

MILLENNIUM, compounded of *mille, a thouſand*, and *annus, a year*, a term literally ſignifying a *thouſand years;* chiefly uſed for the time of our Saviour's expected ſecond appearance, and reign on earth.

Mr. Whiſton, in ſeveral of his writings, has endeavoured to ſupport the notion of a millennium. According to his computation it was to have commenced about the year 1720. See MILLENARII.

MILLEPEDA, in *Conchology*, the name given by authors to a ſpecies of *Strombus*; which ſee.

MILLEPEDES, or SLATERS, in *Zoology*, well known inſects, formerly uſed on many occaſions in medicine. This inſect is otherwiſe called *aſellus*, being a ſpecies of *oniſcus*, in Engliſh the *wood-louſe*. (See ASELLUS and ONISCUS.) Mr. Ray deſcribes ſeven different ſpecies of this inſect, ſome of which we ſee every day, others are more rare. The blue kind, which rolls itſelf up into a ball, is the proper medicinal kind; though there is another ſort of a pale browniſh-grey, ſmaller, flatter, and thinner than the former, and having the laſt diviſion of the body not annular but pointed, and a forked tail, which is of the ſame quality. They are found in cellars, on roofs of houſes, old walls, and under ſtones and logs of wood in cold moiſt places. They are rather more than half an inch in length, whitiſh on the belly, with ſeven pairs of legs, each terminated by a ſharp horny claw. The head is ſomewhat pyramidal, and furniſhed with two articulated feelers; and the upper part is guarded by a callous, browniſh, livid-coloured, jointed armour, conſiſting of 14 ſemicircular ſlates, within which the inſect rolls itſelf like a ball when touched; like ſome other inſects it caſts the ſkin, and carries the young in valvular follicles under the abdomen.

Millepedes are ſo generally known among the vulgar, that moſt perſons ſeem to be maſters of their medicinal uſes, and take them in many caſes without any other direction. They were formerly regarded as expectorant, diuretic, and abſterſive, and occurred frequently in preſcriptions for diſorders in the kidnies, and alſo in obſtructions of the viſcera, and particularly in the jaundice; and in many other diſeaſes. Although they are retained in the liſt of Materia Medica, the good ſenſe of modern practitioners has nearly exploded the uſe of them.

The *millepedes præparatæ* of the ſhops, when they were conſidered as a medicine of importance and beneficial efficacy, were reduced to powder, either by incloſing them in a thin canvas cloth, and ſuſpending them over hot ſpirit of wine in a cloſe veſſel, till they were killed by the ſteam and rendered friable; or by including them in a proper veſſel and drying them with a very gentle heat. The prepared millepedes, or ſlaters as they are called, have a fetid odour, and a ſweetiſh nauſeous taſte.

There were alſo ſeveral chemical preparations of millepedes, as ſpirit, volatile ſalt, oil, and wine of millepedes.

The college of Edinburgh formerly directed two ounces of live millepedes to be ſlightly bruiſed, and digeſted for a night in a pint of Rheniſh wine, after which the liquor is to be preſſed through a ſtrainer.

MILLEPORA, in *Natural Hiſtory*, a genus of the claſs Vermes, and order Zoophyta. The animal is an hydra or polype; coral moſtly branched, and covered with cylindrical turbinate pores. There are 34 ſpecies, chiefly inhabitants of the Mediterranean: but ſome are found on our own coaſts, eſpecially in Cornwall, and a few are ſcattered through the ſeas of America, India, and Polyneſia.

Species.

ALCICORNIS. This ſpecies is branched, compreſſed, ſtraight, with ſcattered and ſcarcely viſible pores. It inhabits the Indian and American ſeas, and is frequently found incruſting pieces of rock, gorgonia, and cocoa-nuts; dull white with ſometimes a yellowiſh tinge, ſmooth, ſolid, ſtony, ſometimes brittle, with very minute pores.

CÆRULEA. This is flat, rough, divided into thick plates bending different ways, the tops of which are ſometimes lobed, and both ſides furniſhed with cylindrical ſubſtellate pores. It is found in vaſt maſſes in the Indian ocean; the laminæ or plates are generally half an inch thick, and full of minute pores between the ſtar-like cells. It appears to be an intermediate ſpecies between the madrepores and the millepores.

ASPERA. Somewhat compreſſed, with eminent pores, which are ſometimes cleft. It inhabits the Mediterranean ſeas. It is erect, pointing two ways, roundiſh, with crowded pores at the branches, cleft on the lower ſide.

SOLIDA. Turbinate, with crowded angular pores. Found on the ſhores of Gothland. Tubes of pores with tranſverſe diviſions within.

TRUNCATA. Dichotomous, erect, with truncate branches.

It inhabits the Mediterranean and North ſeas. Is of a yellowiſh-grey colour, and appearing as if covered with a coat of varniſh, very brittle, within greyiſh, the branches are divaricate, the pores are placed in a quincunx order.

Miniacea. Very minute, branching into ſmall lobes, and covered with ſmall pores. This ſpecies is found in the Mediterranean and Indian ſeas. It is a beautiful little coral, and the ſmalleſt of its genus, being ſeldom above a quarter of an inch high; the whole ſurface, when magnified, appears full of minute, white, blind ſpiracles, and on the tops of the lobes are ſeveral ſcattered holes ſurmounted with a margin; the baſe is broad, and with this it adheres to ſhells, rocks, and other corals.

* **Cervicornis.** This is a little compreſſed, dichotomous. with cells on both ſides, tubular, and prominent florets, It inhabits the Mediterranean and Corniſh coaſts; is from five to ſix inches high; is of reddiſh or yellowiſh-brown, within whitiſh, branched like the horns of a ſtag, and appearing as if covered with a varniſh; a few of the pores are divided at the baſe, which are narrow, and of a brittle texture.

* **Skenei.** Compreſſed, and ſlightly branched, with cells on both ſides, diſpoſed in alternate rows; cells turbinate, with a gaping mouth and covered with a helmet, the under lip furniſhed with a ſmall tooth. It is found near Aberdeen, adhering to the rocks; of a bright ſhining white colour, and appearing as if covered with ſilver varniſh.

Pumila. This is depreſſed, with ſcattered irregular retuſe branches every where porous and roughiſh. It inhabits the Mediterranean, on ſhells and rocks; is about three inches high, ſolid, and very much branched, pale grey, and within whitiſh.

Compressa. This ſpecies is furniſhed with a ſtem ſlightly branched, and a little compreſſed, branches diſtant, pores every where a little prominent and rough. It inhabits the Mediterranean.

* **Lichenoides.** Cauleſcent, decumbent, with waved nearly oppoſite denticulate branches; pores a little prominent on the upper ſide, and ſtriate beneath. It inhabits the Mediterranean and European coaſts, on ſtones and other marine ſubſtances; milk-white, very brittle, and about two inches long.

Violacea. Flat, branching, with erect flexuous round branches, a little compreſſed, with a porous ſuture encompaſſing the margin. It inhabits the South-ſea iſlands; is about three inches high; fine violet blue, with two rows of ſmall pores each ſide the margin, beſides the line of larger ones ſurrounding it; the ſurface is rough with a few cluſters of little ſtuds.

Tubulifera. This ſpecies is ſolid, branched, with tubular ſcattered pores; the branches are confluent, with tapering rough extremities. It inhabits the Sicilian ſeas; is about four inches high, white, ſolid; the trunk and branches ſmooth.

* **Fascialis.** Membranaceous, flat, narrow, branched, flexuous, with pores on both ſides. It is found on the coaſt of the Iſle of Wight, as well as in the Mediterranean, and grows in irregular maſſes; the branches are flat, narrow, and irregularly ſubdivided, which coaleſce, twiſt, and branch out again, leaving hollow ſpaces between them. It is about ſix inches in diameter.

* **Foliacea.** This is, as its name imports, foliaceous, flexuous, uniting ſometimes at the extremities, and is covered with pores on both ſurfaces, ſo ſmall as to be ſcarcely viſible. Found growing to an oyſter-ſhell at the Iſle of Wight; is from three to twelve inches long, white and ſtony.

Zeylanica. This is compoſed of thin concreſcent irregularly divided membranes, with rows of oblong cells on each ſide. It is of a white colour, and is found in the Indian ocean.

Forniculosa. Cruſtaceous, with rows of vaulted cells furniſhed with a ſmall ringent lip, and cloſed by a membrane. Is found in South America, adhering to other corallines; reſembles the Fluſtra foliacea, and is thought by ſome to be a cellepore.

Crustulenta. Cruſtaceous, ſomewhat branching, and irregularly ſhaped, with rows of oblong cells cloſed by a membrane, and very entire diviſions. It inhabits the ſalt dykes of Holland, and the Atlantic; is of a greyiſh-white colour, and forming ſub-globular maſſes.

Erosa. This alſo is cruſtaceous, with open cells pectinate at the lateral margin. It is found in the American ocean, affixed to rocks; the cells have erect ſubulate teeth, about four on each ſide.

Reticulata. Membranaceous, with depreſſed linear branches rough on the upper ſurface, with prominent pores. It inhabits the Mediterranean and Weſt Indies; is white, brittle, horizontal, convolute, and much branched; the reticulate branches growing in an undulate manner, and coaleſcing occaſionally; the upper ſurface is rough, with pointed pores, the under ſurface is ſtriate.

* **Cellulosa.** Membranaceous, reticulate, funnel-formed, irregularly waved, and plaited at the margin, with numerous pores on one ſide. It is found in the Mediterranean and European ſeas, fixed to marine ſubſtances, and reſembles a piece of lace, conſiſting of a flat erect undulated membrane covered with large regular perforations, ſometimes diſpoſed in a cup-ſhaped form, at other times running into looſe folds with a waved margin like a ruffle; is about three inches high, ſolid, brittle, white or yellowiſh-grey, with very vivacious polypes.

Clathrata. Umbilicate, reticulate, with flat branches that are porous on one ſurface. It inhabits the Indian ocean, and is thought to be an intermediate ſpecies between the Celluloſa and Lichenoides; it is white and ſeated on a ſolid centre.

Reticulum. Compoſed of branched cancellate threads. It is found in the Mediterranean, covering the ſurface of ſhells and the roots of fuci; reſembles a ſpider's web, and is compoſed of fine capillary threads.

Spongites. Cauleſcent, erect, with angular imbricate branches; it reſembles a ſponge; is about a foot long: the pores are not viſible.

Coriacea. Sub-membranaceous, ſemi-orbicular, and nearly horizontal, with a few pores on the lower ſurface. It inhabits the Atlantic and Numidian ſeas, covering the ſtems of the Fucus cartilagineus, and forming covers for the chambers of other corals.

Calcarea. Branched, milk-white, ſolid, with tapering ſub-diviſions. It inhabits the Mediterranean; is four inches high. The branches grow ſmaller towards the end, and are uſually regularly ſub-divided.

* **Polymorpha.** Cruſtaceous, ſolid, irregularly ſhaped, but generally branched and tuberculate, and without viſible pores. This is found in moſt of the European ſeas, and is the common coral of the ſhops: in many places it grows in ſuch abundance, that it is burnt for manure; its colour is either red, yellowiſh, or greeniſh, and is but ſeldom white! It was formerly much uſed in medicine as an abſorbent. It is ſometimes ſhaped like the kernel of a walnut, often in large compreſſed maſſes, ſometimes like a ſmall bunch of grapes, but moſt frequently in ſhort and rather irregular

ramifications of a chalky tuberculate appearance, and ſtony ſubſtance.

DECUSSATA. Compoſed of cretaceous erect laminæ, or plates, croſſing one another, and uniting differently in different places. It is found on the coaſt of Portugal, in maſſes about five or ſix inches wide.

*ALGA. This conſiſts of thin ſemicircular plates, diſpoſed horizontally: it inhabits the Corniſh coaſt, adhering to and frequently entirely covering the Polymorpha, and is either red, purpliſh, yellow, or whitiſh; extremely thin and brittle, with ſemicircular plates of various ſizes, conſtantly growing horizontally, with their margins bending over, rendering them convex on the upper ſide, and concave beneath.

*PUMICOSA. Irregularly ſhaped, brittle, rough, and compoſed of ſharp-pointed roundiſh cells. It inhabits the Britiſh coaſts, and is frequently found incruſting many of the Sertularia in ſmall irregular maſſes, appearing very like white ſand ſtrongly united together; the branches are generally cylindrical, each about half an inch long; the cells are placed round about in alternate order, ſhaped like an helmet juſt opening, with a hole in the middle.

*TUBULOSA. This is a paraſitic plant, cruſtaceous, pale purple, with ſmall tubular cells diſpoſed in tranſverſe rows or whorls. It inhabits the Mediterranean and Britiſh coaſts, and is found frequently encompaſſing the ſtem of the Sertularia falcata.

PINNATA. Dichotomous, erect, with tubular pores diſpoſed in a pinnate order. Inhabits the Mediterranean: when freſh caught it is greyiſh, though ſometimes green, is about an inch high, and very brittle.

*LILIACEA. Creeping proſtrate, in obtuſe linear diviſions, with tubular pores on the upper ſurface diſpoſed in tranſverſe rows. It inhabits the Mediterranean and Corniſh coaſts, and reſembles, in ſome reſpects, the Tubuloſa, but is white.

CARDUNCULUS. This is irregularly ſhaped, membranaceous, with concentric wrinkles, and central triangular pyramidal tubes. It is found in the Mediterranean, adhering to the Sertularia; it is minute, white, ſub-pellucid, and reſembling the flower of a thiſtle.

MILLER, PHILIP, in *Biography*, a celebrated gardener and botaniſt, was born in 1691. His father had the ſuperintendance of the Phyſic Garden at Chelſea, belonging to the Apothecaries' Company, and founded by ſir Hans Sloane; to which appointment he himſelf ſucceeded in the year 1722. In this ſituation he became diſtinguiſhed by his practical knowledge of plants, and eſpecially by his ſkill in their cultivation. The latter was evinced in a paper, communicated by himſelf to the Royal Society in 1728, and printed in the 35th volume of the Philoſophical Tranſactions, on "a method of raiſing ſome exotic ſeeds," which had been judged almoſt impoſſible to be raiſed in England. This conſiſted in allowing them to germinate in a bark bed, previouſly to their being planted in earth. By this means alone, ſeveral hard-ſhelled nuts can be made to vegetate in our ſtoves; and indeed the practice is founded on a judicious obſervation of nature's operations. Two years afterwards, Mr. Miller made known, for the firſt time, the preſent popular mode of cauſing bulbous plants to flower in water.

In 1730 he publiſhed anonymouſly a thin folio, accompanied with twenty-one coloured plates, after the drawings of Van Huyſum, entitled "A Catalogue of trees, ſhrubs, plants, and flowers, both exotic and domeſtic, which are prepared for ſale in the gardens near London." The preface is ſigned by a ſociety of gardeners, amongſt whom the name of Miller appears. The work is much more than a mere catalogue, the generic characters being given in Engliſh, and many horticultural and economical remarks ſubjoined. Moſt of the plates contain figures of ſeveral different plants. This publication is mentioned by Haller, who was uninformed reſpecting its real author, in his *Bibl. Bot.* v. 2. 229.

In 1731 appeared the firſt edition of the "Gardener's Dictionary," in folio, the moſt celebrated work of its kind, which has been tranſlated, copied and abridged, at various times, and may be ſaid to have laid the foundation of all the horticultural taſte and knowledge in Europe. It went through eight editions in England, during the life of the author, the laſt being dated 1768. This forms a very thick folio volume, and follows the nomenclature and ſtyle of Linnæus; the earlier ones having been written on Tournefortian principles. A much more ample edition has been publiſhed within a few years, making four large volumes, under the care of the Rev. Prof. Martyn. In this all the modern botanical diſcoveries are incorporated with the ſubſtance of the 8th edition. Linnæus has juſtly remarked, that Miller's was a botanical as well as a horticultural dictionary. We cannot but think that it has proved a powerful means of introducing a taſte for ſcientific botany, amongſt thoſe who at firſt had recourſe to it merely as cultivators.

This work had been preceded, in 1724, by an octavo of two volumes, called "The Gardener's and Floriſt's Dictionary," and was ſoon followed by "The Gardener's Kalender," a ſingle octavo volume, which has gone through numerous editions. One of theſe, in 1761, was firſt accompanied by "a ſhort introduction to a knowledge of the Science of Botany," with five plates, illuſtrative of the Linnæan ſyſtem. Miller had been trained in the ſchools of Tournefort and of Ray, and had been perſonally acquainted with the great Engliſh naturaliſt, of which he was always very proud. No wonder therefore if he proved ſlow in ſubmitting to the Linnæan reformation and revolution, eſpecially as ſir Hans Sloane, the Mecænas of Chelſea, had not given them the ſanction of his approbation. At length more intelligent adviſers, Dr. Watſon and Mr. Hudſon, overcame his reluctance, and, his eyes being once opened, he was no longer behind-hand in deriving advantage from ſo rich a ſource. He became a correſpondent of Linnæus, and one of his warmeſt admirers. Although it does not appear that he had any direct communication with Micheli, he was choſen a member of the Botanical Society of Florence, which ſeems to indicate that they were known to each other, and probably communicated through Sloane and Sherard, as neither was acquainted with the other's language. Miller maintained an extenſive communication of ſeeds with all parts of the world. His friend Houſton ſent him many rarities from the Weſt Indies, and Miller but too ſoon inherited the papers of this ingenious man, amongſt which were ſome botanical engravings on copper. Of theſe he ſent an impreſſion to Linnæus; and ſuch of them as eſcaped accidents, afterwards compoſed the *Reliquiæ Houſtonianæ.* See HOUSTONIA.

In 1755 our author began to publiſh, in folio numbers, his "Figures of Plants," adapted to his dictionary. Theſe extended to three hundred coloured plates, making, with deſcriptions and remarks, two folio volumes, and were completed in 1760. They comprehend many rare and beautiful ſpecies, there exhibited for the firſt time. The commendable deſign of the writer was to give one or more of the ſpecies of each known genus, all from living plants; which as far as poſſible he accompliſhed. His plates have more botanical diſſections than any that had previouſly appeared in this country.

Miller was a fellow of the Royal Society, and enriched its

Tranſactions with ſeveral papers. The moſt numerous of theſe were catalogues of the annual collections of fifty plants, which were required to be ſent to that learned body, from Chelſea garden, by the rules of its foundation. Theſe collections are preſerved in the Britiſh Muſeum, and are occaſionally reſorted to for critical enquiries in botany. He wrote alſo on the Poiſon Aſh, or *Toxicodendrum*, of America, which he believed to be the Japaneſe Varniſh tree of Kæmpfer; a poſition controverted by Mr. Ellis. (See Ellis.) The latter appears to have been moſt in the right, which may account for a certain degree of ill humour betrayed by Mr. Miller in the courſe of the diſpute. It is ſcarcely conſiſtent with the uſual candour of the amiable Dr. Pulteney, that in his "Sketches of the Progreſs of Botany in England," he rather diſcovers a partiality to Miller on this ſubject. We cannot account for his omitting all account of ſo great a man as Ellis, in that valuable work.

Miller continued to attend to his duties and his favourite purſuits to an advanced age, but was obliged at length, by his infirmities, to reſign the charge of the garden. He died ſoon after, at Chelſea, December 18, 1771, in his 81ſt year, and was interred in the burying-ground in the King's road, with his wife, by whom he had, if we miſtake not, ſeveral children. One of them, Mr. Charles Miller, ſpent ſome time in the Eaſt Indies, where he acquired a handſome fortune, and is, we believe, now living in England. This gentleman made ſome experiments on the cultivation of wheat, an account of which was given by Dr. Watſon to the Royal Society. They were intended to ſhew the wonderful produce to be obtained by diviſion and tranſplantation, and have often been repeated. An account of the iſland of Sumatra, by Mr C. Miller, is printed in vol. 68th of the Philoſophical Tranſactions. The ſiſter of Philip Miller married Ehret, and left one ſon. See Ehretia.

In the courſe of his reſidence at Chelſea, Miller collected, principally from the garden, an ample herbarium, which was purchaſed by ſir Joſeph Banks. He ſent many dried ſpecimens to Linnæus. Pulteney's Sketches. Haller Bibl. Bot. Works of Miller. Dryandr. Bibl. Banks.

Miller, James, an Engliſh dramatic writer, was born in the year 1703. He was deſigned for buſineſs, and received an education ſuitable to it, but feeling a repugnance to that ſort of employment he went to Wadham college, Oxford, and having completed the uſual courſe he took orders. While at the univerſity he wrote a famous comedy, entitled "The Humours of Oxford," which was performed in 1729. He was author of ſeveral other pieces, of which the laſt was a tragedy, entitled "Mahomet." This had a conſiderable run, and before its popularity was at all abated, the author died in 1743. He publiſhed a volume of ſermons, and poems. Biog. Dram.

Miller, *Lady*, an accompliſhed woman, of ſome literary talents, who publiſhed letters from Italy, ſix vols. 8vo. She reſided at Bath-Eaſton, near Bath, where ſhe entertained ſeveral ingenious perſons, who compoſed a collection of poems, which was afterwards publiſhed. She died in 1781.

Miller, an admirable performer on the baſſoon, who flouriſhed in the middle of the laſt century. The concertos which he performed during many years, at Vauxhall, Hickford's Room, the Swan, Caſtle, and King's Arms concerts, and the ſolo parts allotted him by Handel in his oratorios and concertos, always excited attention, were heard with delight, and juſtly applauded for the ſweetneſs of his tone, and neatneſs of his execution.

Miller's, in *Geography*, a ſettlement in Kentucky, on a branch of Licking river; 32 miles N.E. of Lexington.

Miller's *Bay*, a bay on the S. coaſt of Jamaica, N. of Portland Point.

Miller's *Town*, a town of Northampton county, in Pennſylvania, pleaſantly ſituated on a branch of Little Lehigh river; 47 miles N.W. by N. of Philadelphia; containing about 40 houſes.—Alſo, a town in Shenandoah county, in Virginia; 32 miles S. of Wincheſter.

Miller's *Thumb*, in *Ichthyology*, an Engliſh name for the fiſh called alſo the bull-head, and by authors the cottus; being the Cottus *gobio* of Linnæus; which ſee.

MILLERIA, in *Botany*, received its name from Dr. Houſton, and was firſt publiſhed by Prof. Martyn, ſen., in honour of their common friend, the celebrated curator of Chelſea garden. (See Miller.) Linnæus, in adopting the name, obſerves, *Crit. Bot.* 80, that "this American plant, whoſe cloſe-ſhut calyx entirely ſurrounds and protects its one or two ſeeds, is well beſtowed on a man who ſpared no pains in procuring rare American ſeeds, and in contrivances for preſerving and communicating them."—Linn. Gen. 443. Schreb. 579. Willd. Sp. Pl. v. 3. 2328. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 3. 266. Juſſ. 187. Lamarck Illuſtr. t. 710. Gærtn. t. 168. Houſt. Ic. ined. f. 13. (Randia; ibid. f. 14.)—Claſs and order, *Syngeneſia Polygamia-neceſſaria*. Nat. Ord. *Compoſitæ oppoſitifoliæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* of one leaf, very large, in three deep ſegments, cloſed together in a flattiſh-triangular form, permanent; the two *innermoſt* equal, nearly ovate, acute, flat; the *outer* one twice as large, roundiſh, pointed, flat, heart-ſhaped at the baſe, moſt deeply ſeparated. *Cor.* compound, half radiant: *united florets* two, within the ſmaller ſegments of the calyx: *female* ſolitary, within the larger one: the former of one tubular, erect, five-toothed petal: the latter ligulate, erect, obtuſe, concave, with one or two notches. *Stam.* (in the united florets) Filaments five, capillary; anthers as many, erect, linear, connected laterally by the middle, acute, as long as the corolla. *Piſt.* (in the ſame) Germen oblong, very thin; ſtyle thread-ſhaped, the length of the petal; ſtigmas two, linear, weak, obtuſe, ſpreading: (in the female floret) Germen large, triangular; ſtyle thread-ſhaped, the length of the petal; ſtigmas two, briſtle-ſhaped, long, reflexed. *Peric.* none, except the cloſed common calyx, become coriaceous and coloured. *Seed* to the united florets none: in the female ones ſolitary, oblong, obtuſe, triangular, tapering downward. *Down* none. *Receptacle* very minute, naked.

Obſ. *M. quinqueflora* has the female floret three-cleft; the united ones four in number; calyx accompanied by five membranous internal leaves; ſtyle ſimple in the united florets, cloven in the female.

Eſſ. Ch. Receptacle naked. Down none. Common Calyx of three permanent valves. Corolla ſemi-radiant.

1. M. *quinqueflora*. Five-flowered Milleria. Linn. Sp. Pl. 1301. Mant. 478. (M. dichotoma; Cavan. Ic. v. 1. 58. t. 82. M. annua erecta, foliis conjugatis, floribus ſpicatis luteis; Mart. Decad. 41. t. 41.)

β. M. *maculata*. Mill. Dict. ed. 8. n. 2. (M. annua erecta ramoſior, foliis maculatis, profundiùs ſerratis; Mart. Decad. 47. t. 47. f. 2.)

Leaves heart-ſhaped. Flower-ſtalks forked. Calyx double.—Native of Vera Cruz, Panama and Mexico. Sent to Chelſea garden in 1731 by Houſton, but now loſt, having no beauty to ſecure the attention of cultivators in general. Linnæus had it at Upſal, and Cavanilles at Madrid. This is an annual ſtove plant, flowering in autumn. *Stem* five or ſix feet high, ſquare, branched, leafy. *Leaves* oppoſite, ſtalked, heart-ſhaped, broad, ribbed, roughiſh, ſlightly toothed or ſerrated, tapering at the baſe. *Flowers* ſmall, yellow, in terminal, leafy, ſlender, forked panicles. The *leaves* of the variety β are more ſtrongly ſerrated, of a darker green, and blotched with black. The number of *florets* varies.

2. M. *biflora*. Two-flowered Milleria. Linn. Sp. Pl. 1301. Hort. Cliff. t. 25. (M. annua erecta minor, foliis parietariæ, floribus ex foliorum alis; Mart. Decad. 47. t. 47. f. 1.)—Leaves ovate. Flower-ſtalks ſimple, terminal, aggregate. Calyx ſingle.—Native of the country near Campeachy, from whence it was ſent by Houſton in 1730.—Rather ſmaller, and leſs ſhowy than even the former. The *leaves* are ovate and triple-ribbed. *Flowers* pale yellow, very ſmall, in terminal tufts.

Willdenow's *M. Contrayerba*, n. 3. Cavan. Ic. v. 1, 2. t. 4, is our *Flaveria capitata* (ſee FLAVERIA); and his *anguſtifolia*, n. 4. Cavan. Ic. v. 3. 12. t. 223, is of the ſame genus. Perhaps *Flaveria* ought to be ſunk in *Milleria*, Cavanilles having found a radiant floret. Their habits however are not ſimilar. S.

MILLE-ROCHES, ISLE AU, in *Geography*, a ſmall iſland of Upper Canada, in the river St. Laurence, containing from 6 to 700 acres of good ſoil. N. lat. 45° 5′. W. long. 75° 40′.

MILLEROLLE, in *Commerce*, an oil meaſure at Marſeilles = 4 eſcandaux = 64 Paris pintes, or 15¾ Engliſh gallons nearly, and weighing about 136 poids de table, or 122lb. avoirdupois. The wine meaſure of the ſame denomination is = 4 eſcandaux = 60 pots; and 4 millerolles of wine = 63 Engliſh gallons nearly; and 3½ millerolles are reckoned = a Bourdeaux hogſhead.

MILLERS, or PAYQUAGE, in *Geography*, a river of the Maſſachuſetts, which runs W. by S. and falls into Connecticut river, between Northfield and Montagne.

MILLERY, a town of France, in the department of the Rhône and Loire; ſeven miles S. of Lyons.

MILLES, JEREMIAH, in *Biography*, a learned divine and antiquary, was born at High Cleer, in Hampſhire, in 1713, of which place his father was miniſter. He ſucceeded Dr. Lyttleton as dean of Exeter, and alſo as preſident of the Society of Antiquaries, to whoſe Archæologia he was a great contributor. Dr. Milles was a zealous champion for the genuineneſs of the Rowley poems, of which he printed an edition in 4to., with gloſſarial annotations. This work laid him open to the attacks of the critics, who were ſceptical on theſe ſuppoſed relics of antiquity. The dean died in 1784.

MILLESSOW, in *Geography*, a mountain of Bohemia, in the circle of Leitmeritz.

MILLET, in *Botany*. See MILIUM.

MILLET, the common name of a plant which grows naturally in India, whence it was firſt imported into Europe. It is greatly cultivated in Italy, Spain, and the ſouthern parts of France, for the food of men as well as that of poultry. It may alſo be raiſed in this climate. This is a plant that delights in a light ſandy ſoil, prepared in the ſame manner as for maize; and in ſuch lands it branches out into many ſtalks, ſometimes thirty or forty, not unlike reeds either in their ſhape or leaves, of which there is one at each joint. The top of each ſtalk is terminated by a large, looſe panicle, which hangs on one ſide, with a chaffy flower, which is ſucceeded by a ſmall round ſeed, about the bigneſs of turnip or cabbage ſeed, of a yellowiſh-white colour in one variety, and of a dark red inclining to black in another, which are the ſmall millet, and the large, a diſtinction which ſome make, as only varieties of the ſame ſpecies. It is likewiſe ſaid to thrive extremely well in ſtrong land; but will not do in ſtony ground, or where the bottom is of either a chalky or clayey nature.

Miller adviſes, that it ſhould be ſown in the beginning of April, that it may ripen in Auguſt; but in warmer climates, the general rule is to ſow it either between the middle and the end of May, or about Midſummer. The former crop is reaped at the end of September, and the latter about the end of October. The ſeed is uſually ſown in furrows, very thin, and covered with the plough or rake. The largeſt ſort ſhould be ſown thinneſt, becauſe it branches moſt. When the plants are about a month old, the ground ſhould be ſtirred round them with a hand-hoe, as well to lay freſh earth to their roots, as they require much nouriſhment, as to clear them from weeds, which they afterwards prevent by over-topping them. At the ſame time, the millet plants ſhould be thinned out wherever they grow too cloſe, ſo as to leave, in general, about ſix inches between each plant. Nothing more is neceſſary to be done till harveſt, except that, when it begins to ripen, great care muſt be taken to protect it from birds, which would otherwiſe ſoon devour it. The returns of this crop are very great; it is not eaſily hurt by drought or rain, nor is it ſubject to blight. Frequent ſhowers of rain are of great ſervice to it whilſt in its young growth.

As ſoon as the crops are ripe, the panicles of the plants are cut off near the uppermoſt joints of the ſtalks with a knife, and put into baſkets or ſacks, in which they are carried home, when they are then laid up in heaps covered with old cloths, and after remaining in that ſituation five or ſix days, ſpread upon the barn floor, threſhed out with a flail, and cleanſed like other ſorts of grain. Great care muſt be taken to dry it well in the ſun, before it is laid up in the granary; as it ſoon ſpoils if the leaſt moiſture be left in it; being of all grains the moſt difficult to keep, unleſs it be thoroughly dry; but on the other hand, none keeps longer, or better, after it has been well dried. It is not liable to the weevil; but it ſhould be turned from time to time in the granary. It has been conſtantly found that the late ſown crops are the moſt defective, and that their panicles are ſmaller than thoſe of the ſame grain ſown at an earlier period.

But the ſmall white millet is the moſt delicate, and the beſt for puddings, &c. The red is larger and coarſer, and uſed for pigeons, poultry, and ſwine, after being ground to meal; it is very good fodder for cattle, either green or after its grain is threſhed out. From its numerous roots, large ſize, and quick growth, it is a ſort of crop that exhauſts the ſoil greatly, and of courſe muſt be well guarded againſt in that reſpect.

The common millet was originally brought from the eaſtern countries, where it is ſtill greatly cultivated: from whence we are furniſhed annually with this grain, which is by many perſons greatly eſteemed for puddings, &c. This is ſeldom cultivated in England, but as a curioſity in ſmall gardens, or for poultry, as its ſeeds generally ripen well.

Millet is reckoned by Pliny the moſt fertile of all grain; one grain of it producing three Roman ſextaries.

Millet is cooling, drying, and binding, ſomewhat windy, and not eaſily digeſted; a ſtrong decoction of it with figs and raiſins, mixed with wine, and drank warm in bed, is a very good ſudorific, though it is ſeldom uſed.

Millet, by conſent of authors both ancient and modern, is refrigerating and drying; it is of bad juice, difficult of digeſtion, binds the belly, and generates flatulencies; it is however well known to be a very grateful food to many nations at preſent. In former times it ſerved to make bread, under a dearth of better corn, as we are aſſured by Dioſcorides,

corides, Pliny, Galen, and others of the ancients. Among the Italians, ſays C. Bauhine, loaves are made of millet, which are yellow, and eaten hot by many, not out of neceſſity, but for their ſweetneſs; but when this bread is grown hard, it is quite black. Of the flour of millet and milk, the Italians make fine cakes, which muſt be eaten as ſoon as dreſſed, or elſe they become glutinous, and ungrateful to the taſte.

A pudding prepared of millet, boiled in milk, with an addition of butter, and ſugar ſprinkled over it, is much in requeſt among the Germans at preſent; and theſe puddings have been long ago introduced into England, and are ſtill in faſhion.

The flour of millet was formerly uſed in fomentations, for the gripes, and for pains of the head and nerves; it was applied externally in bags, becauſe the uſe of it in cataplaſms was difficult, on account of its friability. If the membrane of the brain happens to be wounded, it is excellently conglutinated, ſays Archigenes, by infuſing thereon the juice of calaminth, and ſprinkling it with dry flour of millet. A decoction of millet, with figs and raiſins, is called, by Heurnius, a noble ſudorific and diuretic. Or, take of a decoction of millet, boiled till it burſts, four ounces; white wine, two ounces: let the patient take it hot. Cheſneau.

Millet is diuretic and aſtringent; the ſeeds are of extraordinary ſervice in diſeaſes of the lungs, and exulcerations of the kidnies: made into a cataplaſm, they are anodyne and reſolvent. Hiſt. Plant. adſcript. Boerhaave.

MILLET, *Indian*. See HOLCUS.

MILLEVANT, in *Geography*, a town of Pruſſia, in the province of Pomerelia; 16 miles S.S.E. of Dantzic.

MILLEVILLE, ALESSANDRO, in *Biography*, an excellent organiſt, born at Ferrara, much celebrated in Italy at the beginning of the ſeventeenth century. He was ſucceſſively patronized by the king of Poland, the emperor of Germany, and the duke of Ferrara. He was alſo a voluminous compoſer, as appears by all the catalogues of the time; in which we find the following liſt of his works: Meſſe e Salmi a 3 voci. Concerti a 2, 3, & 4 voci, libro 1. Motetti a 3, 4, 5, & 6 voci, libro 7mo. Novelli fiori a 2 & 3 voci, libro 6. Litanie di B. V. a 3 voci: and, laſtly, he publiſhed at Venice, 1622, a work intitled "Gemme Sacre," and in the ſame city, 1629, another book of motets. Walther.

MILLEVILLE, in *Geography*, a town of Sweden, in the province of Warmeland; 25 miles S. of Carlſtadt.

MILLIARE, or MILLIARIUM, among the Romans, denoted *a mile*, conſiſting of a thouſand paces, *mille paſſus*; whence the name.

In the Roman empire, the milliaria, in all the great roads, were marked with ſtones, or columns erected for that purpoſe; commencing from a column in the heart of the city, called *milliare aureum*.

Thoſe columns were alſo hence denominated *milliary columns*.

MILLIARIA COHORS. See COHORS *Equitata*.

MILLICO, GIUSEPPE, of Naples, in *Biography*, arrived in England 1772, from Vienna, where he had acquired great applauſe as a ſinger and actor, in Gluck's operas of "Orfeo," "Alceſte," and "Paride ed Elena," and as a ſinging maſter, by making Gluck's niece one of the moſt expreſſive ſingers then alive.

This judicious performer and worthy man, who was not an Adonis in perſon, and whoſe voice had received its greateſt beauties from art, found the muſical part of our nation in no favourable diſpoſition towards him. The admirers of Tenducci and Guadagni, as well as the Cocchi, Guglielmi, Giardini, Vento, and Bach parties, however hoſtile in other particulars, all agreed in decrying every part of that opera in which their favourite had no concern. Sacchini, who arrived here ſoon after, was involved in theſe cabals. None of the friends of their predeceſſors would allow that Millico could ſing or the new maſter compoſe. Violent and virulent means were uſed to poiſon, or at leaſt to ſhut the ears of the unprejudiced public; but not with much ſucceſs. Indeed, at firſt both the muſic and performance were frequently hiſſed: but, at length, Sacchini's compoſitions were generally allowed to be admirable, and Millico's importance was manifeſted by a crouded houſe at his benefit, compoſed of the firſt perſons for taſte and rank in the kingdom; and at the end of the next ſeaſon, ſeveral who had boldly pronounced that neither Sacchini could compoſe nor Millico ſing, would have given a hundred pounds if they could have recalled their words, or made their acquaintance forget they had been guilty of ſuch manifeſt injuſtice and abſurdity.

The canzonets of his compoſition, in ſinging which he uſed to accompany himſelf on a ſmall harp ſlung over his ſhoulder, are ſtill as *muſica di camera*, elegant and pleaſing. Not many years after he left this country, where he remained two ſeaſons, he was afflicted with blindneſs; but being received in the chapel royal at Naples, he performed in that melancholy ſtate a conſiderable time, till other infirmities came on, when he threw himſelf into a convent to end his days. He was living when the French invaded Naples; but whether the turbulence of the times ſuffered him to live or die in peace, we are unable to affirm.

MILLIGRAMME, in *Commerce*, a French meaſure of weight = .0154 Engliſh grains. See WEIGHT.

MILLILITRE, a French meaſure of capacity = .06103 Engliſh cubic inches. See MEASURE.

MILLIMETRE, a French meaſure of length = .03937 Engliſh inches. See MEASURE.

MILLING, in the *Manufactories*, an operation called alſo *fulling*.

MILLING, or *throwing of ſilk*, is the laſt preparation of ſilk before dyeing; ſerving to twiſt it, more or leſs, according to the work for which it is intended.

To prepare the ſilk for milling, they firſt put it in boiling water, incloſed between two linen cloths. The mill is a ſquare machine, compoſed of ſeveral pieces of wood, mortiſed in each other, ſo as to form a kind of large cage, in the centre of which are two wheels placed parallel over each other, whoſe axis bears on two poſts. When the machine is ſimple, a ſingle man turns theſe wheels by means of a little cog, in which they catch, and a large handle.

The wheels, put in motion by the handle, communicate their motion to eight windles, or reels, or even more, according to the largeneſs of the machine; on the flights or arms of which the ſilk is wound from off two rows of bobbins placed on each ſide of the machine; each row at the height of one of the two wheels in the centre. Theſe bobbins have their motion by means of leathern thongs, which bear on little cylinders of wood that ſupport them, and turn at length on the two wheels at the centre; ſo that the ſilk on each bobbin twiſts as it winds, and forms its ſeparate ſkain.

The ſmalleſt wheel moves two hundred of theſe bobbins, over which a ſingle perſon is ſufficient to inſpect, to put new bobbins or ſpoils in lieu of thoſe diſcharged of their ſilk, and to knot the ends when they break. See WINDING *of Silk*.

MILLINGTONIA, in *Botany*, a ſuppoſed new genus, conſecrated by the younger Linnæus, to the memory of ſir

Thomas Millington, Savilian profeſſor at Oxford, who is recorded by Grew to have firſt ſuggeſted to him that the anthers of plants were their male organs.—Linn. Suppl. 45. Schreb. 425. Willd. Sp. Pl. v. 3. 382. (where the name is thrice written *Mallingtonia*, by mere inattention.) Juſſ. 138. Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Bignoniæ*, Juſſ.

The fruit being unknown, the generic character in the *Supplementum* has always been incomplete, and is now found inſufficient to diſtinguiſh the plant in queſtion from *Bignonia*, to which genus it is referred by Dr. Roxburgh.

Bignonia ſuberoſa. Roxb. Coromand. v. 3. 11. t. 214. (Millingtonia hortenſis; Linn. Suppl. 291.)—Koenig firſt obſerved this fine tree in the gardens of the Rajah at Tanſchuhr, or Tanjore, but did not meet with the fruit. His manuſcript however does not imply that none is ever produced there. From hence ſome plants were brought to Madras, and one to Calcutta, where Dr. Roxburgh informs us it is now an elegant tree, about thirty feet in height, bloſſoming at the cloſe of the rainy ſeaſon, and ripening ſeeds in March. The *trunk* is ſtraight, with a light aſh-coloured, deeply cracked, ſpongy bark. *Leaves* oppoſite, repeatedly pinnate, about two feet long; leaflets ovate, pointed, ſmooth, ſerrated in Roxburgh's figure, but in his deſcription, like the Linnæan ſpecimens, entire, and conveying ſome idea of the foliage of Catalonian Jaſmine. *Panicles* terminal, large, croſs-branched, many-flowered, ſmooth. *Flowers* two inches long, tubular, ſlender, white, delightfully fragrant; their upper lip erect, cloven half-way down; lower in three equal, ovate, three-ribbed, reflexed ſegments. *Pod* a foot long, not an inch broad, compreſſed, nearly ſmooth, pointed at each end. *Seeds* winged.—The native country of this plant has not yet been aſcertained.

MILLINGTONIA is now applied as the name of a new Eaſt India genus in *Diadelphia Decandria*, by Mr. Donn in *Hort. Cant.* ed. 5. 180. Of this we preſume Mr. Brown to be the author, and that it will be defined in the new edition of Mr. Aiton's *Hortus Kewenſis*. Three ſpecies are enumerated by Mr. Donn, *M. trinervia*, *ſtricta*, and *ſemialata*; all ſtove ſhrubs, which ſeem not yet to have flowered at Cambridge. This genus is placed between *Hedyſarum* and *Indigofera*.

MILLION, in *Arithmetic*, the number of ten hundred thouſand; or a thouſand times a thouſand.

A million of gold, or million of money, is ſometimes underſtood of a million of pounds; and ſometimes of a million of crowns.

MILLION *Bank*. See BANK.

MILLMOTH, in *Natural Hiſtory*, the name of an inſect approaching to the nature of the beetle, but having no ſheath wings. It is common in the abode of millers and bakers, and other perſons who deal in meal.

MILLOT, CLAUDE-FRANÇOIS-XAVIER, in *Biography*, a well-known French writer, was born at Beſançon in 1726. He was brought up among the Jeſuits, and devoted himſelf to the duties of the pulpit; but when the period for public exertion arrived, either the weakneſs of his voice, or a natural timidity, convinced him that he could not make progreſs as a public orator. He, therefore, undertook a profeſſorſhip of hiſtory at Parma, by the recommendation of the prince. He filled this office with high reputation, and upon his return to France was appointed preceptor to the duke d'Enghien. He died in the year 1785, at the age of 59. D'Alembert ſaid of the abbé Millot, that he was the perſon of all others whom he had known, that had "the feweſt prepoſſeſſions and the feweſt pretenſions." In ſociety he was modeſt and rather reſerved in his manners, but every thing which he ſaid was ſenſible and judicious. His works alſo exhibit the ſame candour and cool judgment which were viſible in his converſation. They are chiefly hiſtorical abridgments, written with care and correctneſs, in a natural and rather elegant ſtyle. The principal are: "Elemens de l'Hiſtoire de France, depuis Clovis juſqu'à Louis XV.," 3 vols. 12mo.; "Elemens de l'Hiſtoire Univerſelle," 9 vols. 12mo.; "Memoires Politiques et Militaires pour ſervir à l'Hiſtoire de Louis XIV. et de Louis XV.," &c. He publiſhed alſo "L'Hiſtoire des Troubadours," in 3 vols. which work was chiefly drawn from the papers of M. de Sainte Palaye; ſome "Diſcourſes" read before the academy of which he was a member, and a tranſlation of ſelect harangues from the Latin hiſtorians.

MILLOWITZ, in *Geography*, a town of Bohemia, in the circle of Saatz; 10 miles W. of Saatz.

MILLSTREET, a poſt-town of Ireland, in the county of Cork, chiefly remarkable for a good inn, at which travellers to Killarney uſually paſs a night. It is 134 miles S.W. from Dublin.

MILLTOWN, a town of America, in the ſtate of Delaware; two miles from Wilmington.—Alſo, a town in Northumberland county, Pennſylvania, on the E. ſide of the W. branch of Suſquehannah river, containing about ſixty houſes; 14 miles N. by W. of Sunbury.

MILLTOWN, a poſt-town of Ireland, in the county of Kerry, which promiſes to become a good market town by the exertions of ſir William Godfrey, and the convenience of water carriage, the tide bringing ſloops up the Mang very near to this town. It is 169 miles S.W. by W. from Dublin, and nine miles N.W. from Killarney. Carliſle.

MILLVILLE, a poſt-town of Cumberland county, New Jerſey; 196 miles N.E. from Waſhington.

MILLWOOD, a poſt-town of Frederick county, Virginia; 68 miles from Waſhington.

MILNTHORP, or MILTHORP, a ſea-port and market-town in the pariſh of Heverſham, Kendal ward, Weſtmoreland, is ſituated near the mouth of the Can, at the diſtance of five miles from Kendal, and 251 from London. It conſiſts chiefly of one ſtreet, which is pretty well built; and at the E. end there are ſome good houſes, in pleaſant and open ſituations. This town is the only ſea-port in the county, and has ſeveral veſſels belonging to it, which trade principally to Liverpool, Port Glaſgow, and Annan in Scotland. Here are three rope-yards, two paper-mills, one flax-mill, and one cotton-mill. The market day is Friday, and there is an annual fair on Old May day. A very handſome bridge is thrown acroſs the river Betha, which flows through the town. The reſident population here, according to the parliamentary returns of 1801, amounted to 968 perſons; 459 males, and 509 females, of which number 113 were returned as employed in agriculture, and 170 in trade and manufactures.

The country around this town is pleaſingly diverſified with hill and dale, and embelliſhed by a variety of elegant manſions. Of theſe that of Dallam Tower, the ſeat of Daniel Wilſon, eſq. is the moſt conſpicuous. It is ſituated at the foot of a hill, which riſes rapidly from its baſe, and is covered to the ſummit by a profuſion of trees. In front extends a fine park, adorned with wood, the ground of which riſes as it recedes from the houſe. At Beerham-hill, near this manſion, is a waterfall on the river Beele, well deſerving the attention of the curious traveller. Houſman's Topographical Deſcription of Cumberland, Weſtmoreland, &c. 8vo. Carliſle's Topographical Dictionary, 4to.

MILO, in *Biography*, a name that frequently occurs in the Roman claſſics: we ſhall notice three perſons of note.

One was celebrated at Crotona, in Italy. It is ſaid that he carried on his ſhoulders a young bullock four years old, and afterwards killed it with a ſingle blow of his fiſt. He was ſeven times crowned at the Pythian games, and ſix times at Olympia.—The ſecond was Titus Annius, a native of Lanuvium, who attempted to obtain the conſulſhip at Rome. Clodius the tribune oppoſed his views, yet Milo would have ſucceeded, had not an unfortunate circumſtance taken place between his ſuite and that of Clodius as he was going to the country. Clodius and eleven of his ſervants were killed, and the body of the murdered tribune was carried to Rome and expoſed to public view. Cicero, as is well known to every claſſical ſtudent, undertook the defence of Milo, but with no effect; he was condemned and baniſhed to Maſſalia.—A third of this name was a general of the forces at Tarentum, and that he might not forget the duty and allegiance which he owed to his ſovereign, Pyrrhus ſent him, as a preſent, a chain, which was covered with the ſkin of Nicias the phyſician, who had perfidiouſly offered the Romans to poiſon his ſovereign for a ſum of money.

Milo, anciently *Melos*, in *Ancient Geography*, one of the largeſt and moſt elevated iſlands in the ſouthern part of the Grecian Archipelago. According to Thucydides, it was independent, and enjoyed perfect freedom long before the Peloponneſian war. The inhabitants, ſtrongly ſolicited by the Athenians on the one hand, and on the other attached to the Lacedæmonians, from whom they had deſcended, wiſhed, in the midſt of this terrible war, to remain quiet and to obſerve a wiſe neutrality. At this conduct the Athenians were ſo irritated, that they diſpatched Nicias with a fleet of ſixty ſhips, and 2000 land forces to puniſh them for refuſing to furniſh their quota of troops. Nicias ravaged this iſland, but failed with his feeble army to take the town, which was defended by all the inhabitants, aſſembled for this purpoſe. Some time after the Athenians ſent two other generals, with a more numerous army, who were not more ſucceſsful than Nicias; but at length, when Philocrates brought freſh troops, the Miliots were reduced to the greateſt extremity, and obliged to ſurrender. The Athenians, implacable in their reſentment and ferocious in their vengeance, maſſacred, without diſcrimination, all the men who were capable of bearing arms, and made ſlaves of the women and children, whom they carried away to Attica. They then ſent 500 perſons to repeople the iſland, and to take poſſeſſion of the property of thoſe whom they had murdered. In the mean time, the Athenians, conquered in their turn by Lyſander, commander of the Lacedæmonian troops, and compelled to ſurrender at diſcretion, found themſelves conſtrained to recal their colony; and thoſe who remained of the unfortunate Miliots were then enabled to return, and to reinveſt themſelves with the property which had been taken from them. This iſland, like all thoſe of the Archipelago, paſſed under the dominion of the Romans; it afterwards made part of the empire of the Eaſt. Marco Santo united it, with all the Cyclades, to the duchy of Naxos; and it was in proceſs of time detached from this duchy in favour of Franceſco Criſpo; and at length ſubjected to the Ottoman empire, under which it has loſt, together with its liberty, its importance.

Milo is about ſixty miles in circumference; it is divided in its middle, and almoſt through its whole breadth, by a deep bay: this is one of the fineſt harbours in the Mediterranean, ſufficiently ſpacious to contain a fleet, and to keep the ſhips belonging to it ſheltered from all winds. The anchorage is excellent, particularly at the head of the gulf and near the E. coaſt; the bottom has a fine ſand, and veſſels come to anchor there in from 12 to 18 fathom water. Small craft can approach nearer the coaſt, and carry out moorings to the rocks of one of the grottoes. Another anchorage, more convenient, and alſo leſs expoſed to the action of the winds and the violence of the ſea, lies on the W. coaſt, in a cove called “Patricha.”

The entrance of the harbour firſt mentioned faces the N.W.; it is very wide, and ſhips approach very near to the coaſts that form it, without riſk. To the ſtarboard, or right, they have Cape Veni, and to the left Cape Lerida; the gulf then contracts between Cape San Dimitri and Cape Bombarda. As the latter, a high mountain, in the form of a ſugar-loaf, bears on its ſummit a village, called “Sifour,” ſurrounded by walls, whence it has the name of Caſtro: here the pilots for the Archipelago reſide. As the air here is pure and wholeſome, it is more populous than the capital of Milo, and the inhabitants exhibit ſigns of vigour and health, not common in other parts of the iſland. It is not improbable that the principal place of the iſle of Milo was near the ſcite of Sifour, which commands an extenſive proſpect; more eſpecially as the ancient habitations of the Archipelago are built on eminences the moſt lofty, and the moſt rugged of acceſs. Near this place are conſiderable ruins, fragments of columns of Parian marble, and ſubterraneous galleries, antique catacombs, which furniſh funeral inſcriptions, vaſes, idols, and medals, and other remains of a conſiderable city. The women of Sifour, or Sefours, employ themſelves the whole year in knitting cotton ſtockings, and making coarſe calicoes. The men cultivate the earth, or are mariners. Near this place, on the ſummit of a hill, is at preſent a church of Caloques, built, as Olivier conceives, on the ruins of a temple. However, the capital of the iſland is a town of the ſame name, ſituated on a plain formerly not inferior to any other of the Archipelago, but now preſenting ſcarcely any thing but ruins. Scarcely do forty families drag on their unfortunate exiſtence, with conſumptive aſpects, in a town which reckoned 5000 inhabitants within its walls. At the beginning of the laſt century, Tournefort diſcovered, in 1700, that the air of Milo was inſalubrious, and that the inhabitants were ſubject to dangerous diſorders; but the unwholeſomeneſs of the air muſt have increaſed very much ſince that epoch. In traverſing the iſland to the monaſtery of St. Marino, Mount St. Elias, the moſt lofty point in the iſland, and the volcanic mountain of Calamo, the country preſents various traces of its volcanic origin. At the diſtance of a quarter of a league from Milo alum is formed, which has been mentioned both by ancient and modern writers. In the ſame grotto that furniſhes this alum, are alſo found cryſtals of gypſum, but the heat is ſuch as not to admit its being examined for any long time. The baths called “Loutra” were alſo ſituated in this quarter. The water is ſtrongly charged with alum and marine ſalt. Theſe baths were anciently much frequented by Greeks, who repaired hither from all the Cyclades in order to obtain relief in diſorders of the ſkin, as well as in rheumatiſm and palſy. Spacious grottoes occur frequently, and in theſe are ſubterraneous caverns, full of turnings and twinings, and into which the deſcent is ſteep and laborious. The chambers which they contain appear to have been formerly uſed as habitations and places of concealment.

Near the ſcite of an ancient town, called “Clima” by the modern Greeks, are ſepulchres or catacombs, in which, at an unknown period, the inhabitants of Milo depoſited their dead. Each of theſe catacombs generally contains ſeven ſarcophagi five and a half or ſix feet long, and a foot or fifteen inches deep, ſurmounted by an arch and dug in the rock. The whole iſland indicates a ſubterraneous conflagration; and in ſeveral places the ground which reſounds under your feet apprizes you that it covers vaſt cavities. Every appearance teſtifies, that the ſtones and pebbles which are found here have been thrown up by the exploſion of a volcano; boiling waters iſſue on all ſides; pumice ſtones are ſcattered abroad; ſulphur is formed in abundance, and ſhews itſelf on the ſurface of the ground. Nevertheleſs, the vegetable earth, which moſtly covers the iſland, gently warmed by ſubterraneous heat, is very productive. Corn and cotton are here of an excellent quality; the vines yield good wine, and the trees afford delicious fruits; but the quantity of lands that lie fallow announces an exceſſive diminution in the population, as well as the criminal indifference of the government. Ships ſtill come to Milo to fetch away a great quantity of the ſolid lava, of which mill-ſtones are made, which are tranſported to ſeveral countries of the Levant, particularly to Egypt and Conſtantinople. The iſland likewiſe contains many mines of iron and ferruginous pyrites, from which no advantage is derived. Under a liberal adminiſtration other valuable articles might be found, and the iſland might even ceaſe to be an unhealthy abode. The whole population at preſent does not amount to 500 perſons, and this ſmall number would daily decreaſe, if it was not kept up by emigrants from the Morea, where diſtreſs conſtrains them to ſeek new habitations, and who are attracted to Milo with a view of cultivating the lands. The captain-pacha has ſome difficulty in levying 2500 piaſtres by way of impoſt. N. lat 36° 40′. E. long. 24° 30′. Sonnini and Olivier.

MILOPOTAMO, in *Geography*, a town and fortreſs of the iſland of Candia; 28 miles W.N.W. of Candia.

MILORRA, a ſmall iſland in the Eaſt Indian ſea, between Ternate and Tidor.

MILOSLAW, a town of the duchy of Warſaw; 20 miles S.S.W. of Gneſna.

MILPHOSIS, *μιλφωσις*, a Greek word uſed by the ancient medical writers, as a name of the diſeaſe of the eye-lids, by which the hairs fall off from them, and the edges become red and tumid.

MILREA, or Milree, in *Commerce*, a money of account in Portugal, ſo called, becauſe 1000 reas, or rees, are = 1 milree. In the notation of accounts, the milrees are ſeparated from the rees by a croſſed cypher, called "Cifraon," and the milrees from the millions by a colon; thus, Rs. 2 : 700 ⴲ 500, means two thouſand ſeven hundred mil. and five hundred rees. As the cruſado of exchange, or old cruſado, is 400 rees, the new cruſado, 480 rees, the teſtoon, 100, and the vinten or vintem, 20 rees; the milree is = $2\frac{1}{2}$ old cruſados = $2\frac{1}{12}$ new ditto = 10 teſtoons = 50 vintens. The milree valued in gold is worth $67\frac{1}{4}$*d.* ſterling, and the ſame in ſilver is worth $68\frac{3}{4}$*d.* ſterling. The milree is alſo a gold coin, ſtruck for the Portugueſe poſſeſſions in Africa in 1755; it weighs $19\frac{3}{4}$ grains, and contains, in pure gold, 18.1 grains, and is valued at 3*s.* $2\frac{1}{2}$*d.* ſterling. See Coin.

MILSTATT, or Muhlstadt, in *Geography*, a town of the duchy of Carinthia, ſituated on the Milſtatter ſee: 40 miles N. of Goritz. Milſtatter ſee is a lake of Carinthia, 9 miles E. of Saxenburg.

MILT, in *Anatomy*, a popular name for the ſpleen.

Milt, or *Melt*, in *Natural Hiſtory*, the ſoft roe in fiſhes; thus called becauſe it yields, by expreſſion, a whitiſh juice reſembling milk. See Roe.

The milt is properly the ſeed, or ſpermatic part of the male fiſh.

The milt of a carp conſiſts of two long whitiſh irregular bodies, each included in a very thin fine membrane. M. Petit conſiders theſe as the teſticles of the fiſh wherein the ſeed is preſerved: the lower part, next the anus, he takes for the veſiculæ ſeminales. Vide Mem. Acad. R. Scien. anno 1733, p. 291.

In the milt of a living cod-fiſh there are ſuch incredible numbers of thoſe ſmall animalcules found in the male-ſeed of all animals, that in a drop of the juice of it, no more in quantity than a ſmall grain of ſand, there are contained more than ten thouſand of them; and, conſidering how many ſuch quantities there are in the whole milt of one ſuch fiſh, it is not exceeding the bounds of truth to affirm, that there are more animals in one milt of it, than there are living men at one time upon the whole face of the earth. However ſtrange and romantic ſuch a conjecture may appear at firſt ſight, a ſerious conſideration, and calculation, will make it appear very plain. A hundred ſuch grains of ſand as here mentioned, will make about an inch in length; therefore in a cubic inch there will be a million of ſuch ſands.

The milt of one of theſe fiſhes is frequently about the quantity of fifteen cubic inches, it muſt therefore contain fifteen millions of quantities as big as one of theſe ſands; and if there be ten thouſand animals in each of thoſe quantities, there muſt be, in the whole, a hundred and fifty thouſand millions: which is a number vaſtly exceeding the number of mankind, even though we were to ſuppoſe the whole earth as populous as Holland. See Philoſophical Collections, p. 4. See *Fecundity of* Fish.

Milt *Waſte*, or *Ceterach aſplenium*, in *Botany*. (See Asplenium.) The leaves are recommended as a pectoral ſimilar to maidenhair, or Aſplenium trichomanes; to which they have been frequently joined in infuſions and apozems; and likewiſe as an aperient in obſtructions of the viſcera. They poſſeſs likewiſe a diuretic virtue, and appear to gently carry off ſand, cleanſe the kidnies, and allay pains in the urinary paſſages. The way of uſing them is to drink infuſions of them in the morning, as tea, with the addition of ſuch other medicines as particular caſes may require. See Ceterach, Asplenium, and Trichomanes.

MILTENBERG, in *Geography*, a town of Germany, on the Maine; 26 miles N.E. of Heidelberg.

MILTHORP. See Milnthorp.

MILTIADES, in *Biography*, a celebrated Athenian general, the ſon of Cimon, and grandſon of Miltiades, who founded an Athenian colony on the Thracian Cherſoneſus. After the aſſaſſination of Steſagoras, in the colony, Miltiades was ſent from Athens to take the command, and having got into his power the principal men of the Cherſoneſians, he made himſelf maſter of the whole diſtrict, and married the daughter of the king of Thrace. When Darius I., king of Perſia, undertook an expedition againſt the Scythians, and throwing a bridge acroſs the Danube marched into their country, he entruſted the guard of the bridge to the Ionian Greeks, the commanders of whom he had attached to himſelf, by raiſing them to the ſupreme authority in their ſeveral cities. Miltiades, who was one of them, excited by that ſpirit of Grecian patriotiſm, to which every other duty was made ſubſervient, urged the other leaders to break down the bridge, in order that a prince ſo entirely inimical to Grecian liberty might never return in ſafety. His counſel was approved by all the reſt except Hyſtiæus the Mileſian, who had influence enough to prevent its taking effect. Miltiades, judging it imprudent to await the monarch's return, embarked for Athens, and in his way took poſſeſſion of the iſle of Lemnos for his countrymen. Darius, after his return from his Scythian expedition, having reſolved upon the conqueſt of Greece, ſent Mardonius at the head of a powerful army to invade it. When he had arrived at the plains of Marathon, within ten miles of the capital, Athens, the alarm of the citizens became extreme, and in their deſpair they took the reſolution to march out to meet the foe, with ſuch troops as they could aſſemble, ſoliciting, at the ſame time, ſuccours from the other Grecian ſtates. But of the battle of *Marathon*, we have already given an account under that article. Miltiades, who was unqueſtionably the grand inſtrument in obtaining this victory, was next entruſted with a ſtrong armament fitted out for the reduction of ſome of the iſlands which had taken part with the Perſians. He failed to Paros, and laid ſiege to its capital, but either a falſe alarm of the approach of the Perſian fleet, or an unſucceſsful attempt to gain the place, in which he was wounded, cauſed him to return without effecting his purpoſe. The diſappointment of the Athenians was ſo great, that Miltiades was accuſed of treaſon before the aſſembly of the people, who, forgetting his paſt ſervices, by which they had been delivered from a foreign yoke, condemned him to death. Upon, however, the payment of a heavy fine, he was exempted from capital puniſhment, but was thrown into priſon, where, to the everlaſting diſgrace of his countrymen, he died of a broken heart, in the year after the battle of Marathon. Corn. Nepos. Univer. Hiſt.

MILTON, John, in *Biography*, the father of our great poet, though a ſcrivener (or banker) by profeſſion, was a voluminous compoſer, and equal in ſcience, if not genius, to the beſt muſicians of his age; in conjunction, and on a level with whom, his name and works appeared in numerous muſical publications of the time, particularly in thoſe of old Wilbye; in the "Triumphs of Oriana," publiſhed by Morley; in Ravencroft's "Pſalms;" in the "Lamentations," publiſhed by ſir William Leighton; and in MS. collections, ſtill in the poſſeſſion of the curious The late Mr. T. Warton, in his notes on the Minora of Milton, tells us, from the MS. Life of the Poet, by Aubrey, the antiquary, in the Muſ. Aſhm. Oxon. that "Milton's father, though a ſcrivener, was not apprenticed to that trade: having been bred a ſcholar, and of Chriſt-church, Oxford; and that he took to trade in conſequence of being diſinherited." Mr. Warton therefore obſerves, that Milton, in his Latin epiſtle to his father, addreſſes him in a language which he underſtood. Aubrey adds, "that the elder Milton died very old in 1647, and was interred from his houſe in Barbican, in St. Giles's church, Cripplegate; where the great poet was afterwards buried, near his father, in 1674."

His ſon celebrates his muſical abilities in an admirable Latin poem, "Ad patrem," where, alluding to his father's muſical ſcience, he ſays, that Apollo had divided his favours in the ſiſter arts between them; giving muſic to the father, and poetry to the ſon.

> "Nec tu perge, precor, ſacras contemnere muſas,
> Nec vanas inopeſque puta, quarum ipſe peritus
> Munere, mille ſonos numeros componis ad aptos,
> Millibus et vocem modulis variare canoram
> Doctus, Arionii merito ſis nominis hæres.
> Nunc tibi quid mirum, ſi me genuiſſe poetam
> Contigerit, charo ſi tam prope ſanguine juncti
> Cognatas artes, ſtudiumque affine ſequamur?
> Ipſe volens Phœbus ſe diſpertire duobus,
> Altera dona mihi, dedit altera dona parenti,
> Dividuumque Deum genitorque puerque tenemus."
> Ver. 56 uſque 66.

His effuſions of gratitude for the education he had received from his parent's bounty, and his apology for cultivating poetry, of which he gives a charming eulogium, ſeem to contain ideas as beautiful and ſublime, as any in his Paradiſe Loſt.

Milton, John, the moſt illuſtrious of Engliſh poets, was deſcended from an ancient family ſettled at Milton, in Oxfordſhire. His father, who had been brought up in the Roman Catholic religion, and by embracing the Proteſtant faith had been diſinherited, came to London and followed the profeſſion of a ſcrivener, and marrying a woman, exemplary for her numerous virtues and extenſive charities, had two ſons and a daughter; *viz.* John, the ſubject of this article, Chriſtopher, and Anne. Of the two latter, Chriſtopher, applying himſelf to the ſtudy of the law, became a bencher of the Inner Temple, and at an advanced period of his life was knighted, and raiſed by James II., firſt to be a baron of the exchequer, and afterwards one of the judges of the court of Common Pleas. During the civil war he followed the royal ſtandard, and effected his compoſition with the victors by the prevailing intereſt of his brother. In his old age he retired from the fatigues of buſineſs, and cloſed, in the country, a life of ſtudy and devotion. His ſiſter, Anne, married Mr. Edward Philips, a native of Shrewſbury, who, coming to London, obtained the lucrative place of ſecondary in the crown office in chancery: by him ſhe had ſeveral children, of whom Edward and John only ſurvived to maturity; the former became the biographer, after having, with his brother, been the pupil of his uncle, our author. By a ſecond huſband, Mr. Agar, ſhe had two daughters, of whom Mary died young, and of the other, Anne, nothing more is known, than that ſhe was living in the year 1694.

John Milton, the ſubject of the preſent article, was born at his father's houſe, in Bread-ſtreet, London, on the 9th of December, 1608. His promiſe of future excellence was made at a very early period: every incitement to exertion, and every mode of inſtruction adapted to the diſpoſition and powers of the child, were employed, and no means, probably, were omitted to expand the intellectual Hercules of the nurſery into the full dimenſions of that mental amplitude for which he was intended. The portrait of him was painted, when he was only ten years old, by the celebrated Cornelius Janſen; hence we may infer that the ſon, who was made the object of ſo flattering a diſtinction by a father, in competent, but by no means in affluent circumſtances, could not have been a common child. Of himſelf, at this period, he gives the following account. "My father deſtined me, when I was yet a little boy, to the ſtudy of elegant literature, and ſo eagerly did I ſeize on it, that from my twelfth year, I ſeldom quitted my ſtudies for my bed till the middle of the night. This proved the firſt cauſe of the ruin of my eyes; in addition to the natural weakneſs of which organs, I was afflicted with frequent pains in my head. When theſe maladies could not reſtrain my rage for learning, my father provided that I ſhould be daily inſtructed in ſome ſchool abroad, or by domeſtic tutors at home." "How great," ſays Dr. Symmons, "are the obligations of Britain and the world to ſuch a father, engaged in the aſſiduous and well directed cultivation of the mind of ſuch a ſon." Some part of his early education was committed to the care of Mr. Thomas Young, a puritan miniſter, and native of the country of Eſſex, afterwards chaplain to the Engliſh merchants at Hamburgh, a man whoſe merits are gratefully commemorated by his pupil in a Latin elegy. About the age of fifteen he was ſent to St. Paul's ſchool, of which Mr. Alexander Gill was then maſter, and there he began to diſtinguiſh himſelf by his intenſe application to ſtudy, and his poetical talents. Ardent in his love of knowledge, he was regardleſs of pleaſure, and even of health, when they came into competition with the prevailing paſſion of his ſoul, and we are conſequently not ſurprized by the extraordinary and brilliant reſult which ſoon flaſhed upon the world. It is conjectured that it was at this early period he imbibed the ſpirit of devotion which actuated his boſom to his lateſt moments. For this he was probably indebted to his father, who would naturally be ſolicitous to ſtamp upon the tender boſom of his ſon, that conviction and feeling of duty which were impreſſed ſo deeply on his own, and which he had exhibited in his abjuration of thoſe errors in which he had been educated. He intended his ſon for the church, and on that account would be more anxious to incline him to devotional principles and practice. The ſentiments and the warmth thus communicated to the mind of the youth, would unqueſtionably be ſtrengthened by the leſſons and example of his preceptor, Mr. Young, in whom religion was carried to enthuſiaſm. To Milton's devotional turn of mind we are probably indebted, not merely for the ſubject, but for a great part of the ſublimity of the Paradiſe Loſt. On the 12th of February, 1624-5, he was entered a penſioner at Chriſt's college, Cambridge, under the tuition of Mr. W. Chappel. Of his courſe of ſtudies in the univerſity little is known, but he gave proof of the extraordinary ſkill he had acquired in writing Latin verſe, by ſeveral exerciſes preſerved among his works, and which are of a purer claſſical taſte than any preceding compoſitions of the kind by Engliſh ſcholars. It appears that ſome part of his conduct brought upon him academical puniſhment; but whatever were the cauſe, he felt no ſhame on account of it, but refers ſpontaneouſly to the circumſtance in the following lines:

> " Nec duri libet uſque minas perferre magiſtri
> Cæteraque ingenio non ſubeunda meo.
> Si ſit hoc exilium patrios adiiſſe penates
> Et vacuum curis otia grata ſequi."

Which have been tranſlated by his biographer.

> " And ill my ſoul a maſter's threats can bear,
> With all the fretting of the pedant's war.
> If this be baniſhment—all cares aloof—
> To live my own beneath a father's roof—
> Still let an idle world condemn or not,
> Mine be a truant's name,—an exile's lot."

From theſe lines, the enemies of Milton have inferred that he was ſubjected to corporal puniſhment, and that he was diſmiſſed from his college for irregularity of conduct. Dr. Symmons has, with a proper degree of indignation, vindicated completely the character of Milton from theſe vile aſperſions. Our limits will not permit us to follow him through the ſteps of the arguments, but they appear perfectly ſatisfactory. The doctor, ſpeaking of the calumnies ſpread on this ſubject, ſays, " In oppoſition to this pretended evidence, ſtand the records of our author's univerſity, and the force of his own poſitive declarations. By the former of theſe, which prove that he took his bachelor's degree as ſoon as it could be taken, it is made highly probable, if not abſolutely certain, that he loſt no term; and by the latter we are aſſured that he was not only exempted from puniſhment during his continuance at Cambridge, but in that ſeat of learning was an object of affection and reſpect."—And again, " With reſpect to Milton, we may be confident that no immorality could be the cauſe of his puniſhment. Religion, as we know, took early poſſeſſion of his boſom, and he who, with weak eyes and an aching head, could conſecrate one-half of the night to ſtudy, cannot be ſuſpected of ſtealing the other half from repoſe, for the purpoſe of confounding it with exceſs, or of polluting it with debauch. A mind, indeed, like his, exulting in the exerciſe of its higher powers, and intent on the purſuit of knowledge, could not, without a violation of its nature, ſubmit to licentious indulgencies. The cultivation of intellect not only diveſts the attention from ſenſual pleaſure, but inſpires a pride which ſubdues its faſcination: and while the ſpectacle of the world exhibits innumerable inſtances of men of genius hurrying into exceſſive gratification, it ſcarcely preſents us with one, under the influence of the ſame unfortunate error, among the aſſiduous votaries of knowledge."

Milton probably became obnoxious to the governors of his college by the bold avowal of his puritan opinions, which he had imbibed from his tutor Young, or by his diſlike to the diſcipline of the eſtabliſhed religion, or to the plan of education purſued in the univerſity; hence he might loſe the favour of his ſuperiors in the college, and be expoſed to their cenſures without incurring the ſlighteſt loſs of character, or ſuſtaining the moſt trifling diminution of general eſteem.

He took the degrees of bachelor and maſter of arts, the latter in 1632, when he left the univerſity. In the ſeven years of his academical life, his vigorous and ardent genius broke out in frequent flaſhes, and evidently diſcloſed the future author of " Comus" and " Paradiſe Loſt." He was a poet when he was only ten years old, and his tranſlation of the 136th pſalm evinces his progreſs in poetic expreſſion at the early age of fifteen. He renounced his original purpoſe of entering the church, for which he aſſigns as a reaſon, " that coming to ſome maturity of years, he had perceived what tyranny had pervaded it, and that he who would take orders, muſt ſubſcribe ſlave, and take an oath withal, which, unleſs he took with a conſcience that could retch, he muſt either ſtrain, perforce, or ſplit his faith; I thought it better to prefer a blameleſs ſilence before the office of ſpeaking, bought and begun with ſervitude and ſorſwearing." This denotes a mind reſolved to think and act for itſelf, and it cannot be doubted that Milton was already marked with that firm unyielding temper, which, in ſome degree, is a neceſſary concomitant of a ſuperior mind. He now returned to his father, who had retired from buſineſs, to a reſidence at Horton, in Buckinghamſhire, and there paſſed five years in a courſe of claſſical ſtudy, and in the compoſition of ſome of his fineſt miſcellaneous poems. This was the period of his Allegro and Penſeroſo, his Comus and Lycidas. " L'Allegro and Il Penſeroſo," ſays Dr. Symmons, " were certainly written at Horton, and probably at no long period before the Lycidas, which was the laſt of our author's works while he reſided with his father. They were compoſed in the happieſt humour of the poet's mind, when his fancy was all ſun-ſhine, and

> ——— no cloud, or, to obſtruct her view,
> Star interpoſed.

We may contemplate them not as the effects or qualities, but as the very ſubſtance of poetry, as its " hidden ſoul untied, and brought forward to our ſight." In comparing the merits of theſe pieces, Dr. S. gives the preference to Il Penſeroſo. " The portrait of contemplation," ſays he, " the addreſs to Philomel; the image of the moon wandering through heaven's pathleſs way; the ſlow ſwinging of the curfew over ſome wide-watered ſhore; the flaming of the night lamp in ſome lonely tower; the unſphering of the ſpirit of Plato to diſcloſe the reſidence of the unbodied ſoul; the arched walks of twilight groves; the myſterious dream by the murmuring waters; the ſweet muſic of the friendly ſpirit of the wood; the pale ſtudious cloiſter; the religious light thrown through the ſtoried windows; the pealing organ, and finally the peaceful hermitage—

form together ſuch a maſs of poetic imagery as was never before crowded into an equal ſpace: the impreſſion made by it on the imagination is to be felt and not explained." The pale and ſtudious cloiſter having been objected to, in one of Mr. Wharton's criticiſms, Dr. Symmons remarks, that the word *pale*, as an epithet to cloiſter, is moſt happily poetic, and as holding a large and animated picture to the imagination. It ſhews the ghoſtly light of the place, the ſickly cheek of timorous ſuperſtition, and the wan and faded countenance of ſtudious and contemplative melancholy.

In 1638, having obtained his father's conſent to improve himſelf by foreign travel, Milton ſet out for the continent. At Paris he was received with diſtinction by lord Scudamore, the ambaſſador from England, by whom he was introduced to the notice of the illuſtrious Grotius, who then reſided in the French capital, as the miniſter of Chriſtina, the queen of Sweden. After the delay of a few days at Paris, he renewed his progreſs, and purſued the direct road to Nice, where a veſſel received and landed him at Genoa. From this city he paſſed immediately through Leghorn and Piſa to Florence, and on the banks of the Arno he made what may be regarded as his firſt pauſe. Here he reſided two months, and by the brilliancy of his converſation, and mildneſs of his manners, made himſelf the object of very general admiration. Here he obtained admiſſion into thoſe private academies, which had been inſtituted by the Medici for the advancement of literature, and for the cementing of friendſhips among its votaries. The Engliſh bard could in this place enumerate in the liſt of his friends all the great, the reſpectable, and deeply learned men of Italy, who appear to have been loſt in ſurpriſe at the ſpectacle, preſented to them, of a native of Britain, a country juſt emerging, as they imagined, from barbariſm, who to an acquaintance, not ſuperficial, with all the ſciences, united a profound knowledge of claſſical and Italian letters; whoſe mind was at once ſublime and deep, accurate and comprehenſive, powerful and acute; patient to follow judgment in the gradual inveſtigation of philoſophical truth, yet delighted to fly with the more aerial offspring of the brain on the high and expatiating wing of imagination. During this viſit to Florence he ſaw and converſed with the great Galileo, that memorable victim of prieſtley ignorance and ſuperſtition. "There it was," ſays Milton, "that I found and viſited the famous Galileo, grown old, a priſoner to the Inquiſition, for thinking in aſtronomy otherwiſe than the Franciſcan and Dominican licenſers thought." On his leaving Florence, our traveller proceeded through Sienna to Rome, and then viſited Naples, where he was kindly received by Manſo, marquis of Villa. At Rome he was introduced, by Holſtenius, the learned keeper of the Vatican library, to the attentions of cardinal Barberini, who at that time poſſeſſed the whole delegated ſovereignty of Rome under his uncle, Urban VIII. At a great muſical entertainment which the cardinal gave, he looked for our traveller among the crowd at the door, and brought him, almoſt by the hand, into the aſſembly. It is ſuppoſed, that it was at this concert Milton was firſt ſtruck with the charms and the inimitable voice of Leonora Baroni, which had been made the general theme of their praiſe by the contemporary poets of Italy: and ſhe is probably the perſon who has been celebrated by Milton in her own language, and who was the object of his love in his Italian ſonnets.

At Naples the attentions paid to Milton were of the moſt flattering nature; the marquis of Villa not only conducted him through the viceroy's palace, and to a ſight of all that was worthy to be ſhewn in the city, but honoured him alſo with ſome familiar and very friendly viſits. The imprudent freedom, with which Milton had diſcovered his ſentiments on the ſubject of religion, was the only circumſtance which deprived him of a ſtill more unreſerved intercourſe with this elegant and accompliſhed nobleman. Having completed his intended reſidence at Naples, he began to make preparations for the execution of the remaining part of his plan of travel, which extended to Sicily and Greece; but while he was engaged in this buſineſs he received letters from England, acquainting him with the diſtracted ſtate of his country, and with the near proſpect of a civil war; he determined to return. "As I was deſirous," he ſays, "to paſs into Sicily and Greece, the melancholy intelligence from England of the civil war recalled me; for I eſteemed it diſhonourable for me to be lingering abroad, even for the improvement of my mind, when my fellow-citizens were contending for their liberty at home." He, however, reſolved to reviſit Rome, where he remained two months; and whenever his religion was attacked, he ſcrupled not to vindicate its principles with ſpirit and ardour, even within the precincts of the ſacerdotal palace. From Rome he went to Florence, and his ſecond viſit to this city, which the kindneſs of his friends made a ſpecies of home to him, was of equal duration with his firſt. When he departed from Florence, he croſſed the Apennines, and travelled through Bologna and Ferrara to Venice. He ſpent a month in viewing the curioſities of this celebrated city, and then purſued his returning courſe through Verona and Milan, over the Alps, and by lake Lemanus to Geneva. Here he contracted an acquaintance with two learned divines, John Diodati and Frederic Spanheim. He now returned through France to England, having been abſent about fifteen months. On his arrival he found the civil commotions of his country haſtening to a criſis, and as he had expreſſed impatience to be preſent on the theatre of theſe diſputes, it has been thought extraordinary that he did not inſtantly take upon himſelf ſome active part. But his taſtes and habits were altogether literary, and he had been long pondering upon ſome ſubject of Engliſh poetry worthy of his genius, and capable of being made a paſſport to the immortality to which he aſpired. For the preſent, therefore, he fixed himſelf in the metropolis, undertook the education of his ſiſter's ſons, of the name of Philips. Shortly after he was applied to by ſeveral parents to admit their children to the benefit of his tuition, to which he aſſented, and by this means he has expoſed himſelf to the title of ſchool-maſter, which his enemies, and the enemies of human happineſs and intellectual improvement, who employed it as a term of reproach, conceived to be of a nature to degrade him. He took a houſe in a garden in Alderſgate-ſtreet, and opened an academy for board and education. Here, in his little circle of ſcholars, he was uſefully, if not ſplendidly, engaged; and he could not perhaps conceive, while he was eſſentially promoting the higheſt intereſts of ſome of his ſpecies, that he was degrading himſelf in the eſtimation of the reſt. In his conduct to his pupils, he was familiar and free where he could be ſo, and was never rigid but by compulſion. His form of inſtruction reſpected things more than words, and attempted to communicate knowledge when the underſtanding was, perhaps, incapable of receiving more than the key which opened the important gate. Inſtead of the common claſſics, he put into the hands of his ſcholars ſuch Latin and Greek authors as treated on the arts and ſciences, and philoſophy. Theſe were ill calculated to render learning pleaſant to beginners, and from the imperfect ſtate of ancient ſcience, ſuch a courſe was as likely to inculcate error as truth. He performed the duties of inſtruction with great aſſiduity, and ſet the example of hard ſtudy and ſpare diet to his pupils, whom he ſeems, in ſome reſpects, to have diſciplined with the ſeverity of old times.

Milton did not very long continue inactive in the public cauſe, and his principles made it no matter of doubt which ſide he ſhould eſpouſe in the contentions of his country. Conſcious of his own proper ſtrength, and ſenſible that genius armed with knowledge was a power of far greater and more extenſive efficiency than the bodily force of any individual, he accordingly decided in favour of the pen againſt the ſword; and ſtationed himſelf in the cloſet, where he was himſelf a hoſt, rather than in the field, where every muſcular private man would have been his ſuperior. In the year 1641 he publiſhed four treatiſes relative to church government, in which he attacked epiſcopacy, and ſupported the cauſe of the Puritans. Theſe were followed by another in the next year, relative to the ſame controverſy, and he reckoned among his antagoniſts ſuch men as biſhop Hall and archbiſhop Uſher. His father, who had been moleſted in his reſidence by the king's troops, came to live with him, and ſpent his latter years, in tranquillity, under his ſon's roof. In 1643, Milton married Mary, daughter of Richard Powell, eſq., a magiſtrate in Oxfordſhire. This was a very unſuitable connection, for the father-in-law was a zealous royaliſt, and the daughter had been accuſtomed to the jovial hoſpitality of the country gentlemen of that party. After a month's experience of her new life, the lady ſighed for the gaieties which ſhe had left, and obtaining permiſſion, by the earneſt requeſt of her relations, for a ſhort abſence, ſhe reviſited her native place. Here ſhe continued during the remainder of the ſummer, nor could the letters, meſſages, and remonſtrances of her huſband bring her back. Incenſed at her neglect and ill treatment of him, he began to conſider her conduct as a deſertion of the nuptial contract, and reſolved to puniſh it by repudiation. He ſoon found arguments to juſtify it to the world, and publiſhed, in 1644, "The Doctrine and Diſcipline of Divorce," which was followed by "The Judgment of Martin Bucer concerning Divorce." By theſe writings the fury of the Preſbyterian clergy was inſtantly kindled, and they procured the author to be ſummoned before the houſe of lords, but that body did not chooſe to enter into the queſtion, and ſoon diſmiſſed him. The Preſbyterians were now left without any conſolation for the loſs of an able friend, and the excitement of a formidahle enemy. Milton now was irrevocably alienated from their cauſe, and he ſoon fully diſcovered that many of theſe pretended zealots of liberty ſought only their own aggrandizement, and the power of impoſing upon others a yoke which they had themſelves been unable to bear. On the ſubject of divorce he makes out a ſtrong caſe, and appealed to the whole tenour of the ſcripture; the laws of the firſt Chriſtian emperors; the opinions of the moſt eminent among the early reformers; and endeavours to ſhew that by the laws of God, and by the inferences of the moſt virtuous and enlightened men, the power of divorce ought not to be rigidly reſtricted to thoſe cauſes which render the nuptial ſtate unfruitful, or which taint it with ſpurious offspring. Regarding mutual ſupport and comfort as the principal objects of this union, he contends, that whatever defrauds it of theſe ends eſſentially vitiates the contract, and muſt neceſſarily juſtify its diſſolution.

Milton, in conformity to this theory, reſolved practically to act upon it, and began to pay his addreſſes to a young lady of great accompliſhments, the daughter of a Dr. Davies. The rumour of the intended alliance effected what his remonſtrances had been unable to do; as he was paying a viſit to a neighbour, he was ſurpriſed with the ſudden appearance of his wife from another room, who threw herſelf at his feet and implored forgiveneſs. After a ſhort ſtruggle of reſentment, he relented, and took her again to his boſom. The reconciliation was laſting and ſincere, and Milton nobly ſealed it by opening his houſe to her father and brothers, when they had been driven from home by the triumph of the republican arms. He was now obliged to take a larger manſion, and removed to Barbican. In this aſylum his wife's relations continued, till the queſtion reſpecting their property was adjuſted with the government, and till a period ſubſequent to the death of Milton's father. Under the preſſure of theſe domeſtic embarraſſments, and of the public intereſt, the intellect of our author, obedient to a heart actuated by the pureſt benevolence, was buſy in promoting the welfare of the human race. In the year 1644, he imparted to the world his ideas on the ſubject of education, and defended, with a power which has never been exceeded, that guardian of liberty and truth, the freedom of the preſs.

His "Tractate on Education," addreſſed to Mr. Hartlib, the friend of ſir William Petty, contains his thoughts on that important ſubject. From this it appears, he conceived it poſſible to initiate the young ſtudent into ſcience and language by the ſame proceſs, and to make an acquaintance with things the immediate reſult of an acquaintance with words. Between the years of twelve and twenty-one, the pupil is to be led through various languages from grammar to ethics, logic, rhetoric, politics, law, theology, criticiſm, and the practice of compoſition. Geography was to exhibit to him the ſurface of the globe, and the principles of aſtronomy were to unfold to him the heavens; natural philoſophy, comprehending anatomy and phyſiology, was to make him converſant with the phenomena of nature, and with the wonders of his own frame; the mathematics were to introduce him to the ſciences of architecture, engineering or gunnery, fortification, and navigation. With this kind of education, Milton's pupil was to be accompliſhed, and fit for any duty to which his country might ſummon him, in the pulpit or at the bar, in the ſenate or the field. During the courſe of theſe ſtudies, the body of the ſtudent was to receive its due ſhare of cultivation, to be maintained in health by temperance, and to be invigorated by exertion. This little piece is written in an eaſier and purer ſtyle than the preceding works of its author; but in every ſpecies of merit it muſt yield to another compoſition, produced nearly at the ſame time, by the ſame pen, and addreſſed to the parliament, with the title of "Areopagitica, or a ſpeech for the liberty of unlicenſed printing." The Preſbyterians, on their riſing into power, forgot the principles which they had profeſſed in their adverſity; and, declaring againſt unlimited toleration, diſcovered by their readineſs to violate the rights of others, that their tenderneſs was only for their own. Againſt theſe apoſtates to the cauſe of liberty, Milton advanced as the champion of free diſcuſſion; and the effect of his zeal in this inſtance, for the intereſts of genuine liberty, has received the unanimous acclamation of the world. Though his controverſial, and other engagements, had for ſome time ſuſpended the exertion of his poetical talents, yet he did not ſuffer his character as a poet to ſink into oblivion, and in 1645, he publiſhed his juvenile poems in Latin and Engliſh. In 1646, Milton's wife produced her firſt child, and in the following year, in which his father died, the Powells returned to their own manſion and his houſe was reſigned once more to literature. In this houſe, in which his ſecond daughter Mary was born, he did not continue long, but exchanged it for one of ſmaller dimenſions in High Holborn. His next removal was occaſioned by his acceptance of the office of Latin ſecretary, which rendered a ſituation nearer to Whitehall an object of convenience.

Milton's principles of the origin and end of government, carried him to a full approbation of the trial and execution of the king, which was the final cataſtrophe of the civil wars; and in order to conciliate the minds of the people, which were agitated by the outcries, as well of the Preſbyterians as the loyaliſts againſt that act, he publiſhed early in 1649, a work, entitled "The Tenure of Kings and Magiſtrates," proving that it is lawful, and that it hath been ſo held through all ages, for any who have the power, to call to account a tyrant or wicked king, and, after due conviction, to depoſe and put him to death, if the ordinary magiſtrate have neglected or denied to do it. He ſoon after attempted to ſupport the new order of things, by a pamphlet animadverting upon the revolt of the Scotch Preſbyterians, ſettled at Belfaſt, from the parliament. With the view of preſerving the republican ſpirit of the nation, he alſo employed himſelf in compoſing "A Hiſtory of England" from the earlieſt periods, of which he wrote ſix books, but left the work unfiniſhed. His progreſs was ſtopped by an appointment to the Latin ſecretaryſhip to the council of ſtate. Scarcely was Milton ſeated in his new office, when he was ſummoned by the government to the diſcharge of a duty, well adapted to the extent of his powers, and one of conſiderable importance; it was to write an anſwer to the famous royal work, as it was then ſuppoſed to be, entitled "Icon Baſilikè," or the portraiture of his ſacred majeſty in his ſolitudes and ſufferings. Milton choſe for the title of his work "Iconoclaſtes," or Image-breaker: this piece, ſays his biographer, Dr. Symmons, "may be regarded as one of the moſt perfect and powerful of Milton's controverſial compoſitions. Preſſing cloſely on its antagoniſt, and tracing him ſtep by ſtep, it either expoſes the fallacy of his reaſoning, or the falſehood of his aſſertions, or the hollowneſs of his profeſſions, or the convenient ſpeciouſneſs of his devotion. In argument, and in ſtyle compreſſed and energetic, perſpicuous and neat, it diſcovers a quickneſs which never miſſes an advantage, and a keenneſs of remark which carries an irreſiſtible edge." This work was firſt printed in 1649, and a ſecond edition of it appeared in the following year; it was publiſhed again in London in 1652, in a French tranſlation, and was anſwered in 1651, in a work, entitled "Icon-aclaſtos," or the Image unbroken, and alſo forty years afterwards in another piece, called "Vindiciæ Carolinæ." We have in the article GAUDEN ſhewn that the "Icon-Baſilikè" was written by that prelate, and not by king Charles, to whom it was generally imputed. This has been ſatisfactorily proved by the aſſertions of the two ſons of the king, *viz.* Charles II. and James II.; by letters of the lord chancellor Hyde, and Dr. Gauden himſelf; and by the ſpecific depoſitions of the doctor's friend Dr. Walker, and of his widow. Doubts of the real author of the "Icon Baſilikè" were entertained almoſt immediately upon its publication by Milton, and by other perſons. Milton probably had no doubt whatever of its ſpuriouſneſs, but was without any ſpecific evidence to bring home the charge, he therefore anſwered the book, and its arguments, without regard to the writer, for he expreſsly ſays, "But the matter, here conſiderable, is not whether the king, or his *houſhold rhetorician*, have made a pithy declamation againſt tumults, but firſt, whether there were tumults or not, &c." It was alſo, in the year 1649, attacked as the work of a clergyman who was looking to preferment as a reward, in an able piece, entitled "Icon-alethinè," or the true image. To this work is prefixed a frontiſpiece, in which, on a curtain being drawn aſide, is diſcovered a dignitary of the church of England in his full canonical dreſs, and beneath are inſcribed the following lines:

> "The curtain's drawn; all may perceive the plot,
> And him, who truly the black babe begot.
> Whoſe ſable mantle makes me bold to ſay,
> A Phæton Sol's chariot ruled that day.
> Preſumptuous prieſt! to ſkip into the throne;
> And make the king, his baſtard iſſue own!
> The author therefore hath conceived it meet,
> The doctor ſhould do penance in this ſheet."

On the appointment of Milton to the office of Latin ſecretary, he removed to a lodging at Charing Croſs, and afterwards to apartments in Scotland Yard. Here his wife preſented him with a third child, a ſon, who died in his infancy. In 1652 he changed his reſidence to Petty France, which he occupied for eight years, till the criſis of the reſtoration, a handſome houſe opening into St James's park.

Scarcely had Milton finiſhed his reply to the "Icon Baſilikè," than he was called upon to juſtify the principles of the commonwealth in England, in oppoſition to Salmaſius, an honorary profeſſor in the univerſity of Leyden, who had been hired by Charles II. to write a work in favour of the royal cauſe, which he entitled "Defenſio Regia." Salmaſius was, by much, a more powerful antagoniſt than Dr. Gauden, and the conteſt was to be decided in a more ample field, than that in which Milton had engaged with the "Icon Baſilikè." The powers of his mind were now to be exhibited to Europe, and the whole circle of the civilized and Chriſtian community was to witneſs his triumph or defeat. In 1651, he performed the taſk allotted him in a work under the title of "Defenſio pro Populo Anglicano;" in this he exerciſed all the powers of Latin rhetoric, as well to juſtify the republican party, as to confound and vilify the celebrated ſcholar againſt whom he took up his pen. By this, notwithſtanding the party virulence, with which, by the cuſtom of the times, it was debaſed, he acquired a high reputation both at home and abroad. He was viſited on the occaſion by all the foreign ambaſſadors then in London, was complimented by ſeveral eminent ſcholars on the continent, and received, as a remuneration for his labours, a thouſand pounds from the Engliſh government. His book was generally read by literary enquirers of all parties, while, on the other hand, the work of Salmaſius was condemned and ſuppreſſed by the ſtates of Holland. One ſource of triumph aroſe to Milton's enemies; in conſequence of this controverſy, his intenſe application to ſtudy deprived him of that ſight, which had been for ſome years declining. His phyſicians had warned him, that the exertion neceſſary to accompliſh ſuch a work would probably induce total blindneſs, but his attachment to the public cauſe of his country and the world, made him readily ſubmit to any privations which were merely perſonal, ſo that he might render that ſervice which the exigencies of the times required.

That ſuch were his motives, we have his own declarations, in a fine ſonnet addreſſed to his friend Cyriac Skinner, which our readers will thank us for tranſcribing.

> "Cyriac, this three years day, theſe eyes, though clear
> To outward view, of blemiſh or of ſpot,
> Bereſt of light, their ſeeing have forgot;
> Nor to their idle orbs doth ſight appear
> Of ſun, or moon, or ſtar throughout the year,
> Or man or woman;—yet I argue not
> Againſt Heaven's hand or will, nor bate a jot
> Of heart or hope; but ſtill bear up and ſteer

Right onward What ſupports me, doſt thou aſk ?
The conſcience, friend, to have loſt them overplied
In liberty's defence, my noble taſk,
Of which all Europe rings from ſide to ſide :
This thought might lead me through the world's vain maſk,
Content, though blind, had I no better guide."

And in plain proſe he ſays, in his "Second Defence," "When the taſk of replying to the defence of the king was committed to me, at a time when I had to contend with ill-health, and when one of my eyes being nearly loſt, my phyſicians clearly predicted, that if I undertook the laborious work, I ſhould ſoon be deprived of both ; undeterred by the warning, I ſeemed to hear a voice, not of a phyſician, but of ſome internal and more divine monitor ; and conceiving that by ſome fatal decree, the alternative of two lots was propoſed to me, that I muſt either loſe my ſight, or muſt deſert a high duty, the two deſtinies occurred to me, which the ſon of Thetis reports to have been ſubmitted to him by his mother, from the oracle of Delphi. Reflecting, therefore, with myſelf, that many had purchaſed leſs good with greater evil, and had even paid life as the price of glory, while to me the greater good was offered at the expence of the leſs evil, as merely by incurring blindneſs, I might ſatisfy the moſt honourable demand of duty ; which, intrinſically of more worth even than glory itſelf, ought to be the firſt and deareſt object of every man's regard ; I determined to dedicate the ſhort enjoyment of my eye ſight, with as much effect as I could to the public advantage."

Among the attentions paid to Milton at this time, he was particularly pleaſed with thoſe of Leonard Philarus, a learned Athenian, who had attained to high rank in Italy, and was now employed by the duke of Parma on an embaſſy to the court of Paris. Struck with the ability and ſpirit of Milton's compoſition, this illuſtrious Greek ſent him his portrait, with a letter of panegyric to the defender of the Engliſh commonwealth. On a viſit which Philarus ſoon afterwards made to England, he waited upon Milton, then reduced to a ſtate of total blindneſs, and mutual friendſhip was the conſequence of their perſonal intimacy. When Philarus returned to Paris, he was led, by the celebrity of Thevenot, the phyſician, particularly renowned at that time for his acquaintance with the diſeaſes of the eye, to communicate a hope to Milton of the recovery of his ſight. The letters in which our author acknowledges the kindneſs of his friend on this and other occaſions are preſerved in Dr. Symmons' life of him.

His intellectual powers, however, ſuffered no diminution from this abridgment of the ſenſitive faculties, and he purſued, without intermiſſion, both his official and controverſial employments. In 1652 a book was publiſhed at the Hague, entitled "Regii ſanguinis clamor ad cœlum adverſus parricidas Anglicanos ;" the author was Peter Moulin the younger. Milton replied to it in his "Second Defence," to which we have already referred, and which was entitled "Defenſio ſecunda pro Populo Anglicano." In this was a high panegyric upon Cromwell, who had now aſſumed the ſupreme power with the title of Protector. "Milton's ſubſervience and attachment to this uſurper," ſays one of his biographers, "is the part of his conduct which it is the moſt difficult to juſtify. When the wiſeſt and moſt conſcientious of the republicans had become ſenſible of his arts, and had openly oppoſed his ambitious projects, it might have been expected that the mind of Milton would neither have been blinded by his hypocriſy, nor overawed by his power. If the general tenour of his character will exonerate him from the ſuſpicion of intereſted motives on this occaſion, it muſt be ſuppoſed that he was dazzled with the greatneſs of Cromwell's actions, and was convinced that his ſuperiority alone could allay that contention of parties which threatened ruin to the cauſe that had proved victorious in the field. Milton, beſides, was a zealous friend to religious liberty, for which he ſaw no refuge from the intolerance of the Preſbyterians, except in the moderation of the protector. It may be added, that the very paſſage in which he addreſſes Cromwell with the loftieſt encomium, contains a free and noble exhortation, that he ſhould reſpect that public liberty, of which he conſiders him as the guardian."

Milton's office as Latin ſecretary, chiefly regarded tranſactions with foreign nations, in which it is admitted that Cromwell was meritoriouſly attentive to the honour and intereſt of his own. In 1652 he loſt his wife, and his blindneſs, in a ſhort time, induced him to marry again. His ſecond wife was Catharine, the daughter of captain Woodcock of Hackney, who, unfortunately for him, died within a year in child-bed, greatly regretted by her huſband, who has conſecrated her memory by a beautiful ſonnet, ſuppoſed to be the reſult of a dream, immediately after her deceaſe, in which are the following lines :

Methought I ſaw my late eſpouſed ſaint,
* * * * * *
* * * * * *
Came, veſted all in white, pure as her mind :
Her face was veiled, yet to my fancied ſight
Love, ſweetneſs, goodneſs in her perſon ſhined
So clear, as in no face with more delight.
But Oh ! as to embrace me ſhe inclined,
I waked ;—ſhe fled, and day brought back my night.

Employment was his reſource againſt the gloom of his condition ; and after he had concluded his controverſial warfare, he took up his ſuſpended "Hiſtory of England," which he carried on to the conqueſt : he alſo collected materials for a Latin Theſaurus, intended as an improvement upon that of R. Stephanus.

In the buſineſs of his office he had coadjutors ; but the moſt important matters were ſtill committed to him, and from his pen proceeded a Latin memorial of great ſtrength and elegance, ſtating the reaſons for the war which the protector declared againſt Spain. A remonſtrance which he drew up concerning the perſecution of the Proteſtants in Savoy, ſtrongly expreſſed his deteſtation of religious tyranny.

After the death of Cromwell, when the fluctuations of government threatened general anarchy, he was induced to give his advice on civil and eccleſiaſtical topics in ſome ſmall publications, one of which was entitled "A Ready and Eaſy Way to eſtabliſh a Free Commonwealth, and the Excellence thereof, compared with the Inconveniences and Dangers of re-admitting Kingſhip." This, as its title imports, was intended rather to expoſe the evils neceſſarily conſequent to the nation's relapſe into its old vaſſalage under kings, and to demonſtrate the preference of a republican to a monarchical government, than to propoſe any juſt model of a popular conſtitution. In this work, as well as in another, entitled "Brief Delineations, &c." he ſhews that he was fearful of an unqualified appeal to the people, and deems them incapable of determining with wiſdom for their own intereſts. It was, however, in vain to contend by pamphlets againſt the national inclination. The king returned in triumph, and Milton was diſcharged from his office, and for a time lay concealed in the houſe of a friend in St. Bartholomew's Cloſe, near Smithfield. Here his privacy from the world was perfect, till after the paſſing of the act of oblivion, in the exceptions of which he was not comprehended, aſcertained

tained his ſafety, and re-inſtated him in ſociety. To whom he was indebted, in this emergency, for his preſervation, is not known with certainty ; but it ſeems probable that his life was ſaved principally by the earneſt and grateful interpoſition of ſir William D'Avenant, who had himſelf been formerly preſerved by the mediation of Milton, when ordered by parliament, in 1651, to trial, before the high court of juſtice. (See DAVENANT, WILLIAM.) Milton's name firſt occurs in the proceedings of the new government, in an addreſs from the houſe of commons to his majeſty, that he would iſſue his proclamation to call in Milton's "Defences of the People," and "Iconoclaſtes," together with a book of Goodwyn's, and cauſe them to be burnt by the common hangman, and alſo that the authors ſhould be proſecuted by the attorney-general. The books were accordingly burnt, but the authors were returned as having abſconded.

Now, reduced in his circumſtances, and under the diſcountenance of power, Milton removed to a private habitation, near his former reſidence in the city. But ſcarcely had he left his concealment when he was taken into cuſtody, by an order of the houſe of commons, from which he was diſmiſſed by paying his fees. In 1662, he was reſiding in Jewin-ſtreet, and from this he removed to a ſmall houſe in the Artillery-Walk, adjoining Bunhill Fields, where he continued during the remaining part of his life.

While living in Jewin-ſtreet, he married his third wife, Elizabeth Minſhull, the daughter of a gentleman of Cheſhire. He was now to reſume that poetical character which, for many years, had been ſunk in that of the controverſialiſt and politician. Undiſturbed by contentions and temporary topics, his powerful mind was left in repoſe, to meditate upon the great ideas which had indiſtinctly riſen to its view, and the reſult of its energies was the "Paradiſe Loſt." Much diſcuſſion has taken place concerning the original conception of this grand performance, but hitherto it has not been traced. It is certain that at the time when he firſt formed the reſolution of writing an epic poem, which was at an early period, he thought of ſome ſubject in the heroic times of Engliſh hiſtory ; but the religious turn of his mind, and his aſſiduous ſtudy of the Hebrew ſcriptures, produced a final preference of a ſtory derived from the Old Teſtament. He compoſed in blank verſe, on account of the facility with which he could pour forth the ſtrains that ruſhed into his mind with the force and rapidity of inſpiration. His nephew Philips had the peruſal of it, from the very beginning, in parcels of ten, twenty, or thirty verſes at a time, which, being written by any perſon that was near at hand, probably wanted correction as to the orthography and pointing. This gentleman ſays, upon the authority of Milton, that his vein never happily flowed but from the autumnal equinox to the vernal, and that whatever he attempted at other times was never to his ſatisfaction. The exact time occupied in the compoſition of the Paradiſe Loſt is not known ; it was finiſhed in 1665, when Milton, to avoid the contagion of the plague, through the kindneſs of his friend Elwood, a quaker, made a retreat to Chalfont, in Buckinghamſhire. It was firſt printed in 1667, in ten books, and he received from the bookſeller five pounds for the copyright, with a contingency of ten more, depending on the ſale of two other editions, and which he lived to receive. Theſe fifteen pounds, however, purchaſed only the bookſeller's right to the ſeveral editions for which they were paid, as Milton's widow ſold the irrevertible copyright of the work which had been bequeated to her, for eight pounds, to the ſame bookſeller, Samuel Simmons, who, almoſt immediately, diſpoſed of what was thus wholly transferred to him, for twenty-five pounds to Aylmer, another bookſeller, from whom it paſſed, at a conſiderable advance, to Jacob Tonſon. Much has been ſaid of the deplorably low price advanced for this immortal work, "but," ſays Dr. Symmons, "if we would regard ourſelves placed in the middle of the ſeventeenth century, and immerſed in all the party violence of that miſerable period, we ſhould rather be inclined to wonder at the venturous liberality of the bookſeller, who would give even this ſmall conſideration for the poem of a man living under the heavieſt frown of the times, in whom the *poet* had long been forgotton in the polemic, and who now tendered an experiment in verſe, of which it was impoſſible that the purchaſer ſhould be able to appreciate the value, or ſhould not be ſuſpicious of the danger. It is certain that the world was, at that period, incapable of doing it juſtice, and it was long before it took a ſecure place among thoſe productions which continually riſe in eſtimation, and are unlimited by time or place. Milton, conſcious of its merits, anticipated his final ſucceſs, and was, in that expectation, ſupported amidſt temporary diſcouragements." The thirteenth edition was printed, with a life by the author, in 1727, by Eliſha Fenton, who was a ſcholar, a poet, and a man of worth, though not without his failings. See FENTON.

In 1671 Milton publiſhed his "Paradiſe Regained," written upon the ſuggeſtion of his friend Elwood, who, on having read the Paradiſe Loſt in manuſcript, and being aſked by the author how he liked it, anſwered, in his quaint way, "Thou haſt ſaid much here on Paradiſe Loſt ; but what haſt thou to ſay of Paradiſe Found ?" When the latter poem was finiſhed, he put it into the hands of Elwood, ſaying, in a pleaſant tone, "this is owing to you, for you put it into my head by the queſtion you put to me at Chalfont." This was probably regarded by the author as the theological completion of the plan commenced in Paradiſe Loſt, and he viewed it with the partial fondneſs of an aged parent for his lateſt offspring. But in point of grandeur and invention its inferiority is extremely apparent, yet modern criticiſm has pronounced it by no means unworthy of the genius of Milton, allowance being made for the narrow compaſs of the ſubject, and his particular purpoſe in writing it.

At the ſame time that this was publiſhed, appeared his tragedy of "Sampſon Agoniſtes," compoſed upon the ancient model, and never intended for the ſtage. It cannot be ſaid to entitle the author to a place among thoſe dramatic writers who have diſtinguiſhed themſelves by the talent of moving the paſſions, or of delineating the character ; but its moral and deſcriptive beauties are not inconſiderable. The impreſſion made on the author's mind by the ſufferings of his party, and by his own depreſſed ſtate, may be diſtinctly traced in ſome of its pathetic and animated ſtrains, ſuch as in thoſe that follow :

"God of our fathers ! what is man !
That thou towards him with hand ſo various
Or, might I ſay, contrarious,
Temper'ſt thy providence through his ſhort courſe
Not evenly, as thou ruleſt
The angelic orders, and inferior creatures mute,
Irrational and brute.
Nor do I name of men the common rout,
That wand'ring looſe about
Grow up and periſh, as a ſummer fly.
Heads without name, no more remembered ;
But ſuch as thou haſt ſolemnly elected,
With gifts and graces eminently adorned,
To ſome great work, thy glory,
And people's ſafety, which in part they effect :

> Yet towards theſe, thus dignified, thou oft
> Amidſt their height of noon,
> Chang'ſt thy countenance and thy hand, with no regard
> Of higheſt favours paſt
> From thee on them, or them to thee of ſervice.
> Not only doſt thou degrade them, or remit
> To life obſcured, which were a fair diſmiſſion,
> But throw'ſt them lower than thou didſt exalt them high."

With the Sampſon Agoniſtes Milton's poetical account cloſes; but writing was become ſo much a habit with him, that he was continually making additions to his works in proſe. In 1672 he publiſhed "A Syſtem of Logic, after the Manner of Ramus;" and in the following year he ventured again in the field of polemics, with "A Treatiſe of true Religion, &c. and the beſt Means to prevent the Growth of Popery." The latter was become the dread of the nation, and Milton was among the moſt zealous of its opponents. The principle of toleration which he lays down is agreement in the ſufficiency of the ſcriptures; and he denies it to the Papiſts, becauſe they appeal to another authority. So imperfect was Milton's notion of religious liberty: it is, however, to his credit, that even in this he was contending with popery, avowedly patronized by the duke of York, and ſecretly countenanced by the king. "The danger," ſays his biographer, "which at this inſtant awakened the fears of Milton, became not long afterward ſo palpable and ſtriking as to excite the nation, united in one great effort for its ſafety, to depoſe the Catholic bigot who occupied and abuſed the throne."

In the ſame year Milton publiſhed a ſecond edition of his youthful poems, with his "Tractate on Education," in one volume, in which he included ſome pieces not comprehended in the edition of 1645. In 1674 he gave the world his familiar letters and ſome college exerciſes, the former with the title of "Epiſtolarum Familiarum Liber unus," and the latter with that of "Proluſiones quædam oratoriæ in Collegio Chriſti habitæ." The next exerciſe of his pen, was it is ſaid, to tranſlate into Engliſh the declaration of the Poles, on their elevating John Sobieſki to their elective throne, but Dr. Symmons is doubtful of the fact; thinking it much more certain that in ſome part of the ſame year he wrote "A brief Hiſtory of Muſcovy," which was publiſhed at a period of about eight years after his death. With this work terminated his literary labours; for the gout, which had for many years afflicted him, was now appointed to terminate his valuable life. He ſunk tranquilly under an exhauſtion of the vital powers on the eighth of November, 1674, when he had nearly completed his ſixty-ſixth year. His remains were carried from his houſe in Bunhill Fields to the church of St. Giles, Cripplegate, with a numerous and ſplendid attendance, and depoſited in the chancel near thoſe of his father. No monument marked the tomb of this great man, but one was erected to his memory in Weſtminſter Abbey, in 1737, at the expence of Mr. Benſon, one of the auditors of the impreſt. His buſt has ſince been placed in the church where he was interred, by the late Samuel Whitbread, eſq.

In the July preceding his death, Milton had requeſted the attendance of his brother Chriſtopher, and in his preſence made a diſpoſition of his property by a formal declaration of his will. This mode of teſtament, which is called *nuncupative*, was ſet aſide, on a ſuit inſtituted by his daughters. By this nuncupative will he had given all his property to his widow, aſſigning nothing to his daughters, but their mother's portion, which had not yet been paid. On this account, and from exacting from his children ſome irkſome ſervices, ſuch as reading to him in languages which they did not underſtand, which were neceſſities reſulting from his blindneſs and his indigence, he has been branded as an unkind father. But the nuncupative will, diſcovered ſome years ſince, ſhews him to have been amiable, and injured in that private ſcene, in which alone he has generally been conſidered as liable to cenſure, or rather, perhaps, as not entitled to affection. In this will, publiſhed by Mr. Warton, and in the papers connected with it, we find the venerable parent complaining of "unkind children," as he calls them, for leaving and neglecting him becauſe he was blind, and we ſee him compelled, by their injurious conduct, to appeal againſt them even to his ſervants. By the depoſition of one of thoſe ſervants, it is certain, that his complaints were not extorted by ſlight wrongs, or uttered by capricious paſſion on trivial provocations: that his children, with the exception of the youngeſt, would occaſionally ſell his books to the dunghill women, as the witneſs calls them. That theſe daughters were capable of combining with the maid-ſervant, and of adviſing her to cheat her maſter, and their father, in her marketings; and that one of them, Mary, on being told that her father was married, replied, "that was no news; but if ſhe could hear of his death that would be ſomething."

We cannot better conclude our account of Milton than in the words of his liberal and eloquent biographer, Dr. Symmons, to whoſe work we have already acknowledged our obligations, and to which we earneſtly refer the readers of the New Cyclopedia, in order that they may ſee how much more is recorded of our illuſtrious countryman, than can poſſibly be compreſſed in this article. Milton, ſays Dr. Symmons, was "a man in whom were illuſtriouſly combined all the qualities that could adorn, or elevate the nature to which he belonged; a man, who at once poſſeſſed beauty of countenance, ſymmetry of form, elegance of manners, benevolence of temper, magnanimity and loftineſs of ſoul, the brighteſt illumination of intellect, knowledge the moſt various and extended, virtue that never loitered in her career nor deviated from her courſe;—a man who, if he had been delegated as a repreſentative of his ſpecies to one of the ſuperior worlds, would have ſuggeſted a grand idea of the human race, as of beings affluent with moral and intellectual treaſure, who were raiſed and diſtinguiſhed in the univerſe as the favourites and heirs of heaven."

Of the three daughters of Milton, Anne, the eldeſt, married a maſter-builder, and died with her firſt child in her lying-in. Mary, the ſecond, died in a ſingle ſtate: and Deborah, the youngeſt, married Abraham Clarke, a weaver in Spitalfields. She had ſeven ſons and three daughters, but of theſe ſhe left, at her deceaſe, only Caleb, who marrying in the Eaſt Indies, had two ſons whoſe hiſtory cannot be traced; and Elizabeth, who married Thomas Foſter, of the ſame buſineſs with her father, and had by him three ſons and four daughters, who all died young and without iſſue. Mrs. Foſter died in poverty and diſtreſs, on the ninth of May, 1754, "and with her, it is highly probable, expired the laſt deſcendant of the immortal Milton." Symmons's Life of Milton. Biog. Brit. Gen. Biog. Bayle's Dict. Newton's Life of Milton, and Milton's Works.

Milton, in *Geography*, a pariſh in the lower half hundred of Toltingtrough, lathe of Aylesford, and county of Kent, England, is ſituated 22 miles from London, and forms the eaſt ſide of the town of Graveſend, with which it was incorporated in the reign of queen Elizabeth. Milton was returned, under the population act of 1801, as containing 322 houſes, occupied by 2056 inhabitants. The church, which ſtands near the ſea-ſhore, about a mile from Graveſend,

end, is built of flints and rag-ſtones : round it formerly ſtood the village of Milton, of which only one houſe is now left. See GRAVESEND.

MILTON, or *Middleton*, as anciently called, a market town and pariſh in the upper half hundred of Milton, in the lathe of Scray, and county of Kent, England, is of very remote antiquity, and formed part of the demeſnes of the Saxon kings. It is ſituated 12 miles from Maidſtone, and 39 from London, on the acclivity of a hill, about half a mile from the high road, ſloping down to a ſmall creek which falls into the river Swale, about two miles to the north-weſt. The vicinity of this town to the Swale, which ſeparates the iſle of Sheppey from the main land, was the cauſe of its being frequently plundered by the Danes during their piratical incurſions in the ninth century. Here their veteran chief, Haſtings, endeavoured to eſtabliſh himſelf in the time of Alfred ; and the remains of his encampment or fortreſs are ſtill to be ſeen in the marſhes of Kemſley Downs, between Milton church and the mouth of the creek. It conſiſts of a high rampart and broad ditch, incloſing a ſquare area, the ſides of which are nearly parallel with the cardinal points of the compaſs. It meaſures about an hundred feet each way, and has obtained the name of Caſtle-Rough, from its having been long overgrown with trees and underwood.

Milton is ſuppoſed to have originally ſtood in the vicinity of its church, which is conſiderably to the north of the preſent town ; and near it the Saxon kings had a palace, which was burnt, together with the town, by earl Godwyn, during his quarrel with Edward the Confeſſor, about the year 1052. Notwithſtanding this, Milton appears to have been a place of conſiderable importance for the time, in the days of William the Conqueror, who, in the Domeſday ſurvey, is recorded to have then held the manor. It remained veſted in the crown till the time of Charles I., though frequently granted for life, or a term of years, to different perſons ; particularly to ſeveral queens in dower, and others of the royal blood, who procured various privileges for the inhabitants. The grant of the market, which is kept on Saturdays, was obtained by queen Iſabella, in the 13th of Edward II., together with the liberty of holding an annual fair for four days. The town is governed by a portreeve, who is choſen on St. James's day, by ſuch inhabitants of the pariſh as pay the church and poor's rates. The market-houſe and ſhambles ſtand near the middle of the town ; and at a ſmall diſtance northward is the court-houſe, an old timber building, where manor courts and other public meetings are held ; beneath it is the town gaol. The church is a ſpacious fabric, and conſiſts of two aiſles and two chancels, with a maſſive embattled tower at the weſt end, which, together with the ſouth chancel, is compoſed of ſquared flints, laid in even rows. The eaſt windows are large, and pointed : that of the north chancel is divided into five lights, with numerous crockets above ; the other has four trefoil-headed lights below, with three ranges of quatrefoil lights above. The ſouth chancel, which belonged to the ancient family of Northwood, contains a piſcina, and ſeveral tombs and ſepulchral memorials.

The number of houſes in this pariſh, as returned in the year 1801, under the population act, was 322 ; that of inhabitants 2056. The Oyſter Fiſhery furniſhes the principal ſource of employment to the latter, and has done ſo for many centuries. In the reign of king John, the right of this fiſhery in the manor and hundred of Milton was granted to the abbey at Faverſham, to which it appertained at the diſſolution. It then was held by the crown till the reign of Charles I. : ſince that period it has been granted, with the manor, to various perſons ſucceſſively ; and is now held on leaſe by a company called Free Dredgers, who are governed by their own particular rules or bye-laws, made, according to ancient cuſtom, at the court-baron of the manor. The oyſters produced within the limits of this fiſhery are in high eſtimation, under the name of "Native Miltons." There are four wharfs belonging to this town ; and conſiderable quantities of corn, and other produce of the adjacent country are ſhipped here for the London markets, commodities of every kind being freighted in return.

In the weſtern part of this pariſh and its vicinity is a large tract of woodland, called Cheſnut Woods, from the great plenty of thoſe trees which grow therein : and in a preſentment made of the cuſtoms of Milton, in 1575, it is mentioned, that the occupiers of three mills holden of the manor, ſhould gather yearly for the lord of it nine buſhels of "cheſtenottes" in Cheſnot Wood, or pay eighteen-pence by the year to the queen.

In the marſhes in the north-weſt quarter of the pariſh is a decoy for wild fowl, of which great numbers are taken, and principally ſold in the markets of the metropolis. Haſted's Hiſtory of Kent, vol. vi. Beauties of England and Wales, vol. viii. by E. W. Brayley.

MILTON, a townſhip of America, in Chittenden county, New York, on the E. ſide of lake Champlain, oppoſite to South Hero iſland ; divided into nearly equal parts by La Moille river, which diſcharges itſelf into the lake in Colcheſter. The townſhip contains 786 inhabitants.—Alſo, the "Uncataquiſſet" or "Unquaty" of the ancient Indians, a poſt-town in Norfolk county, Maſſachuſetts, adjoining to Dorcheſter ; 7 miles S. of Boſton : containing 1143 inhabitants, three paper-mills, and a chocolate-mill. It was incorporated in 1662 ; and affords one of the fineſt proſpects in America.—Alſo, a town in the county of Saratoga, in New York, containing 2123 inhabitants.—Alſo, a poſt-town in Cayuga county, New York, on the N.E. ſide of Cayuga lake, 40 miles N. of Tioga river ; incorporated in 1794, and containing 3553 inhabitants.—Alſo, a ſmall poſt-town in Albemarle county, Virginia, on the S.W. ſide of the Rivanna, about 80 miles N.W. by W. of Richmond.—Alſo, a poſt-town of Northumberland county, Pennſylvania ; 219 miles from Waſhington.

MILTOWN-MALBAY, a poſt-town of Ireland, in the county of Clare. It is built on a bank running down to the ſea, facing the ſouth-weſt. There are here hot and cold baths, and it is much frequented as a bathing-place. It is 128 miles W.S.W. from Dublin. Carliſle. Wakefield.

MILTSCHIN, a town of Bohemia, in the circle of Bechin ; 10 miles N. of Tabor.

MILTUS, in *Botany*, ſo called by Loureiro, from μίλτος, *red lead*, or *vermilion*, the whole plant being as that author ſays of a beautifully vivid red colour.—Loureir. Cochinch. 303.—Claſs and order, *Dodecandria Pentagynia*. Nat. Ord. *Caryophyllei*, Linn. ? *Ficoideæ*, Juſſ. ?

Gen. Ch. *Cal.* Perianth inferior, of five, ovate, concave, rugoſe, coloured, ſpreading, permanent ſegments. *Cor.* none. Nectary none. *Stam.* Filaments twelve, affixed to the bottom of the calyx, and ſhorter than it ; anthers ovate, twin, erect. *Piſt.* Germen ſuperior, roundiſh, furrowed ; ſtyle none ; ſtigmas five, linear, bent backwards. *Peric.* Capſules five, approaching each other, ovate, rough, ſingle-ſeeded. *Seed* ovate, ſhining.

Eſſ. Ch. Calyx of five leaves, inferior. Corolla none. Capſules five, ſingle-ſeeded.

Obſ. Loureiro remarks that the difference between this genus and *Glinus* is not very great.

1. M. *africana.* Loureir.—A native of dry places at

Mozambique, an African iſland.—All that we know of this plant is from the deſcription of the above quoted author, which is as follows. *Stem* ſhrubby, much divided, about four feet long, ſlender, proſtrate, ſmooth. *Leaves* oblong, entire, obtuſe, thick or fleſhy, ſmooth, the leſſer ones nearly ſeſſile, oppoſite, and crowded. *Flower-ſtalks* ſimple, many together, lateral.—The ſtems, flowers, and leaves are all of a remarkably ſtriking red or vermilion colour.

MILVAGO, in *Ichthyology*, a name given by Geſner and ſome others, to a fiſh called by authors in general *milvus*, and by ſome *lucerna*, and the *flying-fiſh*. It is a ſpecies of the trigla, and is called, by Artedi, the trigla with a ſnout bifid at the extremity, and the ſide-lines forked near the tail.

MILVERTON, in *Geography*, a market-town in the hundred of the ſame name, and county of Somerſet, England. It is ſituated in a woody fertile country, pleaſingly diverſified with hill and valley, at the diſtance of eight miles from Taunton, and five from Wellington. The buildings are chiefly arranged in three irregular ſtreets; and the church ſtands on an eminence in the centre. This town was anciently a borough, the manor whereof is now veſted in the crown, and long poſſeſſed a good trade in ſerges and druggets. The manufacture of theſe articles, however, is now almoſt entirely dropped, but an extenſive manufactory of flannels has been eſtabliſhed of late years. Though entirely deprived of its privileges as a borough, it continues to be governed by a portreeve; and ſearchers and ſealers are ſtill annually appointed. The petty ſeſſions are held here. Friday is the market day, and there are two fairs during the year, one on the 25th of July, and another on the 10th of October. The population of the town and pariſh, according to the returns of 1801, was 1667 perſons.

Milverton is remarkable in hiſtory as having given name to John de Milverton, the Carmelite friar of Briſtol, who was celebrated for his zealous oppoſition to the doctrines of Wickliff, the firſt Engliſh reformer. Collinſon's Hiſtory and Antiquities of Somerſetſhire, vol. iii. 4to.

MILUS, μιλος, a name given by the Greek writers to a plant uſed in garlands, and ſometimes to a tree. Theophraſtus evidently uſes it as the name of a tree, and Crato as that of the garland-herb,

MILVUS, in *Ichthyology*. See Flying-*Fiſh*, Callyonimus *Lyra*, and Dragonet.

Milvus, in *Ornithology*, the name of the kite and buzzard. See Falco.

MILWALDE, or Midwalde, in *Geography*, a town of Holland, in the department of Groningen; 8 miles S.S.E. of Dam.

MIMA, a town of Japan, in the iſland of Xicoco; 23 miles N.W. of Awa.

MIMANSA, in *Philoſophy*, is the name of a theory upheld by a numerous ſect of Hindoos, among whom, however, even of this ſchool, there is conſiderable diverſity of opinion. The word Mimanſa denotes, in Sanſcrit, the operations and concluſions of reaſon. The doctrines are divided into the firſt and ſecond. The firſt, called Purva Mimanſa, or Karma Mimanſa, is ſaid to have been promulgated by Jaimini in twelve chapters; it diſcuſſes queſtions of law, and moral and religious duties. (See Jaimini.) The ſecond diviſion is called Vedanta, and is attributed to Vyaſa, who is ſometimes ſaid to have been the maſter or preceptor of Jaimini. (See Vedanta and Vyasa; and the articles Murty and Mystical *Poetry* for ſome of the tenets of the Vedanti ſchool.) Both the Mimanſas profeſs to ſhew what acts are pure or impure, what objects are to be deſired or avoided, and by what means the ſoul may aſcend to the Firſt Principle. Compared with the Grecian ſchools, the Mimanſa approaches neareſt the Platonic, having, indeed, many conſonant ideas and doctrines.

MIME, Mimus, a term in the ancient comedy, ſignifying a *buffoon*, or *mimic*, who acted by poſtures ſuitable to the perſon or ſubject he repreſented.

The word comes from the Greek μιμος, *imitator*; formed of μιμεομαι, *I imitate*. The ſame comedians were alſo ſometimes called *pantomimes*, becauſe of their counterfeiting all manner of poſtures and geſtures.

According to Lucian (de Saltatione), a ſingle dancer, or mime, was able to expreſs all the incidents and ſentiments of a whole tragedy or epic poem by dumb ſigns, but ſtill to muſic, as in the ancient recitation, and in modern pantomime entertainments; though Ariſtotle expreſsly ſays, that dancers want neither poetry nor muſic; as by the aſſiſtance of meaſure and cadence only, they can imitate human manners, actions, and paſſions. See Bathyllus and *Pylades*.

Plutarch (Sympoſ. l. vii. probl. 8.) diſtinguiſhes two kinds of pantomime: one was called υποθεσιν, the ſubject of which was decent and decorous, as well as the manner of expreſſing it, and this nearly approached to comedy. Buffoonery and indecency conſtituted the other.

Sophron of Syracuſe, who flouriſhed in the time of Xerxes, was reputed the inventor of ſerious and decorous pantomime, replete with leſſons of morality. Plato had great pleaſure in the peruſal of the pantomimes of this author. But the Greek drama was ſcarcely formed, ere theatric writers and actors endeavoured more to divert the people by farces and repreſentations of vicious ſcenes and characters, than to improve their morals. Such were the means by which interludes on the ſtage were rendered agreeable to the people of Greece.

The Romans were equally pleaſed with pantomime, and formed of it a fourth ſpecies of drama. The actors diſtinguiſhed themſelves by a licentious imitation of the manners of the times, as appears by the following verſe of Ovid.

> "Scribere ſi fas eſt imitantes turpia Mimos."

The mimes uſually acted without ſocks or ſtockings, whereas the three others wore ſocks or buſkins. Their heads were cloſe ſhaved, like the fools on mountebank ſtages; their dreſs, like that of our harlequins, was compoſed of bits of cloth or linen of different colours. This dreſs was called *Panniculus centumculus*. They ſometimes alſo appeared in magnificent ſenatorial robes of purple, to divert the people by the ridicule and contraſt of a ſenator's robe, and a ſhaved head and ſocks. Thus harlequin ſometimes on our ſtage is bedight in the garb of a gentleman. To this dreſs they joined licentious language, and all kinds of ridiculous poſtures, neglecting nothing that could amuſe the populace.

This kind of diverſion was given even at funerals, and the actors were called *Archimimes*. They went before the coffin, and deſcribed by their geſtures the actions and manners of the deceaſed: his virtues and vices, all were exhibited. The propenſity which the mimes had to raillery, inclined them rather to reveal their frailties, than paint their virtues, or any thing that could redound to their honour.

The applauſe given to the pieces of Plautus and Terence, did not prevent even the better ſort from admiring theſe pantomimic farces, when enlivened by wit, and not debaſed by indecency. The Mimographic poets of the Romans, who chiefly diſtinguiſhed themſelves in theſe dramatic exhibitions, were Sneius Mattius, Decimus Liberius, Publius Syrus, under Julius Cæſar; Philiſtion, under Auguſtus; Silo, under Tiberius; Virgilius Romanus, under Trajan;

and Marcus Marcellus, under Antoninus. But the moſt celebrated of all theſe were Decimus Liberius, and Publius Syrus. The firſt diverted Julius Cæſar ſo much that he made him a Roman knight, and conferred on him the privilege of wearing gold rings. He had ſuch a wonderful talent at ſeizing ridicule, as to make every one dread his abilities. To this Cicero alludes, in writing to Trebutius, when he was in Britain with Julius Cæſar, telling him, that "if he is abſent much longer inactive, he muſt expect to be attacked by the mime Liberius." Publius Syrus, however, gained ſo much more applauſe, that he retired to Puzzoli, where he conſoled himſelf for his diſgrace and the inconſtancy of the people, and the tranſient ſtate of human affairs, by the following admirable verſe:

"Cecidi ego: vadet qui ſequitur; laus eſt publica."

We with difficulty can imagine ſome of the grave and judicious reflections of Syrus to be extracted from the pantomimes which he exhibited on the ſtage: we ſhould rather take them for maxims moulded on the ſock or buſkin. Encycl. 1ſt edit.

"Sweet Polhymnia, ſee advance,
Mother of the graceful dance:
She who taught th' ingenious art
Silent language to impart:
Signs for ſentiment ſhe found,
Eloquence without a ſound:
Hands loquacious ſave her lungs,
All her limbs are ſpeaking tongues."

MIMESIS, μιμησις, in *Rhetoric*, a figure, whereby the words, geſtures, ſpeech, actions, &c. of another perſon are imitated. See IMITATION.

MIMETES, in *Botany*, ſo called by Mr. Saliſbury (according to Mr. Brown); apparently from μιμητης, *a mimic*, but we know not its particular application. Brown Tr. of Linn. Soc. v. 10. 105. Ait. Hort. Kew. ed. 2. v. 1. 197. (Hypophyllocarpodendron; Boerh. Lugd-Bat. ed. 2. v. 2. 205. t. 205, 206.)—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteæ*, Juſſ.

Eſſ. Ch. Corolla regular, in four deep ſegments. Stamens in the concave tips of the ſegments. Nectary four ſcales beneath the germen. Nut ſuperior, ſeſſile, ſmooth. Common receptacle flat, many-flowered. Scales deciduous.

Eleven ſpecies of this genus, all from the Cape of Good Hope, are deſcribed by Mr. Brown, four of which, introduced by Mr. Maſſon between the years 1774 and 1795, are cultivated at Kew. They are all *ſhrubs*, of a ſtout tortuous habit; their *leaves* either entire, or furniſhed with callous teeth. *Flowers* aggregate, generally axillary, ſometimes embraced by a ſort of hooded leaf, ſometimes terminal. *Involucrum* of many imbricated, membranous, rarely coriaceous, leaves, ſometimes turned all to one ſide. *Piſtils* longer than the corolla, which becomes flaccid after its expanſion. *Stigma* cylindrical, ſlender, for the moſt part acute. In *M. capitulata* however, Mr. Brown's ſecond ſpecies, it is thickened and conical at the ſummit. In *M. purpurea*, his laſt, the *receptacle* is deſtitute of ſcales.

The following examples are ſufficient.

M. *hirta*. Hairy Mimetes. Br. n. 1. (Protea hirta; Linn. Mant. 188. Lepidocarpodendron foliis ſericeis brevibus, confertiſſimè natis; fructu gracili longo; Boerh. Lugd-Bat. v. 2. 194. t. 194. Leucadendron hirtum; Linn. Sp. Pl. 136.)—Involucrum equilateral, coloured, pointed, eight or ten-flowered. Stigma awl-ſhaped. Corolla feathery. Leaves acute, entire.—Grows in moiſt ſituations. Flowers in the greenhouſe from June to Auguſt. A buſhy *ſhrub*, with numerous, imbricated, ſilky *leaves*. *Flowers* reddiſh.

M. *cucullata*. Three-toothed Mimetes. Br. n. 4. (Protea cucullata; Linn. Mant. 189. Leucadendros africana, ſive Scolymocephalos anguſtiori folio, apicibus tridentatis; Pluk. Almageſt. 212. t. 304. f. 6. Hypophyllocarpodendron; Boerh. Lugd-Bat. 206. t. 206. Leucadendron cucullatum; Linn. Sp. Pl. 136.)—Involucrum unequally directed, pointed, nearly ſmooth. Leaves linear-oblong, three-toothed, ſmooth: the floral ones dilated below, with recurved margins. Stigma awl-ſhaped, very acute.—Native of low marſhy places, a mile and a half from the Cape. The *leaves* are crowded, tipped with three blunt red teeth. *Flowers* feathery, their long prominent ſtyles reaching far beyond the corolla.

M. *thymelæoides*. Daphne-leaved Mimetes. Br. n. 8. (Leucadendron thymelæoides; Berg. Cap. 19.)—Stem erect. Leaves oval, obtuſe, downy, ſmall. Flowers terminal, rather cluſtered. Style downy below the middle.—*Stem* ſhrubby, with round, purpliſh, downy, upright, compound branches. *Leaves* about half an inch long, crowded, ſpreading, downy, finely fringed; the lower ones becoming ſmooth. *Flowers* ſeſſile, the ſize of a ſmall cherry, moſtly in pairs. *Leaves* of the *involucrum* elliptical, inclining to lanceolate. *Scales* of the *receptacle* all over denſely woolly. *Corolla* ſilky. *Stigma* rather acute. Of this we find no figure, nor is any thing ſaid of the colour of the flowers.

MIMIZAN, in *Geography*, a town of France, in the department of the Landes, and chief place of a canton, in the diſtrict of Mont-de-Marſan. The place contains 413, and the canton 2821 inhabitants, on a territory of 415 kiliometres, in 6 communes.

MIMNERMUS, in *Biography*, a Greek elegiac poet, a native of Colophon, who flouriſhed in the ſixth century before Chriſt, was contemporary with Solon. He was the inventor of the pentameter verſe: his compoſitions were of the elegiac kind, according to the ancient acceptation of the word, which by no means confined it to mournful topics. His talents led him to treat of very different ſubjects: he was a votary of love and pleaſure, and is ſo diſtinguiſhed by a line in Propertius:

"Plus in amore valet Mimnermi verſus Homero:"

Horace likewiſe refers to him in a ſimilar connection, though in much ſtronger terms:

"Si, Mimnermus uti cenſet, ſine amore jocisque
Nil eſt jocundum, vivas in amore jociſque."

"If, as wiſe Mimnermus ſaid,
Life unbleſt with love and joy,
Ranks us with the ſenſeleſs dead,
Let theſe gifts each hour employ."

His manners are thought to have correſponded with his philoſophy. Of his poems only a few remain, which have been publiſhed with the "Novem Feminarum Græcarum Carmina," by Urſinus in 1568, and by Wolfius in 1734.

Mimnermus, according to Plutarch, has rendered himſelf remarkable, by playing upon the flute a nome called *Cradias*, which, Heſychius tells us, was an air for that inſtrument uſually performed at Athens, during the march, or proceſſion, of the victims of expiation. His elegies, of which only a few fragments are preſerved, were ſo much admired in antiquity, that Horace preferred them to thoſe of Callimachus. (Epiſt. lib. ii. ep. ii. v. 101.) He compoſed a poem of this kind, as we learn from Pauſanias, upon the battle fought between the people of Smyrna, and the Lydians, under Gyges. He likewiſe was author of a poem in elegiac verſe, quoted by Strabo (lib. xiv. p. 633, 634. ed. Par.), which he entitled "Nanno," and in which we may ſuppoſe he chiefly celebrated a young and beautiful girl of that name, who, according to Athenæus, was a player on the flute, with whom he was enamoured in his old age. Horace bears teſtimony to his abilities in deſcribing that ſeducing paſſion; alluding to ſome much admired lines of this Greek poet, which have been preſerved by Stobæus:

" *Τις δε βιος, τι δε τερπον ατερ χρυσης ’Αφροδιτης;* &c.
What is life and all its pride,
If love and pleaſure be denied?
Snatch, ſnatch me hence, ye Fates, whene'er
The am'rous bliſs I ceaſe to ſhare.
Oh let us crop each fragrant flow'r,
While youth and vigour give us pow'r;
For frozen age will ſoon deſtroy
The force to give or take a joy;
And then a prey to pain and care,
Deteſted by the young and fair,
The ſun's bleſt beams will hateful grow,
And only ſhine on ſcenes of woe!"

MIMOSA, in *Botany*, ſo called from *mimus*, an actor or imitator. *Herba*, or *arbor*, *mimoſa*, meaning a ſort of imitative plant, whoſe motions mimic the ſenſibility of animal life. The Senſitive Plant.—Linn. Gen. 548. Schreb. 734. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 3. 438. Juſſ. 346. Tourn. t. 375. Lamarck Illuſtr. t. 846. Gærtn. t. 155. (Acacia; Tourn. t. 375. Inga; Plum. Gen. 13. t. 19.)—Claſs and order, *Polygamia Monoecia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, very ſmall, with five teeth. *Cor.* of one petal, funnel-ſhaped, regular, more or leſs deeply five-cleft, ſometimes wanting. *Stam.* Filaments capillary, very long, uſually very numerous, ſometimes united below; anthers incumbent, ſometimes partially abortive. *Piſt.* Germen ſuperior, oblong; ſtyle thread-ſhaped, ſhorter than the ſtamens; ſtigma abrupt. *Peric.* Legume long, with numerous tranſverſe partitions. *Seeds* numerous, of various roundiſh ſhapes.

Obſ. Many of the flowers are male, ſoon falling off; others are female; others furniſhed with both ſtamens and piſtil, each occaſionally more or leſs imperfect; all which circumſtances vary in different ſpecies.

Mimoſa of Tournefort has a jointed legume, and apparently ſenſitive, or irritable, leaves.

Acacia of the ſame author has a cylindrical legume; the leaves not moving when touched.

Inga of Plumier has a fleſhy legume.

No part of the fructification in the genus before us is conſtant.

The *calyx*, uſually five-toothed, in ſome ſpecies is three-cleft.

Corolla uſually of one petal, in ſome is of five, in others altogether wanting.

Stamens in ſome very numerous, in others ten, five, or four; in ſome monadelphous; in ſome abortive.

Pericarp a legume, but in ſome ſpecies fleſhy, in others membranous; in ſome winged, in others jointed; in ſome compoſed of four valves.

Seeds of a different ſhape in different ſpecies.

Eſſ. Ch. Calyx five-toothed. Corolla regular, five-cleft. Stamens five or more. Piſtil one. Legume ſuperior, with many cells. Some male flowers.

This vaſt genus labours under great uncertainty of character, as appears by the above remarks of Linnæus. For ſome of its near allies, ſee GLEDITSIA and GYMNOCLADUS. Juſſieu has hinted at the propriety of dividing it, according to the number of ſtamens, and the ſtructure of the legume. This Willdenow has attempted; but to accompliſh it fully, an examination of numerous ſpecies in a living ſtate would be neceſſary; and as moſt of them are tropical ſhrubs or trees, rarely ſeen, and ſtill more rarely flowering or fruiting, in the gardens of Europe, this deſirable end is not at preſent attainable. The foliage is of the pinnate kind, more or leſs compound; in ſome irritable, and folding up when touched or ſhaken; in all, we believe, drooping and folding together in the dark. A number of paradoxical ſpecies as to habit, uniform enough in fructification, have been found in the ſouthern hemiſphere. Theſe have only a few pinnated leaves when young, bearing ſubſequently nothing but ſimple, vertical, oblong or linear, dilated and defoliated footſtalks, which have all the appearance of leaves, and doubtleſs perform the functions of ſuch. A few ſpecies bear, in their adult ſtate, nothing but angular thorns, ſtill leſs like foliage. Yet we know not of any difference in the fructification, between theſe and various uniformly pinnate kinds of *Mimoſa*, found likewiſe in New Holland, which have the habit as well as characters of numerous ſpecies heretofore deſcribed, natives of Africa, or of the Eaſt or Weſt Indies.

It is difficult to form a calculation of the ſpecies of *Mimoſa*. The 14th edition of *Syſt. Veg.* contains fifty-three only, ſcarcely any of the New Holland ones being there included. Of theſe laſt five are figured by Labillardiere, and ſeveral in Curtis and Andrews; two in Smith's Specimen of the Botany of New Holland. Much more information may be expected from Mr. Brown on this ſubject.

The genus is for the preſent ſubdivided, by the compoſition of its leaves, into ſeveral ſections, of which we ſhall offer a few examples.—Some ſpecies are furniſhed with thorns, others not.—The roots in general have a ſtrong alliaceous ſcent.

Section 1. Leaves ſimply pinnate.

M. *Inga*. Sweet-bean Mimoſa. Linn. Sp. Pl. 1498. (Inga flore albo fimbriato, fructu dulci; Plum. Ic. 14. t. 25. Arbor ſylveſtris, Belgis *Zoete-boontjes;* Merian. Surin. 51. t. 51.)—Thorns none. Leaves pinnate, of five pair of ovate leaflets, with a jointed bordered ſtalk.—Native of South America. A *tree*, with broad, ſmooth, ſerrated, ribbed *leaflets*. *Flowers* corymboſe, large, green, with many united *ſtamens*. *Legumes* often a foot long, tortuous and furrowed; the *ſeeds* lodged in ſweet eatable pulp. The laſt circumſtance ſhews an affinity to *Ceratonia*.

Section 2. Footſtalk divided, bearing two or three diſtinct pair of leaves.

M. *bigemina*. Pointed Twin-leaved Mimoſa. Linn. Sp. Pl. 1499. (Katou-Conna; Rheede Hort. Malab. v. 6. 21. t. 12.)—Thorns none. Leaves pointed, in a double pair.—Native of Malabar. A tall *tree*, with a fœtid though inſipid *root*. *Leaflets* ovate, entire, three inches long, ſmooth. *Flowers* ſmall, white, monadelphous. *Legumes* ſpiral, compreſſed, their poliſhed globoſe ſeeds ſuſpended by a thread.

Section 3. Leaves conjugate, conſiſting of two pinnate leaves, on a common footſtalk.

M. *ſenſitiva*. Broad-leaved Senſitive plant. Linn. Sp. Pl. 1501. (M. ſpinoſa prima, &c.; Breyn. Cent. t. 16.)—Prickly. Leaves conjugate; each with two pair of half-ovate leaflets; the innermoſt lower one very ſmall. Petals none.—Native of the Braſils; and of hedges at Lima. This very intereſting plant, whoſe ſenſibility, on account of the large ſize of its leaflets, is ſo ſtriking, was formerly introduced by Houſton into the gardens of England, but is no longer to be met with. We have ſeen it at Turin. The *footſtalks* have a large ſucculent knot at their baſe, which appears the chief ſeat of irritability, and on which the *leaflets* turn, as on a hinge, at the ſlighteſt touch. The largeſt *leaflets* are near an inch and half long; all ſemi-ovate, briſtly beneath. *Flowers* in globular denſe heads, on ſimple axillary ſtalks. *Legumes* flat, radiating from a centre, briſtly and downy.

M. *pudica*. Common Senſitive plant, or Humble plant. Linn. Sp. Pl. 1501. (M. ſpinoſa tertia, &c.; Breyn. Cent. t. 18.)—Prickly. Leaves ſomewhat fingered, pinnate. Stem hiſpid. Legumes jointed, fringed.—Native of South America, and of the iſle of Bourbon.—This is naturally ſhrubby, though raiſed as an annual in our ſtoves, where it is kept for the ſake of its wonderful ſenſibility. The *leaflets* are very numerous, oblong, obliquely elliptical, rather briſtly. If one of them be cut, the ſhock is communicated, with gradually accelerated rapidity, along the footſtalks, to the reſt, who all fold ſoftly together, after which the common and partial ſtalks droop and become pendulous. Theſe have the ſame tumid pulpy texture at their baſe as the former. (See Leaves.) The *flowers* are pale purple, in round, axillary, ſtalked tufts. *Legumes* near an inch long, compoſed of three or four orbicular fringed joints.

Section 4. Leaves at leaſt doubly pinnate.

M. *glauca*. Glaucous Mimoſa. Linn. Sp. Pl. 1504. (Acacia non ſpinoſa, flore albo, foliorum pinnis latiuſculis glabris, ſiliquis longis planis; Trew. Ehret. 9. t. 36.)—Thorns none. Leaves doubly pinnate, in ſix principal diviſions, and very numerous partial ones. Legumes long, lanceolate, flat.—Native of South America. Cultivated in our ſtoves, from the time of king William. The delicate glaucous *foliage* is very handſome. *Flowers* white, decandrous, in globular ſtalked axillary heads, either ſolitary or in pairs. *Legumes* a ſpan long, acute at each end.

M. *farneſiana*. Sweet-ſcented Yellow Mimoſa. Linn. Sp. Pl. 1506. Acacia indica farneſiana; Ald. Hort. Farneſ. 3. t. 2, 4.)—Spines in the place of ſtipulas, awl-ſhaped, diſtinct. Leaves doubly pinnate, in eight principal diviſions, and numerous partial ones. Legumes tumid, curved.—Native of Hiſpaniola. Firſt raiſed at Rome in 1611. It is ſcarcely now ſeen in our ſtoves. The *leaflets* are ſmall and ſmooth. *Flowers* deep yellow, in ſtalked heads, (not ſeſſile as Linnæus ſays,) valuable for their exquiſite fragrance, which excels almoſt every thing of the kind.

M. *nilotica*. Egyptian Mimoſa. Linn. Sp. Pl. 1506. Woodv. Med. Bot. t. 67.—Spines in the place of ſtipulas, needle-ſhaped, divaricated. Leaves doubly pinnate, with glands on their common ſtalk. Heads of flowers on downy ſtalks, ſeveral together.—Native of the Levant. Linnæus miſtook this for the true Gum Arabic plant, whoſe legumes were paſted along with his ſpecimens, and which is another ſpecies of *Mimoſa*, not well known to us. At leaſt this was the opinion of the late learned Mr. Dryander. Several ſpecies, akin to theſe, produce different ſorts of Gum Arabic, or Gum Senegal.

M. *pubeſcens*. Hairy-ſtemmed Mimoſa. Vent. Hort. Malm. t. 21. Curt. Mag. t. 1263.—Thorns none. Branches hairy. Leaves doubly pinnate, without glands. Leaflets numerous, crowded. Heads of flowers numerous, in long axillary cluſters.—Native of New South Wales. A beautiful and fragrant acquiſition to the conſervatory, remarkable for its rich downy *foliage*, and copious golden *flowers*.

Of the New Holland ſpecies with denudated footſtalks, aſſuming the aſpect of ſimple leaves, and which make a fifth moſt diſtinct *ſection*, examples are

M. *myrtifolia*. Curt. Mag. t. 302.

M. *ſtricta*. Ibid. t. 1121. Andr. Repoſ. t. 53.

Of thoſe which bear ſpines only.

M. *verticillata*. Curt. Mag. t. 110.

Mimosa, in *Gardening*, comprehends plants of the ſhrubby and under ſhrubby kinds, of which the ſpecies cultivated are, the double-flowered annual ſenſitive mimoſa (M. plena); the lively mimoſa (M. viva); the quadrivalve-podded humble mimoſa (M. quadrivalvis); the ſenſitive plant (M. ſenſitiva); the humble plant (M. pudica); the long-twigged mimoſa (M. virgata); the ſpotted-ſtalked mimoſa (M. punctata); the ſlothful mimoſa (M. pernambucana); the hairy-podded mimoſa (M. aſperata); the ſlow American ſenſitive plant (M. pigra); the glaucous mimoſa (M. glauca); the horned mimoſa, or cuckold tree (M. cornigera); the horrid mimoſa (M. horrida); the Farneſian mimoſa, or ſponge tree (M. farneſiana); the Egyptian mimoſa (M. nilotica); the whorled-leaved mimoſa (M. verticillata); the rough tree mimoſa (M. arborea); the Lebbeck, or Egyptian mimoſa (M. lebbeck); the broad-podded mimoſa (M. latiſiliqua); the tamarind-leaved American mimoſa (M. tamarindifolia); the ſpiral mimoſa (M. circinalis); the ſmall-leaved mimoſa (M. pennata); the broad-leaved mimoſa (M. latifolia); the purple mimoſa, or ſoldier wood (M. purpurea); the netted mimoſa (M. reticulata); the climbing mimoſa (M. ſcandens); the myrtle-leaved mimoſa (M. myrtifolia); and the ſweet-ſcented mimoſa (M. ſuaveolens.)

Method of Culture.—Theſe plants are all capable of being increaſed by ſeed, and ſome of the ſenſitive kinds by layers and cuttings, but the firſt is by much the beſt method. The ſeed procured from the nurſeries or ſeed-ſhops ſhould be ſown in pots of light rich mould early in the ſpring, covering it with fine earth, a quarter of an inch deep, and plunging the pots in the hot-bed; if in a common hot-bed under frames and glaſſes, managing them nearly in the manner of tender annuals, and when in a bark-bed in the ſtove little trouble is required. But moderate ſprinklings of water ſhould be given; and when the plants are two or three inches high, they ſhould be planted out ſingly into ſmall pots, preſerving the earth to their roots, replunging them in the hot-bed, &c. giving water and occaſional ſhade till they are well rooted, repeating the waterings frequently. The plants ſhould afterwards be continued either in the hot-bed under glaſſes, or plunged in the bark-bed of the ſtove, to facilitate their growth, preſerve them in vigour, and increaſe the ſenſibility of the ſenſitive kinds; admitting freſh air pretty freely.

It is proper that the perennial ſorts, both ſhrubby and herbaceous, ſhould be kept in the ſtove all winter, and principally the year round. And they muſt be frequently removed into larger pots to prevent the roots from getting through the pots, which they are apt to do, and by that means are often deſtroyed.

The Acacia kinds are the moſt tender, requiring the ſtove almoſt conſtantly, except a little in the heat of ſummer, when they muſt be placed in a warm ſituation. They ſhould always have a bark hot-bed, and be put in very ſmall pots filled with ſandy mould, the heat of the ſtove being kept up to above temperate: as the leaves of ſome of them are ſhed, they have the appearance of being dried when that is not the caſe.

Where there is not the convenience of a ſtove, thoſe who are curious to have the plants, may have them in ſummer, by the aid of a common dung, or tan-bark hot-bed, under frames and glaſſes, though not in winter; by raiſing ſome of the annual, or any of the other kinds, by ſeed in ſpring, in a hot-bed under a frame, &c. keeping up the heat of the bed until the middle of June, and continuing the plants always under the frame, raiſing one end of the lights a little, occaſionally, in warm days, to admit freſh air; and as they riſe in height, raiſe the frame at bottom, to allow them full room to grow. About Midſummer, or ſoon after, ſome of the low ſpreading kinds may likewiſe be turned out with balls, or plunged in their pots into a warm ſunny border, and covered with large hand-glaſſes, which may be lifted off occaſionally juſt to view the plants. By theſe methods, the plants may be preſerved through the ſummer in their ſenſitive quality, though not in equal perfection to thoſe in ſtoves; nor can they be preſerved alive in winter out of the ſtove.

The ſhrubby kinds that afford ſpreading branches may be laid any time in ſummer, in pots plunged in the bark-bed, where they then take root, and are ready to pot off ſingly in the autumnal ſeaſon.

The ſenſitive and humble ſorts often branch out profuſely, ſo as to furniſh plenty of young ſhoots for cuttings, which ſhould be planted in pots in the ſummer ſeaſon, plunging them in the bark-bed, whereby they often readily take root, and form good plants.

Theſe modes ſhould, however, only be practiſed when ſeed cannot be procured.

The general culture of all the ſpecies is afterwards to keep them always in pots placed in the ſtove, being plunged occaſionally in the bark-bed, eſpecially the ſpreading ſenſitive kinds, frequent waterings being given in ſummer and winter, but conſiderably the moſt in the ſummer ſeaſon; ſhifting them into larger pots as they increaſe in growth. And although moſt of the ſorts will live in the open air in the heat of ſummer, it is the beſt practice to expoſe them but ſparingly.

The fourth and fifth ſorts are held in high eſtimation on account of the ſingular ſenſibility lodged in their leaves; which, in conſequence of being touched or ſhaken, either by the hand, a ſtick, or the leaſt wind blowing upon them, the wings of the leaves ſuddenly cloſe, and the footſtalks fall down. The period of time which the leaves, &c. require to recover themſelves, after falling from any irritation, are according to the vigour of the plant, the hour of the day, the ſereneneſs of the atmoſphere, and the temperature of the heat of the ſtove, &c. being often from ten or fifteen minutes to an hour or more.

The plants alſo, every evening, naturally contract themſelves, and expand again in the morning. They are all ornamental and curious in their nature.

MIMULUS, in *Botany*, a name borrowed from Pliny, whoſe plant however could not be the ſame with Linnæus's American genus. The word is derived from *Mimus*, a maſked actor among the Romans, and alludes to the form of the corolla.—Linn Gen. 323. Schreb. 423. Willd. Sp. Pl. v. 3. 360. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 2. 361. Juſſ. 122. Brown Prodr. Nov. Holl. v. 1. 439. Lamarck Illuſtr. t. 523. Gærtn. t. 53. (Cynorrhynchium; Mitch. 3)—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Scrophulariæ*, Juſſ. and Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, oblong, priſmatic, five-ſided, five-folded, five-toothed, nearly equal, permanent. *Cor.* of one petal, ringent; tube the length of the calyx; limb two-lipped; the upper erect, cloven, rounded, reflexed at the ſides; the lower broader, with three rounded ſegments, the middle one ſmalleſt; palate convex, cloven, protruded from the baſe of the lower lip. *Stam.* Filaments four, thread-ſhaped, within the throat, two of them ſhorter; anthers cloven, kidney-ſhaped. *Piſt.* Germen ſuperior, conical; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma ovate, cloven, compreſſed. *Peric.* Capſule oval, of two cells, opening tranſverſely at the top; partition membranous, contrary to the valves. *Seeds* numerous, ſmall. *Recept.* oblong, affixed to the partition on each ſide.

Eſſ. Ch. Calyx five-toothed, priſmatic. Corolla ringent; the upper lip folded back at its ſides. Capſule with two cells and many ſeeds.

1. M. *ringens*. Oblong-leaved Monkey-flower. Linn. Sp. Pl. 884. Curt. Mag. t. 283.—Stem erect. Leaves oblong, linear, ſeſſile.—A native of Virginia and Canada, growing in wet places, and flowering in the ſummer.—*Root* perennial. *Stem* annual, about two feet high, ſquare, jointed, occaſionally branched at the baſe. *Leaves* two at each joint of the ſtem, oppoſite, ſerrated, acutely pointed. *Flowers* ſolitary, on long, oppoſite ſtalks which ſpring from the joints of the upper part of the ſtem; they are of a delicate violet colour and without ſmell. *Seeds* pale ſtraw-coloured, and tipped at each end, according to Gærtner, with a ſmall, prominent, reddiſh point.—This plant was referred to ſeveral different genera by old authors. Linnæus firſt called it *Mimulus*, aſſigning the following explanation of the term in his *Philoſophia Botanica*, "MIMULUS, *mimus perſonatus*."

2. M. *glutinoſus*. Orange Monkey-flower. Willd. n. 2. (M. aurantiacus; Curt. Mag. t. 354.)—Stem erect, ſhrubby, round. Leaves ſeſſile, ovato-lanceolate, rather obtuſe.—Gathered by Mr. Archibald Menzies in California. It flowers in our greenhouſes, to which it is extremely ornamental, during the greateſt part of the ſummer.—*Stem* nearly three feet high, much branched, jointed, viſcid. *Leaves* oppoſite, ſeſſile, ſerrated, much blunter than in the laſt ſpecies, revolute, ſmooth above, veiny. *Flowers* very ſhowy, twice as large as thoſe of M. *ringens*, of a beautiful orange colour, on ſolitary ſtalks, two at each joint of the ſtem. The whole plant is glutinous.

3. M. *alatus*. Oval-leaved Monkey-flower. Willd. n. 3. Vahl. Symb p. 2. 72.—Stem erect, ſquare, winged. Leaves oval, on ſtalks. A native of North America. It flowers at Kew in July and Auguſt.—We know of no figure of this plant, which very much reſembles the firſt ſpecies in appearance.—*Stem* ſimple, ſmooth, ſlightly branched at the top, winged with a membrane at each angle. *Leaves* oval, veined, unequally ſerrated. *Flowers* on axillary, ſolitary, oppoſite, ſquare ſtalks, ſwelling upwards. *Corolla* but little exceeding the calyx in length.

4. M. *luteus*. Yellow Monkey-flower. Linn. Sp. Pl. 884. Curt. Mag. t. 1501. (Gratiola foliis ſubrotundi nervoſis, floribus luteis; Feuill. Peruv. v. 2. 745. t. 54.)—Stem creeping. Leaves roundiſh or ovate, on ſhort ſtalks embracing the ſtem.—Found originally at Chili by Feuillée; and lately in California, and at Nootka, by Mr. Archibald Menzies. Dr. Langſdorff alſo, one of the Ruſſian embaſſy to China, found it at one of the Fox Iſlands.—*Stems* creeping in the lower part, angular, thick at the baſe, the flowering branches aſcending. *Leaves* oppoſite, at the joints of the ſtem. *Flowers* on ſolitary ſtalks, two at each joint, of a bright yellow colour, their throat ſpotted with red. The whole plant is maſſy and magnificent, being thickly ſet with foliage and flowers.

5. M. *gracilis*. Slender Monkey-flower. Brown Prodr. Nov. Holl. v. 1. 439.—Very ſmooth, erect. Leaves oblong, ſomewhat linear, obtuſe, nearly entire. Flower-ſtalks elongated.—Found by Mr. R. Brown near Port Jackſon, as well as in the tropical part of New Holland.

6. M. *repens*. Creeping Monkey-flower. Brown Prodr. Nov. Holl. v. 1. 439.—Smooth, creeping. Branches aſcending. Leaves oval, obtuſe. Flower-ſtalks ſhorter than

the calyx.—Native of New South Wales and Van Diemen's Land. *Brown*.

Mimulus, in *Gardening*, comprehends plants of the herbaceous flowery ornamental kind, of which the ſpecies cultivated are, the oblong-leaved monkey-flower (M. ringens); the wing-ſtalked mimulus (M. alatus); and the orange monkey-flower (M. aurantiacus).

Method of Culture.—This is a plant which is very hardy in reſpect to cold, but ſhould have a loamy ſoft ſoil, rather moiſt than dry, and not too much expoſed to the ſun.

In the firſt ſort the plants may be increaſed by parting the roots, not too ſmall, and planting them in autumn, or the early ſpring, but the former is the better ſeaſon. It may alſo be raiſed by ſeeds, which ſhould be ſown in autumn, ſoon after they become perfectly ripe, on a border expoſed to the morning ſun. And the ſecond ſort may likewiſe be increaſed in the ſame manner.

With reſpect to the third kind, it is beſt propagated by planting cuttings of the young ſhoots or branches in the early ſpring in pots of freſh mould, plunging them in a mild hot-bed, being afterwards managed as the other ſorts.

The firſt and the ſecond ſort may be introduced in the borders and clumps, and the third among other potted plants of the leſs tender kinds.

MIMUSOPS, in *Botany*, ſo called by Linnæus, who ſeems to have taken the idea of the name from Hermann's *Muſeum Zeylanicum*, p. 23. This tree is there called *Munamal*, *Muna* being ſaid to ſignify the human face in the Cingaleſe language, becauſe the flowers have ſomewhat of the reſemblance of a human face, of which however we ſeek in vain for any trace in the plates of authors. As this author ſays the highly fragrant flowers are worn by young women to adorn the neck and head, may not the above appellation allude to their being uſed as an ornament for the face?—Linn. Gen. 190. Schreb. 252. Willd. Sp. Pl. v. 2. 325. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 349. Brown Prodr. Nov. Holl. v. 1. 530. Juſſ. 152. Lamarck Illuſtr. t. 300. Gærtn. t. 42. (Imbricaria; Juſſ. 152. Binectaria; Forſk.)—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Holoraceæ*, Linn. *Sapotæ*, Juſſ. and Brown.

Gen. Ch. *Cal.* Perianth inferior, of eight deep ſegments in two rows, ovate, acute, coriaceous, permanent. *Cor.* of one petal, wheel-ſhaped, its ſegments in two rows, numerous, oblong, entire or divided, the length of the calyx. *Stam.* Filaments eight, awl-ſhaped, hairy, very ſhort; anthers oblong, erect, as long as the calyx. *Piſt.* Germen ſuperior, roundiſh, rough; ſtyle cylindrical, ſmooth, the length of the corolla; ſtigma ſimple, very blunt. *Peric.* Berry of one cell, oval, pointed. *Seeds* one or two, oval, hard.

Obſ. Mr. Brown deſcribes an equal number of abortive filaments, alternate with the ſtamens, and the calyx as in ſome inſtances ſix-cleft. The germen has originally ſix or eight cells. Dr. Roxburgh alſo found the abortive filaments.

Eſſ. Ch. Calyx of eight ſegments in two rows. Corolla of one petal, in numerous ſegments, in a double row. Berry with one or two ſeeds.

1. M. *Elengi*. Linn. Sp. Pl. 497. Fl. Zeyl. 57. Roxb. Coromandel. v. 1. t. 14. (Elengi; Rheed. Hort. Mal. v. 1. 33. t. 20.)—Leaves alternate, remote, ovate, pointed.—A native of ſandy places in the Eaſt Indies, and much cultivated for its highly fragrant bloſſoms, which expand chiefly in the hot ſeaſon. Theſe flowers are ſacred to the Hindoo gods. The *root* of this tree is thick and fixed deeply in the earth. *Trunk* branched, many feet in circumference, covered with a brown and ſmoothiſh *bark*. *Leaves* alternate, on ſhort ſtalks, ſomewhat drooping, waved, very firm, of a deep ſhining green, three or four inches long and about half as broad. *Flowers* ſtalked, two or three at the baſe of the leaf-ſtalks, ſlightly drooping, white or yellowiſh, very fragrant. *Seed* compreſſed, ſhining, cheſnut-coloured. The wood of this plant is ſaid by Rheede to be remarkaby durable in water, but on the contrary very ſubject to become rotten if expoſed to the air.

2. M. *parvifolia*. Brown Prodr. Nov. Holl. v. 1. 531.—A native of the tropical part of New Holland.—Leaves oval, pointed, ſmooth on both ſides. Flower-ſtalks one to three, downy, longer than the downy leaf-ſtalks.—All that we know of this ſpecies is from its diſcoverer Mr. Brown, who ſays that it is very nearly allied to *M. Elengi*, but that the flower-ſtalks of the latter are more numerous, and ſhorter than the leaf-ſtalks, which are ſmoothiſh.

3. M. *Kauki*. Linn. Sp. Pl. 497. Fl. Zeyl. 57. Brown Prodr. Nov. Holl. v. 1. 531. Willd. n. 3. (Metroſideros macaſſarenſis; Rumph. Amboin. v. 3. t. 8.)—Leaves on ſhortiſh ſtalks, crowded together at the ends of the branches, ovate, obtuſe, ſilvery beneath.—A native of the Eaſt Indies and Arabia, as well as of the tropical parts of New Holland.—The *branches* of this tree are thicker than thoſe of *M. Elengi*, having ſmall ſcars ſcattered all over them. *Leaves* crowded together at the ends of the branches. *Flowers* very ſimilar in ſtructure, but larger than thoſe of the firſt ſpecies.—The *berries* are eaten in their crude ſtate by the natives of Macaſſar, and are ſaid to have a pleaſant flavour. The foliage is extremely ornamental, and the wood uſeful for the handles of tools and ſuch purpoſes.—Mr. Brown hazards a doubt whether the *Manil-kara*, Rheed. Hort. Mal. v. 4. t. 25, can poſſibly be cited as a ſynonym of *M. Kauki* on account of its ſix-cleft flowers, though they agree preciſely as to foliage.

4. M. *hexandra*. Willd. n. 2. Roxb. Coromandel. v. 1. t. 15.—Leaves alternate, obovate, emarginate. Flowers hexandrous.—Native of the Eaſt Indies, in the mountainous, uncultivated parts of the Circars. It flowers towards the beginning of the wet ſeaſon.—The *trunk* of this large tree is erect, and much branched, with an aſh-coloured *bark*. *Leaves* alternate, on ſtalks, wedge-ſhaped, deeply emarginate, very hard, of a deep ſhining green, three to five inches long, and about a third as broad. *Flowers* ſeveral together, axillary, ſtalked, variegated with white, lilac and yellow. *Berry* the ſize and ſhape of an olive.

5. M. *Imbricaria*. Willd. n. 5. (Imbricaria; Juſſ. et Lamarck Illuſtr. t. 300.)—Leaves crowded together at the ends of the branches, ovate, obtuſe, retuſe. Berry with many ſeeds.—A native of the Iſle of Bourbon.—We are inclined to believe that this is very near *M. Kauki*, or perhaps a variety of that ſpecies, although we have adopted it on the authority of Willdenow.

MINA, μνα. The Attic mina was either nummary or ponderal; in the firſt acceptation it was the ſixtieth part of a talent, and contained a hundred drachmæ, or denarii, amounting in our coin (if we allow nine-pence for the value of the drachma), to three pounds fifteen ſhillings. The mina of Athens contained, at firſt, ſeventy-three drachmæ; but Solon gave it a hundred. Mina, conſidered as a weight, was alſo divided into a hundred drachmæ. It was regarded as a pound weight of the country to which it belonged; and the Attic pound is conſidered as the ſame with the Roman, and very nearly one pound troy. See Drachm.

Mina was alſo a medicinal weight, conſiſting of twelve Roman ounces; but as in coinage eight drachms were allowed to the ounce, the mina, or pound, contained ninety-ſix, i. e.

the pound in weight conſiſted in fact of ninety-ſix drachmæ, while the pound in tale had a hundred. Dr. Arbuthnot aſſerts that the common Attic pound contained ſixteen ounces, and was equal to our pound avoirdupoiſe; but this aſſertion ſeems to be contradicted by ancient teſtimony. See Coin and Weight.

Mina, or *Mine*, in *Commerce*, a corn meaſure of Genoa, equal to 8 quarte, or 96 gombette: 100 Engliſh quarters = 233 mina, and a mondino of ſalt = 8 mine. See Measure.

Mina, in *Geography*, a town of Algiers; 50 miles S.E. of Oran.—Alſo, a river of Algiers, which runs into the Sheliff, 12 miles E. of Muſtygannim.

Mina, or *Minau*, a ſea-port town of Perſia, in the province of Kerman, at the entrance of the gulf of Perſia, at the mouth of the river Ibrahim, the air of which is inſalubrious. It is ſurrounded with walls, and defended by towers, and has medicinal ſprings and baths; 42 miles W. of Ormus. N. lat. 27 8′. E. long. 56°40′.

MINADA, a town of Japan, in the iſland of Niphon; 20 miles N. of Xenday.

MINADAH, a river of Bengal, which runs into the Ganges at its mouth, N. lat. 22 45′. E. long. 91° 3′.

MINAES Geraes, a juriſdiction of South America, in Brazil, ſituated between the 15th and 22d degrees of S. lat., and the 25th and 33d degrees of W. long. The number of inhabitants is computed to be about 35,180 whites, 26,075 Indians, and 108,400 ſlaves. The fifth part of the gold found in this juriſdiction, and formerly paid to the king of Portugal, is eſtimated yearly to be about five millions of livres.

MINAGGNHINIM, a pulſatile inſtrument of muſic among the Hebrews, which was a ſquare table of wood, fitted with a handle; over this table was ſtretched an iron chain, or hempen cord, paſſing through balls of wood or braſs, which ſtruck againſt the table when the inſtrument was ſhook, and occaſioned a clear ſound, which might be heard at a great diſtance.

MINARES, in *Geography*, a river of Spain, which waters the province of Aragon.

MINAS, *Baſin of*, or *Les Mines* bay, ſometimes called "Le Grand Praye," a gulf on the S.E. ſide of the bay of Fundy, into which its waters paſs by a narrow ſtrait; about 30 leagues from the entrance of Annapolis, and ten from the bottom of Bedford bay; 12 leagues in length and three in breadth.

Minas, or *De las Minas* hill, the middlemoſt of the three hills, ſerving as inland marks for Bonaventura bay and river, on the coaſt of Peru, in South America; S. of Panama bay. N. lat. 3° 20′. W. long. 75° 18′.

Minas *des Rixas*, a town of Brazil, in the government of Goya; 85 miles N. of Villaboa.

MINASCOU Bay, a bay in the river St. Mary, between lake Superior and lake Huron; containing ſeveral iſlands. N. lat. 46°. W. long. 84°.

MINATO, *Count* Nicola, of Bergamo, in *Biography*, a dramatic poet of great fertility. The reputation which he had acquired in writing for the theatres of Venice, occaſioned his being engaged at Vienna as imperial poet laureate. He furniſhed the emperor's lyric theatre with a great number of ſerious operas, and ſtill more ſmall occaſional dramas and poems for muſic. On every birth-day and occaſion of joy and feſtivity, an analogous piece or two, beſides the fixed operas for winter and autumn. Theſe operas paſſed into Italy, where they were new ſet and performed with ſucceſs. This poet poſſeſſed a perfect knowledge of hiſtory, his fable was generally well planned, and his characters well ſuſtained. He had genius and invention, and gave good opportunities for decoration and machinery. He flouriſhed from about 1650 to 1683.

MINATTA, *Iſle la*, in *Geography*, lies on the N. coaſt of lake Superior, in Upper Canada, near to, and E. of, the grand Portage, extending to Thunder bay.

MINAYA, a ſmall town of Spain, in the province of La Mancha: it was formerly conſiderable, but is now almoſt reduced to the ſize of a village. The entrance to the pariſh church, which is of a moderate ſize, and has three chancels, is through a portico ſupported by two pillars of the Corinthian order, of white marble; 2½ leagues from La Roda.

MINAZZO, Cape, a cape of Spain, on the W. coaſt of Galicia. N. lat. 42 51′. W. long. 91 20′.

MINCA, a name given by the ancients to a very coarſe and bad kind of myrrh.

MINCH, in *Geography*, a channel of the North ſea, between the Hebrides and the main land of Scotland.

MINCHA, in the *Jewiſh Cuſtoms*, offerings of meal, cakes, or biſcuits, made in the temple of the Lord. The Seventy have ſometimes preſerved this word in their tranſlation; but inſtead of *mincha* they read *manaa*, which doubtleſs was the received pronunciation in their time. We find *manaa* in the ſame ſenſe in Baruch, i. 10. Levit. ii. 3, &c. See the Greek of Jerem. xvii. 26. Dan. ii. 46. 2 Kings, viii. 5. 9. xvii. 7. xx. 12. 2 Chron. vii. 7. Nehem. xiii. 5, 9, &c. Calmet. Dict. Bibl.

MINCHIN-HAMPTON, in *Geography*, a market-town in the hundred of Longtree, and county of Glouceſter, England, is ſituated on the declivity of a gentle eminence, and conſiſts of four irregular ſtreets, interſecting each other at right angles. The chief trade of this town is a manufacture of cloths, which is carried on to a conſiderable extent, the many brooks and rivulets in the vicinity being extremely favourable for the purpoſe. The church, which is built in the form of a croſs, was founded by the nuns of Caen, in the reign of Henry III. Numerous monuments and ſepulchral inſcriptions diverſify the interior of this fabric; and in the church-yard appears a braſs plate, in honour of Mr. James Bradley, the celebrated aſtronomer, who was a native of Glouceſterſhire, and died in 1762. Here are three market-houſes, two of which were erected by P. Sheppard, eſq. in the year 1700, with the view of eſtabliſhing a wool-market, but the deſign failed of ſucceſs. Here is likewiſe a reſpectable free-ſchool. Leland ſays "there were nunnes" in this town; and Camden and Speed hence affirm it contained a nunnery. Biſhop Tanner, however, conſidered this ſtatement as erroneous, and ſays, "this place was called Minchin-Hampton, only becauſe the manor was given to the nuns, or minchins of the Holy Trinity, at Caen, in Normandy, by William the Conqueror." The abbeſs of that monaſtery purchaſed for it the privilege of a weekly market, which continues to be held on Tueſday. According to the parliamentary returns of 1801, this town contained a population of 3419 perſons, of which number 1549 were males, and 1870 females. To the weſt of this town lies an extenſive common, called Amberley, remarkable for being the ſcite of a very ſingular encampment. The great vallum of this work is irregular, and has ſmaller trenches branching from it. It extends nearly three miles in length, to a ſpot called Woeful-Dane-Bottom, probably in memory of ſome ſignal defeat ſuſtained here by that people, whom Mr. Foſbrooke conjectures to have occupied this camp as a ſummer reſidence, during their abode at Cirenceſter in the year 879. At Rodmarton, a ſmall village near the foſs-way, which paſſes through this diſtrict, a teſſellated pavement and other Roman remains were diſcovered about the middle of the ſeventeenth century. Horſley, a diſuſed market-town, two miles from Minchin-Hampton, contains ſome fragments of a priory, formerly dependent on the monaſtery of St. Martin's, at Trours, in Normandy. In a field adjoining to Gatcombe park, the ſeat of Philip Sheppard, eſq., is a large oval tumulus, now planted with firs, which had erect ſtones at each end of it. On its ſummit is placed a huge fragment of rock, evidently a ſepulchral monument, which has been long diſtinguiſhed by the appellation of Tingle-ſtone. At ſome diſtance from this tumulus appear two large ſtones, ſet upright in the ground; one has its top broken off, but the other is perfect, and riſes ten feet above the ſurface. Tradition aſſigns one or both of theſe memorials to Long, a Daniſh chieftain, whence comes the name Long's ſtone, or pillar. Bigland's Hiſtory of Glouceſterſhire, vol. ii. folio. Beauties of England and Wales, vol. v.

MINCHIVAVIDA, a ſmall iſland in the South Pacific ocean, near the coaſt of Chili. S. lat. 44° 40′.

MINCIO, a river of Italy, which riſes in lake Garda, forms the lake which ſurrounds the city of Mantua, and afterwards runs into the Po near Sachetta.—Alſo, a department or diviſion of the new kingdom of Italy, conſiſting of what was before the revolution the duchy of Mantua, containing 123,649 inhabitants, who elect nine deputies. The capital is Mantua.

MIND, Mens, denotes a thinking or underſtanding being. See Spirit.

Philoſophers generally allow three kinds of minds, *viz.* *God*, *angels*, and the human *ſoul*. For a thinking being muſt either be finite or infinite: if infinite, it is *God;* and if finite, it is either joined with a human body, or not; if the latter, it is an *angel;* if the former, a *ſoul*.

The *human mind* is properly defined a thinking rational ſubſtance; by *thinking* it is diſtinguiſhed from body; and by *reaſoning* from God and angels, who are ſuppoſed to ſee and know things intuitively, without the help of deduction and diſcourſe.

Mind, *Affection of the.* See Affection.

MINDANAO, or Magindanao, in *Geography*, one of the Philippine iſlands, and inferior only to Luçon in extent: it is of a triangular form, and in circumference about 900 miles, but ſo interſected with promontories and bays, that a perſon might croſs it in a day and a half. It was diſcovered by the Spaniards who accompanied Magellan. It lies S.E. of Manila, at the diſtance of 600 miles. Although mountainous, the vales conſiſt of a rich black mould, watered with the fineſt rivulets; it furniſhes ample ſupplies of rice, and alſo palm-trees, the pith of which affords ſago, and this, when reduced to meal, is uſed for making bread and biſcuit throughout all the iſland. It has a variety of fruits in common with the other iſlands of this archipelago; but the cinnamon is peculiar to itſelf, and the trees that furniſh it grow on the mountains without culture, and without being regarded as the property of any individual. By digging deep in the ground, and ſearching the rivers, the inhabitants find good gold. They alſo collect plenty of ſulphur from the burning mountains. The ſcenery of Mindanao is beautiful, and it is fertile in a variety of productions. The chief Spaniſh ſettlement is at Sambuang, in the S.W. The "Lano" is a large inland lake, about 60 miles in circumference: horſes and buffaloes have multiplied here to a ſurpriſing degree. In the ſouth, there is a volcano of conſtant eruption, which ſerves as a ſea-mark. In the ſtrait between this iſland and that of Xolo, very large pearls are found. N. lat. 5° 40′ to 9° 55′. E. long. 122° to 126° 27′.

MINDAY, a town of Pegu; 8 miles S. of Prome.

MINDELHEIM, a town of Bavaria, and capital of a lordſhip, about 8 miles ſquare; 22 miles S.W. of Augſburg. N. lat. 48° 2′. E. long. 10° 27′.

MINDEN, a principality of Germany, in the kingdom of Weſtphalia, about 96 miles in circumference, conſiſting of good corn land, ſo that agriculture is carried on with great diligence and with ſuch ſucceſs, that from hence neighbouring countries are ſupplied with flax and corn, and particularly with wheat and barley. This principality has alſo wood, turf, coal, and a productive ſalt-work, and plenty of fiſh. The Roman Catholics only enjoy in the town of Minden, and the Calviniſts every quarter of a year, at the citadel of Peterſhagen, their public worſhip; all other churches in the country belong to the Lutherans. This principality is now annexed to the kingdom of Weſtphalia.

Minden, a city of Weſtphalia, and capital of the forementioned principality, and formerly one of the Hanſe towns, is ſituated on the Weſer. It is about two miles in compaſs, and ſurrounded with walls and ramparts. Its ſituation for commerce is advantageous, and ſome of the inhabitants carry on a conſiderable brewery; others are employed in agriculture and breeding of cattle. The cathedral is a conſiderable building, and the chapter conſiſts of 18 perſons, partly Roman Catholic and partly Lutheran. This town was an important place, even in the reign of Charlemagne; and it has ſince been contended for, and occaſionally poſſeſſed by the Imperialiſts, Swedes, and French; 30 miles E. of Oſnabruck. N. lat. 52° 18′. E. long. 8° 56′.

Minden, a poſt-town of America, in Montgomery county, New York; 472 miles from Waſhington.

MINDEPILLY, a town of Hindooſtan, in Myſore; 8 miles W. of Veniatighery.

MINDERER, Raymond, in *Biography*, a phyſician of Augſburg, who was diſtinguiſhed in the early part of the ſeventeenth century as a partizan of the chemical ſect. He was alſo eminent as a military phyſician, in which capacity he ſerved ſeveral campaigns, with univerſal eſteem throughout all ranks in the army; whence he alſo roſe to high reputation and practice in the courts of Vienna and Munich, and was conſulted by the principal nobility. He publiſhed the reſult of his experience relative to the diſeaſes of armies, in the German language; and this work was tranſlated into Latin, with the title of "Medicina Militaris, ſeu, Liber Caſtrenſis, euporiſta et facilè parabilia Medicamenta continens," Vienna, 1620, 8vo. This work was ſeveral times reprinted, and was alſo tranſlated into Engliſh in 1674. He was likewiſe author of the following works. "De Peſtilentiâ Liber unus," ibid. 1608. "Aloëdarium Marocoſtinum," ibid. 1616, and afterwards republiſhed. "De Calcantho, ſeu Vitriolo, ejuſque qualitate, virtute, et viribus," 1617. "Threnodia Medica, ſeu, Planctus Medicinæ lugentis," 1619. His chemical reputation is evinced by the connection of his name in the ſhops, even at this day, with the neutral ſalt, the acetate of ammonia, which is called Mindererus' ſpirit. Eloy. Dict. Hiſt.

MINDERERI Spiritus. See Vinegar.

MINDIGAUT, in *Geography*, a town of Hindooſtan, in Dooab; 5 miles S.E. of Canoge.

MINDIUM, in *Botany*, Juſſ. 164. Medium Dioſcoridis, Mindium Rhazis; Rauw. It. 284. See Medium and Michauxia.

MINDO, in *Geography*, a town of South America, in the audience of Quito; 20 miles N.W. of Quito.

MINDORO, one of the Philippine iſlands, about 27 miles S. from the iſland of Luçon, triangular in figure, and about 150 miles in circumference. It is high and mountainous, abounding in cocoa and other fruit-trees, with ſome rice. A part of the ſea adjoining this iſland is called the "ſea of Mindoro." N. lat. 12° 21′ to 13° 30′. E. long. 120° 24′ to 121° 24′.

MINDOWLY, a town of Hindooſtan, in the circar of Singrowla; 10 miles N. of Soipour.

MINDYGUR, a town of Hindooſtan, in Oude; 5 miles S. Canoge.

MINE, a town of Abyſſinia; 170 miles S.W. of Gondar. N. lat. 10° 4′. E. long. 35° 30′.

Mine. This word is applied generally to all works carried on under ground, but ſeems principally to belong to ſuch as have for their object the diſcovery and production of the metallic ores.

The conſtruction of the works in various mines differs according to circumſtances, ſuch as the form of the hills in which they are ſituated, or the poſition of the ores, whether found in veins or beds. Some mines are formed by a level or drift entering the foot of a mountain, and extending to the depoſits of metal within it, which may be taken away and carried out through this opening; and in this caſe *ſhafts* are only required for the purpoſes of ventilation.

This ſeems to be the ſimpleſt ſtate of mining, and is, as well as ſuch mines as have been formed by following ore from the ſurface to ſuch depths as water would permit, to be ranked among the earlier efforts of this kind.

The more extended operations of mining are to be found where regular metallic veins, ſituated in primitive rocks, are worked to great depths below the level of the ſea, where perpendicular *ſhafts*, drained of the conſtantly accumulating water by engines, form the means of communication from the ſurface to *levels* driven upon the *lode* or vein, at various and ſucceſſive depths, ſo as to open all parts of it for the diſcovery of its contents.

A mine thus conſtructed, of any conſiderable extent, is one of the moſt extraordinary inſtances of human enterprize, patience, and ingenuity; eſpecially if it be conſidered that its formation depends upon the application of two of the moſt wonderful diſcoveries on record, the expanſive forces of gunpowder and ſteam.

Mines in Cornwall and Devon are generally worked by a company of proprietors, called adventurers, who agree with the owner of the land, or lord of the ſoil, as he is uſually denominated, to work the mine for a certain term of years, paying him, by way of rent, a proportion of the ores raiſed, or an equivalent in money. The grant thus made to the adventurers is called a *ſet*, and the lord's rent, if paid in ore, is called the *diſh* (probably from the ancient practice of meaſuring it by a veſſel of that ſort), and when ſettled for in money, has the term *dues* applied to it.

The adventurers divide their undertaking into ſhares of different magnitude, but uſually forming in the whole ſome even and eaſily diviſible number. The ſmalleſt ſhare uſually held by one adventurer is one ſixty-fourth part, though in ſome large mines this ſhare is divided, and a perſon may then have only a one hundred and twenty-eighth part of the whole, while others may hold eighths, others ſixteenths or thirty-ſeconds, and ſome larger proportions, but the whole added together make up ſixty-four ſhares. Any part of the concern held by one perſon is generally called a *dole*, and diſtinguiſhed as to its relation to the whole by adjoining to this word the denomination of its value, as an eighth dole, a ſixteenth dole, &c.

Mines in Cornwall and Devon are uſually named as ſoon as they are undertaken, and this practice ſeems to have been of conſiderable antiquity, as the word *wheal*, or *huel*, uſually even now prefixed to theſe appellations, is derived from the ancient Cornish language, and ſignifies a work or mine. The other parts of the names of mines often relate to the ſituation, or have been given in compliment to ſome perſon connected with them, or adopted according to the fancy of the adventurers. Thus Wheal Roſe is probably derived from the Corniſh word *ros*, a valley, and means therefore the mine in the valley; Wheal Godolphin has the name of a family; and among the arbitrary appellations which are the moſt numerous, may be inſtanced Wheal Unity, Wheal Virgin, Wheal Jewel, &c.

The *bounds*, or limits of the ſet of a mine, are uſually marked out upon the ſurface, and include the ſpace of ground in which any company of adventurers have contracted for the right working. Bounds for working tin are recognized by the ſtannary laws of Devon and Cornwall, as a property in themſelves diſtinct from the poſſeſſion of the ſoil, and were probably originally granted to encourage the ſearch for this metal by the laws of the duchy, that the revenue of the chief lord might not ſuffer by the unwillingneſs of the poſſeſſor of the ſoil to have its ſurface diſturbed. Tin bounds that have been legally renewed, or poſſeſſion retained, are even now in their original ſtate in this reſpect; but copper mines, and alſo many tin mines, are now generally held of the poſſeſſor of the fee.

Mines are generally conducted in Cornwall and Devon by a manager appointed by the adventurers, who hold meetings at the counting-houſe to reviſe and paſs the accounts, and to debate and determine on all ſubjects relative to the proſecution of the works ſubmitted to them.

Under the principal agent others are appointed, who are practical miners, and who ſuperintend the various operations and ſettle the terms of the contracts with the workmen, which are made by a kind of public auction. Theſe agents are called *captains*, and the number employed in a mine is in proportion to its extent and importance. Some attend principally to the works below, and are therefore called *under-ground captains*; others take charge of the operations on the ſurface, and are therefore diſtinguiſhed by the appellation of *graſs captains*. It would be injuſtice to this uſeful and reſpectable body of men to paſs them over without noticing the intelligence, activity, and ſkill by which the agents of the mines in the diſtricts alluded to are diſtinguiſhed.

The eſtabliſhment of a mine further includes occaſionally an engineer, a head carpenter and ſmith, who have each their workmen under their care; a *pitman*, who directs the fixing and repair of the pump-work; a *timberman* or *binder*, who ſuperintends the conſtruction of the woodwork under ground, for ſecuring the ſhafts, ladders, levels, and ſo on: and beſides theſe operative men, there are uſually clerks to keep the accounts, and perſons to receive and deliver to the workmen the materials uſed in their operations.

The miners working under ground are divided into two claſſes, according to the mode by which they are paid. Thoſe of the firſt claſs are called *tributers*, who work on the productive parts of the mine, and receive a proportion of the ore which they procure and make merchantable, for their labour. This mode of payment, by its occaſionally leading to unuſual profit, ſtimulates to great exertion in the diſcovery of freſh depoſits of ore, and is therefore conducive to the intereſts of the employer as well as the workman. To the reward thus held out to ſkill and intelligence, may probably be attributed the prevalence of theſe qualities, which may be obſerved more particularly in this claſs of Corniſh miners. The other workmen employed under ground are denominated *tutwork-men*, who agree for ſinking ſhafts, driving levels, and ſo on, at a certain price *per* fathom. Theſe prices are exceedingly various, as the rock to be penetrated differs in degrees of hardneſs, or the nature of the work expoſes the men to more or leſs danger or inconvenience from water or bad air.

The people employed on the ſurface in dreſſing the ores, generally perform their labour by taſk-work, the amounts being charged to the account of the tributers, whoſe ore is undergoing this proceſs.

The copper ores, when ready for ſale, are ſampled by agents of the ſmelting companies, who viſit the mines for that purpoſe, and are ſold on a fixed day by a public ſale, called a *ticketing*, and afterwards weighed and carried to a port and ſhipped to Wales, where the copper ſmelting houſes in general are. Tin ores are ſmelted in Cornwall, and are ſold by the miner to the owners of the ſmelting houſes by private contract, valuing them by an aſſay made by the buyer. In this reſpect the value of tin ores is determined by a mode much more uncertain and irregular than that employed for copper, the aſſay of which is conducted with extreme care, and wonderful accuracy.

The extent of the returns and coſts of the mines in Cornwall and Devon, both collectively and ſeparately, may be ſeen by referring to the hiſtory of mining in this diſtrict, where the tables of the ſtate of theſe concerns exhibit a very intereſting picture of the great increaſe of theſe extenſive undertakings. See Mining, *Hiſtory of.*

The king by his prerogative hath all mines of gold and ſilver to make money; and therefore thoſe mines, which are properly royal, and to which the king is entitled when found, are only thoſe of ſilver and gold. (2 Inſt. 577.) By the old common law, if gold or ſilver be found in mines of baſe metal, according to the opinion of ſome, the whole was a royal mine, and belonged to the king; though others ſay that this was only the caſe, when the quantity of gold or ſilver was of greater value than the quantity of baſe metal. (Plo d. 336.) But by ſtatute no mines of copper, tin, iron, or lead, ſhall be adjudged royal mines, though gold or ſilver be extracted. (1 W. and M. c. 30.) And perſons having mines of copper, tin, lead, &c. ſhall enjoy the ſame, although claimed to be royal mines; but the king, or perſons claiming royal mines under his authority, may have the ore (except tin-ore in Devon and Cornwall) paying to the owners of the mines, within thirty days after it ſhall be raiſed, and before removed, 16*l. per* ton for copper-ore waſhed, and made merchantable; for lead-ore 9*l. per* ton; tin or iron, 40*s.* &c. (Stat. 5 W. & M. c. 6.) If any perſon maliciouſly ſet on fire any mine, or pit of coal, he ſhall be guilty of felony, without benefit of clergy, by ſtat. 10 Geo. II. c. 32. If any perſon ſhall wilfully or maliciouſly ſet fire to, burn, demoliſh, pull down, or otherwiſe deſtroy or damage any fire-engine, or other engine erected for draining water from coal mines, or for drawing coals out of the ſame; or for draining water from any mine of lead, tin, copper, or other mineral, or any bridge, waggon-way, or trunk erected for conveying coals from any coal mine, or ſtaith for depoſiting the ſame; or any bridge, or waggon-way erected for conveying lead, tin, copper, or any other mineral, from ſuch mine, or cauſe the ſame to be done, he ſhall be guilty of felony, and tranſported for ſeven years. (9 Geo. III. c. 29.) Provided that no perſon be proſecuted under this act beyond 18 months after the offence committed. By 39 & 40 Geo. III. c. 77, deſtroying or damaging mines or roads leading to or from the ſame, &c. incurs the guilt of miſdemeanor, and any one perſon ſo offending may, on conviction, be impriſoned for any time not exceeding ſix months. Colliers and miners working in a manner contrary to their agreement, or not fulfilling their contracts, ſhall, on conviction, forfeit not exceeding 40*s.* and on non-payment be impriſoned for a time not exceeding ſix months, or until the penalty and coſts ſhall be paid. Stealing ore out of mines is no larceny, except only thoſe of black-lead, the ſtealing ore out of which is felony, puniſhable with impriſonment and whipping, or tranſportation not exceeding ſeven years, and eſcaping from ſuch impriſonment, or returning from tranſportation is felony, without benefit of clergy, by 25 Geo. II. c. 10.

Mine-*adventurers*, *Company of*, had its firſt riſe about the year 1690, when certain mines of lead and copper were found in South Wales, which were divided by the proprietors into twenty-four ſhares; and in 1693 ſub-divided into four thouſand and eight ſhares, for the term of twenty-two years and a half; to which term five years more were added in 1698, and the affairs of the company regulated by a new conſtitution. In 1704, queen Anne granted a charter of incorporation to this company; in conſequence of which ſeveral new ſhares were added, ſo that the whole number amounted to ſix thouſand and twelve. However, the intereſts of this corporation were ſo ill managed, that the proprietors and creditors petitioned parliament in 1710, and a committee of the houſe of commons was appointed to enquire into its ſtate. The reſult of the enquiry was a cenſure on the principal managers; and though, in 1711, a law was paſſed for the better regulation of the company, and the relief of the creditors and proprietors, nothing could preſerve it from ſinking.

Mine, in the *Art of War*, denotes a ſubterraneous canal or paſſage dug under the wall or rampart of a fortification intended to be blown up by gunpowder.

The paſſage of a mine leading to the powder is called the *gallery*. Theſe paſſages or galleries made within the fortification, before the place is attacked, and from which ſeveral branches are carried to different places, are generally four feet wide, and five feet high, and the earth is ſupported from falling in by arches and walls, as they are to ſerve for a conſiderable time; but when mines are to be uſed in a ſhort time, the galleries are only about three feet wide and five high, and the earth is ſupported with wooden frames or props. When the gallery is carried on to the place where the powder is to be lodged, called the *chamber*, the miners make this generally of a cubical form, large enough to hold the wooden box, which contains the powder neceſſary for the charge; this box is lined with ſtraw and ſand-bags, to prevent the powder from contracting any dampneſs. The chamber is ſunk ſomewhat lower than the gallery, unleſs the beſieged can raiſe the water in the ditch, and incommode the gallery; in which caſe the chamber is made higher than the gallery, that the water may not be let in and ſpoil the mine. The line, drawn from the centre of the ſpace containing the powder, perpendicular to the neareſt ſurface, is called the line of *leaſt reſiſtance;* the pit or hole, made by a mine when ſprung, is called the *excavation.* The fire is conveyed to the mines by a pipe or hoſe, made of coarſe cloth, whoſe diameter is about an inch and a half, called *fauciſſon*, extending from the chamber to the entrance of the gallery, to the end of which is fixed a match, that the miner who ſets fire to it may have time to retire before it reaches the chamber. In order to prevent the powder from becoming damp, the fauciſſon is laid in a ſmall trough, called *auget*, with ſtraw in it, and round the fauciſſon, with a wooden cover nailed upon it. There are various kinds of mines, which acquire different names; as *royal* mines, *ſerpentine* mines, *forked* mines, as their paſſages are ſtraight, oblique, winding, &c. The mines made by the beſiegers in the attack of a place are ſimply called *mines*, and thoſe made by the beſieged *counter-mines*. They are both made in the ſame manner, and for the like purpoſes, *viz.* to blow up their enemies and their works; only the principal galleries and mines of the beſieged are uſually made before the town is beſieged. The beſieged generally make a great many ſmall mines under the glacis, of about ſix, ſeven, or eight feet deep under ground, which are called *fougaſſes* or *fougades*. They make likewiſe another ſort, called *coffers* or *caiſſons*, which are a kind of wooden boxes three or four feet long, and a foot or eighteen inches wide, which they bury four, five, or ſix feet under the glacis, and about four yards diſtant from each other.

Mines, *Hiſtory of*. It is obſerved by writers on this ſubject, that mines were in uſe long before the invention of gunpowder; for the ancients made galleries or ſubterraneous paſſages under the walls of places, and ſupported them with ſtrong props; filling the interval with all kinds of combuſtibles, which being ſet on fire burnt their props, and, the walls being no longer ſupported, fell, whereby a breach was made. The beſieged alſo made uſe of ſimilar paſſages from the town under the beſiegers' machines, with which they battered the walls, in order to deſtroy them. But the art of mining has received great improvements ſince the invention of gunpowder. The firſt mines which we read of, ſince the diſcovery of gunpowder, were uſed, in 1487, by the Genoeſe, in the attack of Serezanella, a town belonging to Florence: however, as theſe failed, they were neglected for a conſiderable time. The firſt ſucceſsful application of the blowing of mines in ſieges was in the kingdom of Naples, in the year 1503; when Pietro de Navarre by this means poſſeſſed himſelf of a fort garriſoned by the French. But the firſt celebrated uſe of theſe mines in oppoſing the progreſs of the beſiegers was in the years 1666, 1667, 1668, at the ſiege of Candia; though they had been often practiſed in the defence of places before, in a leſs memorable manner; for by the aſſiſtance of this invention principally, the city of Candia kept the whole power of the Ottoman empire at bay for three years ſucceſſively. Since that time the advantage of counter-mines hath been better underſtood. The laſt eminent inſtance of their great utility was in the defence of Turin, in 1706: for ſo effectually were the beſiegers traverſed thereby, that, after near four months of open trenches, they were not in poſſeſſion of more than the counter-ſcarp, and even then, eleven pieces of their cannon were blown up by the defendants but three or four days before the place was relieved.

The firſt profeſſed writer on mines was the celebrated M. Vauban; he was ſucceeded by M. de Valliere, one of the greateſt maſters in the art of mining; who, uniting theory with experiment, diſcovered, by meaſuring ſeveral excavations, that the pit or hole made in the earth, when the mine was ſprung, was not an inverted cone (*Plate* VI. *Fortification*, *fig*. 10.) nor a fruſtum of a cone (*fig*. 11.) as Vauban and others had ſuppoſed, but nearly a paraboloid (*fig*. 12.); and his tables were computed according to that figure. It has been generally admitted by miners, that the diameter of the pit or hole made by the mine was always twice the line of the leaſt reſiſtance, and that this diameter ſhould never exceed this proportion. But M. Belidor undertook to remove this prejudice; and however generally it may ſtill prevail, he ſeems to have proved by many experiments, which have ſince been repeated by others, that the diameter of the hole made by a mine may be increaſed to any length in regard to the depth of the mine.

Mines, *Theory of*. The eſtimation of the proper quantity of powder with which a mine is to be loaded in any kind of ſoil, or at any depth under ground, in order to produce any propoſed effect, is the moſt difficult part of the whole art of mining. This depends not only on the quantity of earth to be blown up, but likewiſe on the tenacity of the different ſoils in which the mines are made. The quantity of earth to be raiſed depends on the figure of the excavation; for if this is known, the ſolid content may be determined by geometry; and by weighing exactly a cubic foot of that ſoil, we can eaſily diſcover what weight is to be raiſed; and by knowing what quantity of powder is required to raiſe a certain weight, the tenacity of the parts may alſo be had, by making a mine ſo as to produce a good effect; and ſubtracting the quantity of powder, neceſſary to raiſe the weight of the ſolid from the charge of the mine, the remainder would be the quantity neceſſary to overcome the tenacity. It is, however, diſputed, as we have already obſerved, what the figure of the excavation is: it was at firſt imagined to be an inverted cone, as A C B (*fig*. 10.) whoſe vertex is in the centre of the chamber, and the radius of its baſe A D equal to its axis C D; but this being found to allow too ſmall a charge, it was next ſuppoſed to be a fruſtum of a cone, as A E F B (*fig*. 11.) whoſe leſſer baſe E F is equal to the line C D of leaſt reſiſtance, and the greater A B equal to twice that line. On this laſt ſuppoſition, ſaid to be confirmed by the experiments of M. Maigrigny, under M. Vauban, near Tournay, miners have computed their tables of the quantities of powder neceſſary for charging mines at different depths.

However, Mr. Belidor diſputed the concluſions of Maigrigny; whoſe experiments were examined by direction of the chief commander of the artillery of La Fere, in the conſtruction of more than a hundred and fifty mines between the years 1725 and 1730. In the courſe of this enquiry, ſeven mines were made, whoſe line of leaſt reſiſtance was ten feet, and loaded with the following quantities of powder, *viz*. the firſt with 120lb.; the ſecond with 160lb.; the third with 200lb.; the fourth with 240lb.; the fifth with 280lb.; the ſixth with 320lb.; and the ſeventh with 360lb. Theſe mines being ſprung one after another, and their excavations examined, the diameters of their baſes were found to be as follow: that of the firſt $22\frac{2}{5}$ feet; the ſecond, 26 feet; the third, 29 feet; the fourth, $31\frac{1}{4}$ feet; the fifth, $33\frac{1}{2}$ feet; the ſixth, 36 feet; and the ſeventh, 38 feet. Theſe experiments invalidated the principles of Maigrigny; nevertheleſs miners have ſtill doubted, whether the diameter of the excavation can he made greater than double the line of leaſt reſiſtance, or whether the excavation itſelf will not become like a well or pit when overcharged. As to the true figure of the excavation, this was diſcovered by M. de Valliere, and aſcertained by others after him to be very nearly a paraboloid, as A E B (*fig*. 12.) having the centre of the powder or charge in the focus C, C D the line of leaſt reſiſtance, A B the diameter, and C A the radius. Mr. Muller, however, obſerves, that though the figure of the excavation is a paraboloid, the quantity of the earth to be blown up ſhould be eſtimated by the part A L M B, cut off by a plane L M, paſſing through the focus or centre C of the chamber, parallel to the horizon A B; the other part L E M being occaſioned by the force of the powder preſſing downwards; becauſe, he ſays, the exploſion of gunpowder, acting on all ſides alike, muſt condenſe the ſolid under the chamber from L to M, by its preſſure downwards, ſo long as it preſſes the earth above L M upwards; and it cannot be ſaid, that any particle of earth under the horizontal line L M can be drove upwards. In order to find the content of this ſolid, let $EK = EC = \frac{1}{4}$ of P, or the parameter; and it appears from the well known properties of the parabola, that $AD^2 = ED \times P$; $LM = P$; and $CA = KD$. And in tht right-angled triangle C D A, $CD^2 + DA^2 = CA^2 = KD^2$; and, therefore, $\sqrt{CD^2 + DA^2} = KD$; whence, if C D and D A are given, the line K D, and conſequently CK, or its equal CL, will be known; and, therefore, if the line of leaſt reſiſtance CD, and the radius DA of the baſe are given, the parameter may be found. Moreover, the ſolid content of the paraboloid is equal to half the cylinder of the ſame baſe and altitude; if r expreſſes half the circumference, whoſe radius is unity; *i. e.* if $r = 1.57$; then, becauſe $1 : 2r$, or the radius to the circumference as the ſquares of the radii CL, DA, are to the areas of their circles; we have $rED \times AD^2$ for the ſolid content of AEB, and $rEC \times CL^2$ for the ſolid LEM; therefore, their difference $rED \times AD^2 - rEC \times CL^2$, will expreſs the ſolid required. But if P expreſſes the parameter LM, then will $P \times ED = AD^2$, and $P \times CE = CL^2$, and theſe values ſubſtituted in the expreſſion of the ſolid, give $rP \times ED^2 - rP \times EC^2$: or, becauſe $ED = EC + CD$, and $KD = CD + 2EC$, we ſhall have this expreſſion reduced to $rP \times CD \times KD$. But as r is a conſtant number, it may be neglected in comparing the ſolids; and then $P \times CD \times KD$ will be the expreſſion of the ſolid. And when two excavations are compared together, which have the ſame line of leaſt reſiſtance CD, the ſolid will be expreſſed by the rectangle $P \times KD$. Hence if this ſolid, or the quantity of earth to be raiſed, and the line CD of the leaſt reſiſtance be given, the parameter P may be found; and having the parameter and the line CD, the equation $P \times ED = AD^2$, will give the radius AD of the baſe. For if $CD = c$, and the given ſolid $ALMB = a$, then becauſe $CE = \frac{1}{4}P$, the expreſſion $P \times CD \times KD$ will give $Pc \times \overline{\frac{1}{2}P + c} = a$, or $PPc + 2Pcc = 2a$, and $PP + 2Pc = \frac{2a}{c}$, to which adding cc, we ſhall have $PP + 2cP + cc = \frac{2a}{c} + cc$; and $P + c = \sqrt{\frac{2a}{c} + cc}$.

In comparing mines together, which have the ſame line of leaſt reſiſtance, the rectangle $P \times KD$ gives $PP + 2cP = 2A$, to which adding cc, we ſhall have $PP + 2cP + cc = 2a + cc$, whoſe ſquare root is $P + c = \sqrt{2a + cc}$. By means of theſe equations, all the different problems relating to mines are eaſily ſolved, on the ſuppoſition, that the forces of powder are proportional to their quantities, and, therefore, the charges alſo proportional to the quantities of earth to be raiſed in the ſame ſort of ſoil, *i. e.* in ſoil of the ſame denſity and tenacity. Some writers, however, aſſert, that the elaſtic force of powder is greater in proportion in larger quantities than in ſmall ones, which Mr. Muller denies; and Mr. Belidor gives another reaſon for diminiſhing the charges of mines, as the earth to be raiſed increaſes; which is, that not only the weight of the earth to be raiſed is to be conſidered, but likewiſe the preſſure of the atmoſphere over the ſurface of the excavation, which preſſure is as the baſes of the excavation, and theſe as the ſquares of the diameters; whereas the weights of ſimilar ſolids are as the cubes of theſe diameters; and, therefore, this preſſure being leſs, in proportion, in larger bodies than in ſmaller, the charges ought rather to be leſſened in large mines than in the ſmall. But this reaſoning ſeems to be contradicted by experiments.

In order to know the quantity of powder neceſſary for blowing up a mine in a particular ſoil, ſeveral mines are to be made in it, having their lines of leaſt reſiſtance equal, but loaded with different quantities of powder, till one is found to have the deſired effect. When this is found, the diameter of its baſe muſt be meaſured with the greateſt accuracy, and likewiſe the line of leaſt reſiſtance; and when theſe lines are determined, the parameter P of the parabola is found by the equation $KD = \sqrt{AD^2 + CD^2}$; and, having the parameter given, the quantity of earth or ſolid is found by the ſolid $P \times CD \times KD$, or by the rectangle $P \times KD$, as the lines of leaſt reſiſtance are different or the ſame. This ſolid, and the charge of the mine, will ſerve to find the effect of any other mine made in the ſame ſoil when the charge is given; or to determine the charge, ſo that the diameter of the baſe ſhall be of any given length, by means of the equation $P \times ED = AD^2$. The ſame being performed in all the different ſoils, which generally occur in making mines, will ſerve to make mines of any depth, or placed in any ſoil.

The miners divide the different ſoils into five ſpecies.

$$\left.\begin{array}{l}1.\\2.\\3.\\4.\\5.\\6.\end{array}\right\}\text{ into }\left\{\begin{array}{l}\text{looſe earth or ſand.}\\\text{common middling light ſoil.}\\\text{loam or ſtrong ſoil.}\\\text{potters' clay, or ſtiff ſoil.}\\\text{clay mixed with ſtones.}\\\text{all kind of maſonry.}\end{array}\right.$$

It has been found, that a cubic foot of the firſt weighs 95lb; of the ſecond, 124lb.; of the third, 126lb.; of the fourth, 135lb.; and 160lb. of the fifth. But as to maſonry, it cannot be determined to any degree of exactneſs, as depending on the different kinds of ſtones or bricks of which they are made.

It is pretended, that there are nine pounds of powder required to raiſe a cubic toiſe of the firſt kind; 11 of the ſecond; 13 of the third; 15 of the fourth; 18 of the fifth; and 20 or 25 to raiſe a cubic toiſe of maſonry above ground; and 35 or 40 for raiſing the ſame quantity under ground.

Theſe are the French weights and meaſures, which being reduced into Engliſh, give 8lb. of powder for the firſt kind of ſoil; 9.8 for the ſecond; 11.6 for the third; 13.4 for the fourth; 16 for the fifth; 18 or 22.3 for the maſonry above ground; and 31 or 35 for raiſing the ſame quantity under ground.

In the ſecond volume of M. Vauban's Attack and Defence of Places, he ſays, that the following rules never fail.

A cubic toiſe of common earth requires 14 pounds of powder to be raiſed.

Stiff ſand or loam, which may be dug without being ſupported, requires 17 pounds *per* toiſe.

Mixed earth requires 18 pounds *per* toiſe.

Potters' clay or ſtiff ſoil, 19 pounds *per* toiſe.

Fat or ſtiff earth mixed with pebble ſtone, 22lb.

Wet ſand, which cannot be dug without being ſupported, 15lb.

Theſe rules of M. Vauban make, therefore, the charges greater than thoſe of later miners.

But this is a matter which muſt be decided by experiments; and when theſe are made with ſufficient exactneſs, it will be eaſy to find the proper charge of a mine, ſo as the diameter of its baſe be of any given length; or when that length is given, to determine the charge required. *E. gr.* Let it be required to find the diameter of a mine made in the ſecond ſort of ſoil; which being loaded with 100lb. of powder, ſay, if 11 pounds raiſe a cubic toiſe, or 216 cubic feet of earth, how much will raiſe 100lb.; the fourth term, which is 1964, will be $= a$; and $2a = 3928$; and ſuppoſing the line of leaſt reſiſtance CD to be 10 feet, then will $c = 10$; hence the equation $c + P = \sqrt{\frac{2a}{a} + cc}$, will give $c + P = \sqrt{402.8} = 20$; or $P = 10$, and $EC = \frac{1}{4}P = 2.5 : ED = 12.5$; whence the equation $P \times ED = \overline{AD}^2$, gives $10 \times 12.5 = 12.5 = \overline{AD}^2$, or $AD = 11.2$ nearly.

But to ſhew how far this theory agrees with the experiments mentioned before, we may ſuppoſe the firſt to be true, and from thence proceed to find what the diameters of the baſes of the others will be. All the lines of leaſt reſiſtances of theſe mines were ten feet each, the diameter of the baſe of the firſt mine was found to be $22\frac{2}{3}$ feet; ſo that AD is $= 11.33$, or 11.4 $CD = 10$; theſe values being ſubſtituted in the equation $KD = \sqrt{\overline{CD}^2 + \overline{AD}^2}$, will give $KD = \sqrt{229.96} = 15.16$; and $2\,KC = P = 10.32$; hence theſe values being ſubſtituted in the rectangle $P \times KD$, becauſe the line of leaſt reſiſtance is here always the ſame, gives $10.32 \times 15.16 = 156.5$, for the ſolid, which muſt be remembered, becauſe it is the ſtandard number whereby the other ſolids are determined.

Now if 120lb. gives 156.5, how much gives the charge 160lb. of the ſecond for its ſolid, the fourth term gives $208\frac{2}{3} = a$, and $2a = 417\frac{1}{3}$; this value, as well as that of $c = 10$, being ſubſtituted in $P + c = \sqrt{2a + cc}$, gives $P + c = \sqrt{517.4} = 22.7$; hence $P = 12.7$, $EC = \frac{1}{4}$, $P = 3.2$, and $ED = 13.2$. Now theſe values being ſubſtituted in $P \times ED = \overline{AD}^2$, give $\overline{AD}^2 = 167.64$, and $AD = 13$ nearly; and as AB has been found by meaſurement to be about 26, it ſhews that this computation anſwers very nearly the experiment.

If as the charge 120 of the firſt is to the charge 200 of the third, ſo is the ſolid 156.5 of the firſt to the ſolid of the third; we ſhall have $a = 260.84$, or $2a = 521.68$; and as $c = 10$, the equation $P + c = \sqrt{2a + cc}$ gives $P + c = \sqrt{621.68} = 24.93$ nearly; hence $P = 14.93$, $\frac{1}{4}P = EC = 3.73$, and $ED = 13.73$; theſe values being ſubſtituted in $P \times ED = \overline{AD}^2$, give $AD = 14.32$, and $AB = 28.64$; which anſwers nearly the experiment; it was found that $AB = 29$ nearly.

If we proceed thus with regard to the 4th, 5th, 6th, and 7th experiments, we ſhall find the diameters of the baſe to be as follows; that of the 4th, 31.2; that of the 5th, 33.2; the 6th, 35.3; and that of the 7th, 37.4; which anſwers pretty near the experiments.

In this method of conſtructing mines, any opening may be made, whatever be the line of reſiſtance; and by making this line ſmall, and loading the mine with more powder, the inconvenience of a large excavation, which affords lodgment to the beſiegers, is avoided: beſides, the ſhafts and galleries are ſooner made, and ſeveral mines may be placed under one another, by which the ſame ſpot of ground may be blown up ſeveral times.

If it were required to make a mine in the ſame ſort of ſoil as that in which the ſeven experiments mentioned before were made, ſo that the line of the leaſt reſiſtance ſhall be equal to the radius of the baſe, and each of ten feet, and to find the quantity of powder neceſſary for its charge. Becauſe $AD = CD = 10$, the equation $KD = \sqrt{\overline{AD}^2 + \overline{CD}^2}$, will give $KD = \sqrt{200} = 14.14$; hence $P = 8.28$; theſe values being ſubſtituted in $P \times KD$, will give 117, nearly, for the ſolid; then if we ſay, as the ſolid 156.5, of the firſt experiment, is to the ſolid 117, ſo is the charge 120 to the charge required, it will be 90lb. nearly. But if it was required to find the quantity of powder neceſſary to raiſe a cubic fathom, or 216 cubic feet of this ſoil; then becauſe $CD = 10$ has been neglected in the ſolid 156.5, of the firſt experiment, as likewiſe the ratio r, therefore the quantity muſt be multiplied by $r \times 10$; or becauſe $r = 1.57$ by 15.7, which will give 2457; then if we ſay, as 2457 requires 120lb. of powder, how much will 216 require; and the fourth term, which is 10.5lb., will be the number ſought. From whence it appears, that the ſoil, in which theſe experiments were made, was a light ſort of ſoil, ſomewhat lighter than that which is taken by the miners for the ſecond ſort.

M. De Valliere ſuppoſes, in his table, inſerted below, that a mine, whoſe line of leaſt reſiſtance and radius of the baſe are each ten feet, requires $93\frac{3}{4}$lb. for its charge. Now, if it be required to find what kind of ſoil theſe mines are made in, by ſubſtituting the number for CD, AD, in the equation $KD = \sqrt{\overline{AD}^2 + \overline{CD}^2}$, we ſhall have $KD = \sqrt{200} = 14.4$, and $P = 8.28$; now theſe values being ſubſtituted in $rP \times CD \times KD$, we ſhall have $15.7 \times 8.28 \times 14.14 = 1838$; then if we ſay, as 1838 is to $93\frac{3}{4}$, ſo is 216 to 11. This fourth term will expreſs the number of pounds of powder required to raiſe a cubic fathom of the ſame ſort of ſoil, which therefore is the ſecond ſort.

The preceding computations have been made of French weights and meaſures, to ſhew how nearly the foregoing theory agrees with the experiments made at La Fere. It remains now to apply it to our own weights and meaſures; becauſe eight pounds of powder will raiſe a cubic fathom of earth of the firſt ſort; if we ſay a cubic fathom, or 216 cubic feet, is to eight pounds, as 1838 cubic feet is to 68.074 pounds, this fourth term will be the charge of a mine, whoſe line of reſiſtance is 10 feet as well as the radius of the baſe: in the ſame manner are found the charges of the ſame mine in the reſt of the ſoils. But the ſhorteſt way of computing tables is to ſubtract the logarithm of 216 from that of 1838, which gives 9298917; now if to this logarithm we add thoſe of 8, 9.8, 11.6, 13.4, 16; the weight of the powder required to raiſe a cubic fathom of the different ſoils, found before; we ſhall have 1° 83298, 2° 92112, 3° 99435, 4° 05699, 5° 14301 for the logarithms of the charges of a mine whoſe line of leaſt reſiſtance is 10 feet, and the diameter of the baſe 20.

Valliere's TABLE for the Charges of Mines.

Length of the line of leaſt reſiſtance.	Charge of Powder.	Length of the line of leaſt reſiſtance.	Charge of Powder.	Length of the line of leaſt reſiſtance.	Charge of Powder.	Length of the line of leaſt reſiſtance.	Charge of Powder.
Feet.	lb. oz.	Feet.	lb. oz.	Feet.	lb. oz.	Feet.	lb. oz.
1	0 2	11	124 12	21	868 3	31	2792 4
2	0 12	12	162 0	22	998 4	32	3072 0
3	2 8	13	205 15	23	1140 10	33	3369 1
4	6 0	14	257 4	24	1296 0	34	3660 12
5	11 11	15	316 4	25	1558 9	35	4019 8
6	20 4	16	364 0	26	1647 12	36	4374 0
7	32 2	17	460 9	27	1815 4	37	4748 11
8	48 0	18	516 12	28	2058 0	38	5144 4
9	68 5	19	643 0	29	2286 7	39	5561 2
10	93 12	20	750 0	30	2530 4	40	6000 0

By this conſtruction the radii of the baſes being always equal to the lines of leaſt reſiſtances, the ſolids are ſimilar, and therefore are to one another as the cubes of their axes; that is, as the cubes of the lines of leaſt reſiſtances. So that taking any one of the charges to be true, the others will be found by ſaying, as the cube of the axis whoſe charge is given is to its charge, ſo is the cube of the axis of any other mine to its charge.

For example, let the charge $93\frac{3}{4}$ of the mine, whoſe line of leaſt reſiſtance is 10 feet, be given; and it be required to find the charge of any other mine whoſe line of leaſt reſiſtance is given, ſuppoſe 15: then ſay, as the cube 1000 of 10 is to the cube 3375 of 15, ſo is the charge $93\frac{3}{4}$ to the charge required, which is 316.4, or 316 pounds 6 ounces, which is 2 ounces more than in the table. In the ſame manner is found the charge of a mine whoſe line of leaſt reſiſtance is 20; or becauſe 20 is double of 10, the cube of 20 will be octuple the cube of 10; and therefore $8 \times 93\frac{3}{4}$, or 750 pounds, will be the charge of that mine.

A TABLE of the Charges of Mines according to Muller's Theory.

Diam.	Charge.	Diam.	Charge.	Diam.	Charge.
Feet.	Pounds.	Feet.	Pounds.	Feet.	Pounds.
22	150	42	639	62	1518
24	181	44	711	64	1621
26	217	46	773	66	1741
28	255	48	857	68	1842
30	297	50	946	70	1980
32	344	52	1020	72	2098
34	394	54	1115	74	2243
36	452	56	1205	76	2372
38	502	58	1299	78	2501
40	560	60	1406	80	2648

In this table the line of leaſt reſiſtance is ſuppoſed to be always 10 feet, and the charges producing the openings at the ſides of them from 22 feet to 80 It is ſuppoſed that the charge $93\frac{3}{4}$ of a mine, whoſe line of leaſt reſiſtance and radius of the baſe are each 10 feet, is given. and from thence all the reſt are computed by means of theſe equations, $KD = \sqrt{AD^2 + CD^2}$, and $P \times KD = a$; and by comparing the diameters of the baſes found, by means of theſe equations, to be rather leſs than thoſe found by experiments, it is preſumed that the diameters marked in this table will not be found leſs, but rather greater in practice.

In order to find the ſize of the boxes, generally made cubical, in which the powder is lodged: as a cubic foot of common powder weighs about 55 pounds, if we ſay as 55 is to unity. ſo is any other quantity to its cube; *i. e.* if the given quantity of powder be divided by 55, the quotient will be the cube required, and its cube root will be the length of the ſide of the box. The box muſt always be made a fourth bigger than it ſhould be, on account of the ſtraw and ſand-bags put in it, for keeping the powder free from wet; ſo that if the quantity of powder be 360 pounds, the fourth part of it, or 90, muſt be added, and the ſum 450 divided by 55, whoſe quotient is 8.1818, and the ſquare root of this, or 2.86 feet, or 34 inches, will be the ſize required. If the chamber happens to be placed on a rock, or any other hard ſubſtance, the force or action of the powder downwards, meeting with great reſiſtance, will be employed in raiſing the earth upwards; and conſequently the effect of the mine will be much greater than that produced by the ſame quantity of powder, placed on a ſofter ſubſtance. On which account, if a platform of ſtrong planks were made under the chambers, there would be a leſs quantity of powder required for the charge of the mine. When the mine is properly loaded, the gallery is ſtopped up with ſtones, earth, and dung, well rammed, five or ſix feet farther from the chamber than the length of the line of leaſt reſiſtance. And for preventing the mine from burſting through the gallery, and to make it have its effect upwards, the gallery is made with one or two turnings, at right angles to each other, and ſtrongly ſecured with buttreſſes and planks, and the intervals rammed with ſtones and earth.

Many writers have eſtimated the operation of mines on the falſe ſuppoſition, that their entonnoir, or excavation, is the fruſtum of a cone; and therefore, in order to eſtimate the weight of the matter to be blown up, they have only to compute the ſolidity of ſuch a fruſtum in cubic fathoms, and to multiply the number of fathoms by the number of pounds of powder neceſſary for raiſing the matter it contains; and if this cone contains matters of different weights, to take a mean betweeen them all; always having a regard to their degree of coheſion. As to the diſpoſition of mines, there is one general rule, which is, that the ſide towards which one would determine the effect, be the weakeſt; but this varies according to occaſions and circumſtances.

MINES, *Different Sorts of*. A mine which has only one chamber is called a ſingle mine, as A, *fig.* 13. If it has two chambers, it is called double, as *fig.* 14, and if it has three, triple, as *fig.* 15, &c. the names being taken from the number of chambers. If a ſingle mine is made under the rampart, to make breach, the entrance O, *fig.* 13, muſt not be oppoſite to the place where the chamber is deſigned to be, but on one ſide or other; and the gallery with two turnings, that it may be ſtopped with greater ſecurity, and that the diſtance of the entrance O to the chamber A may be greater than the length of the line of leaſt reſiſtance: otherwiſe the mine would have its effect that way. It muſt alſo be obſerved, that the chamber is placed in the middle of a counterſcarp, by which means it will make a greater breach than if it were placed in the earth behind the wall. When a double mine is made under the rampart for making breach, the entrance O, *fig.* 14, is made, as nearly as can be gueſſed, in the middle, between two counter-forts; the gallery being carried quite through the wall in a direct line, turns afterwards to the right and left, in the form of a T; from whence it is alſo called a T mine; and the chambers are alſo placed in the next counter-forts, but exactly at equal diſtances from the direct gallery: this double mine will make a much larger breach than the ſingle one, and it is for that reaſon preferred to any other.

But when a triple mine is to be made under the rampart, the opening O, *fig.* 15, is to be made directly oppoſite to the counter-fort, if poſſible, and carried directly through the wall, and turned to the right and left in the ſame manner as the former; and the chambers A, B, at both ends, are placed in the two adjacent counter-forts. As to the gallery of the third, C, it is carried round the middle counter-fort, and the chamber placed under its extremity; this laſt is generally charged with fifty pounds of powder more than either of the others; but great care muſt be taken to carry the auger of this laſt chamber in zig-zags, ſo as to be equal in length to that of the chamber B, otherwiſe the fire would not reach them all three at the ſame time, and thereby the chamber C not take fire, which ſometimes happens, and then the effect does not anſwer the expectation.

There are ſeldom or ever more made than a triple under the ramparts in ſieges; but when a work is to be demoliſhed, they make then as many as will demoliſh a whole face at once; which is done by giving the fire to all at the ſame time; that is, all the ſauciſſons are brought into one, and ſo contrived, as that their parts from the chambers to the common junction may be exactly equal. Muller's Syſtem of Artillery, &c. vol. vi. part iii. p. 206, &c.

Mine, *Chamber of a.* See Chamber and Mine.

Mine, *Counter.* See Counter-*mine* and Mine.

Mine, *Gallery of a.* See Gallery and Mine.

Mine, *Knight of the,* is a military honour, anciently conferred on perſons who had diſtinguiſhed themſelves in engagements in mines.

Mine-*Ships,* are ſhips filled with gunpowder, incloſed in ſtrong vaults of brick or ſtone, to be fired in the midſt of an enemy's fleet. See Fire-*ſhip.*

Mine is alſo a French meaſure. See Measure.

Mine-*Dial* is a box and needle, with a braſs ring divided into 360 degrees, with ſeveral dials graduated thereon; generally thus made for the uſe of miners.

MINEHEAD, in *Geography,* a townſhip of America, in Eſſex county, Vermont, on Connecticut river; it is watered by Nulhegan river, and has only 27 inhabitants.

Minehead, a cape of Ireland, in the county of Waterford, between Ardmore-head and Helwick-head, from the latter of which it is about four miles diſtant.

Minehead, a ſea-port town and borough, ſituated on the ſouthern ſhore of the Briſtol channel, in the hundred of Carthampton and county of Somerſet, England. The town was firſt incorporated by queen Elizabeth, who endowed it with many valuable privileges. In the reigns of Charles II. and queen Anne, ſo great was the trade from this port to Ireland, that upwards of forty veſſels were conſtantly engaged in it. Several were likewiſe employed in the Weſt India, Virginia, and Straits trade; and not leſs than 4000 barrels of herrings were annually ſhipped here for the Mediterranean. The chief articles of import, beſides colonial produce, were wool, linen, and cattle, and the exports conſiſted moſtly of coals and grain. All this trade is now entirely loſt; the herrings have deſerted the coaſt, and there are at preſent only five or ſix veſſels belonging to the port. In the time of its proſperity the government of this borough was veſted in a portreeve, but ſince its decline it has been committed to two conſtables, who are choſen annually at the court leet of the lord of the manor. The arms of the town are a ſhip under ſail and a wool-pack, emblematical of its priſtine trade.

Minehead is divided into three parts; the Upper Town, conſiſting of ſeveral irregular ſtreets, meanly built, and ſtanding on the eaſtern ſlope of a vaſt hill, called Greenalaigh or Minehead point; the Lower Town, ſituated half a mile from the beach to the ſouth-eaſt; and the Quay Town, placed under the brow of a lofty eminence cloſe to the ſhore. The church, which is a large handſome ſtructure, ſtands in the Upper Town, and is diſtinguiſhed by a very elegant alabaſter ſtatue of queen Anne, on a pedeſtal four feet high. It was the gift of ſir Jacob Banks, as appears from an inſcription upon it, bearing the date 1719. At the entrance of the quay, in Quay Town, ſtands the Cuſtom-houſe, which ſtill continues furniſhed with a regular eſtabliſhment of officers. A market continues to be held here every Wedneſday; and there is a ſmall manufacture of woollen cloths, which conſtitutes the chief ſupport of the inhabitants. Fronting the market place is an alms-houſe, built and endowed by Robert Quirk, in 1630. Two members are ſent from this borough to parliament, who are elected by the pariſhioners of Dunſter and Minehead, being houſekeepers and not receiving alms. The conſtables are the returning officers.

The country around Minehead is pleaſing and beautiful, preſenting to the view a ſeries of lofty hills interſperſed with rich and luxuriant vallies. The climate is ſo mild that vegetation is a month earlier here than in moſt parts of England. This circumſtance has of late years induced many perſons to reſort hither during the bathing ſeaſon, to the great benefit of the town. A peculiar ſpecies of limpet, found on the rocks here at low water, afford a very curious liquor uſed in marking linen, which, when firſt applied, exhibits a variety of changes in its colour, and ultimately, after waſhing, aſſumes a bright crimſon hue, which no ſubſequent efforts will alter or eradicate. About ſix miles to the ſouth of the town is the lofty mountain of Dunkerry, which riſes 1770 feet above the level of the ſea, and is 12 miles in circumference at the baſe. From the collections of ſtones bearing the marks of fire, which appear on different parts of it, it is conjectured to have been uſed as a beacon to alarm the country in the event of invaſion. Collinſon's Hiſtory and Antiquities of Somerſetſhire, vol. ii. 4to. 1791.

MINELLI, Andrea, in *Biography,* a Venetian opera poet, and author of many dramas that were much applauded: ſuch as "Orfeo," 1702; "Finezze d'Amore, et la forza vinta dall' Onore," 1703; "La Rodoguna," at Milan the ſame year; and "Il trofeo dell' innocenza," at Venice, 1704.

MINELLIUS, John, was born at Rotterdam about the year 1625, and paſſed his life as a teacher of the learned languages. He died in 1683. He publiſhed notes upon Terence, Salluſt, Virgil, Horace, Florus, Valerius Maximus, and Ovid's Triſtia, which have not only been very uſeful to ſtudents, but have been freely tranſcribed by more modern editors and commentators.

MINEO, in *Geography,* a town of Sicily, in the valley of Noto, near a lake of the ſame name; 24 miles S. of Catania.

MINERA, in *Medicine,* the ſeat, or rather matter of a diſeaſe.

The term is applied by ſome authors to thoſe parts of the body wherein there are collections and coacervations of humours made; which, hardening, form obſtructions, and produce diſeaſes.

In this ſenſe we ſay, the *minera morbi,* &c.

MINERALS, or Fossils, are thoſe inorganical natural bodies of which the ſolid maſs of the earth is compoſed. Their more remarkable properties and characters will be enumerated under the article Oryctognosy.

Mineral, *Æthiops.* See Æthiops, and Mercury.

Mineral, *Turbith.* See Turbith, and Mercury.

Mineral *Oil.* See Oil.

Minerale *Bezoardicum.* See Bezoardicum.

Mineral, *Cryſtal.* See Crystal *Mineral.*

Mineral *Kermes.* See Kermes *Mineral.*

Mineral *Waters,* are thoſe which, at their ſpringing forth from under-ground, are found impregnated with ſome mineral matter; as ſalt, ſulphur, vitriol, &c. See Water.

Such are hot baths, ſpaws, purging, &c. ſprings.

Mineral *Waters, Earth of.* See Earth.

MINERAL *Juices*. See JUICES.

MINERAL *Courts*, *Curiæ minerales*, in *Law*, courts for regulating the concerns of lead mines; as *ſtannary courts* are for tin.

MINERALOGY, the ſcience which makes us acquainted with all the various relations under which minerals preſent themſelves to us. This comprehenſive branch of knowledge is by the illuſtrious Werner divided into five diſtinct doctrines, *viz.* 1. *Oryctognoſy*, or that part of mineralogy which, with the aſſiſtance of well aſcertained characters and fixed denominations, teaches us to determine foſſil ſubſtances, and to arrange them according to their natural affinities. 2. *Geognoſy*, which has for its object the ſtructure, relative poſition, and formation of thoſe ſubſtances of which the cruſt of the earth is compoſed. 3. *Mineralogical Geography*, which exhibits, in geographical order, the ſpecies of rocks that occur in different countries, together with the various ſpecies of minerals contained in them, and the circumſtances under which they occur. 4. *Mineralogical Chemiſtry*, which makes us acquainted with the various chemical properties of minerals, and with the quality and quantity of their component parts. 5. *Economical Mineralogy*, in which mineral ſubſtances are conſidered merely with a view to the uſe to which they are applicable, which alſo determines their arrangement.

It is only within the laſt quarter of the elapſed century that the knowledge of minerals has made rapid ſtrides towards perfection; not long before that period it could ſcarcely be ſaid to have aſſumed the appearance of a ſcience; and the ancients appear to have been totally unacquainted with any thing in the ſhape of ſcientific mineralogy.

The οξυκτα and μεταλλευτα of Ariſtotle can ſcarcely be conſidered as bearing teſtimony to this philoſopher's knowledge of minerals, and are indeed only mentioned by him becauſe he fancied the origin of the former might be derived from earth, and that of the latter from water. The few mineral ſubſtances treated on by Theophraſtus, Pliny, Dioſcorides, and Galen, intermixed with productions of art, are merely ſuch as were employed for the common purpoſes of economy, and the ſtudy of theſe authors is far more important to the philologiſt and antiquary than to the mineralogiſt. On reading the ſixth book of Dioſcorides, we become indeed acquainted with part of the medical knowledge of the ancients, but it teaches us very little that might be deemed any way intereſting in a mineralogical point of view. Pliny, where he treats on gems and metals, expatiates on the luxury prevalent among the Romans, and when ſpeaking of marble, baſalt, &c. enters upon the hiſtory of their productions of art, without at all adverting to the degree of knowledge they poſſeſſed of unorganized nature. Indeed, *ſcientific* knowledge of this kind was not among the acquirements of the ancients; and whatever may have the appearance of it in the writings of the authors above-mentioned, is ſo deſtitute of order and preciſion, that it is ſurpriſing how Wallerius, who well knew what is requiſite for a mineralogical ſyſtem, could mention Theophraſtus, Pliny, Dioſcorides, and Galen, as the firſt ſyſtematical writers in mineralogy. The knowledge of ſome mineral ſubſtances muſt, of courſe, be coeval with the earlieſt ages of the world; but to trace mineralogy, as a ſcience, to Egypt, or to ancient Greece and Rome, is almoſt as abſurd as to dignify Tubal Cain with the title of the firſt of chemiſts.

When the general lethargy of the ſciences commenced, little regard was paid even to the ſcanty knowledge handed down in the works of the ancients; and it was not till the introduction of the chemiſtry, or rather alchemy, of the Arabians into Europe, that a ſmall ſhare of attention was again beſtowed on the ſtudy of unorganized bodies. Avicenna laid the foundation of the diſtribution of minerals, into ſtones, metals, ſulphureous foſſils, and ſalts; a diviſion which was generally adopted by the chemiſts of thoſe times, but not by the other naturaliſts; the former, to judge from a paſſage in Agricola (De Nat. Foſſilium, l. i. p. xvii.), not being held in great eſteem by the ſcholiaſts. "Avicenna," ſays Agricola, "non *ſcienter*, ſed *more chimiſtarum*, ſulphureo duas ſpecies ſubjecit: ſulphur et arſenicum." Hence it is that Albertus Magnus, this ſuperſtitious tranſcriber of the ancients, followed quite a different diſtribution; for among other changes which he adopted, was that of throwing the ſalia and ſulphurea into one claſs, under the name of *Media*.

Such were the firſt attempts at introducing ſome order among the unorganized bodies. The chemiſts on one ſide propoſed the component parts, which, however, far from being demonſtrated, were only hypothetically aſſumed by them: the ſcholiaſts, on the other hand, were equally intent upon inveſtigating and recommending the characters derived from the external form of minerals, their ſuppoſed medicinal properties and miraculous virtues. This twofold view of the ſubject characterizes the writings of almoſt all ſucceeding mineralogical authors, down to a period not far remote from the preſent; we find them either implicitly adopting the ideas of the chemiſts, or announcing themſelves as mere empirical collectors of curioſities. Agricola, the firſt ſyſtematic mineralogical writer, may, indeed, be conſidered as an exception to this rule. He directed his thoughts to the uniting the views of theſe two claſſes of writers, although he certainly inclined more to thoſe of the ſecond.

Agricola was the firſt who paid attention to external characters, which were determined by him with tolerable preciſion, and employed for the diſtinction of the mineral ſubſtances then known. All foſſils (corpora ſubterranea) are divided by him into ſimple, or ſuch as conſiſt of homogeneous particles; and into compounded, or ſuch as are formed of heterogeneous parts, taken in a mineralogical acceptation of the terms. The minerals belonging to the former of theſe diviſions are found in four different forms, which are, 1. Terra. 2. Succus concretus. 3. Lapis. 4. Metallum. *Terra* he defines as "corpus foſſile quod poteſt manu ſubigi, cum fuerit aſperſum humore, aut ex quo, cum fuerit modefactum, fit lutum." Theſe earths he divides partly according to ſome external characters, partly after their localities, in caſes where their names are derived from the countries or places in which they are found. "*Succus concretus* eſt corpus foſſile ſiccum et ſubdurum, quod aquis aſperſum aut non mollitur, ſed liqueſcit, aut, ſi mollitur, multum vel pinguitudine differt a terra, vel materia ex qua conſtat." The foſſils of this claſs Agricola divided into macra and pinguia; the former conſiſt of a juice partly mixed with earth (ſal nitrum), partly with metal (chryſocolla, ærugo, ferrugo, cæruleum), partly mixed both with earth and metal (atramentum ſutorium, alumen, &c,): to the latter he refers ſulphur, bitumen, ſandarach, and auripigmentum. The ambiguity of this definition, and the impropriety of placing in one and the ſame claſs ſubſtances ſo very diſtinct from each other, require no comment. The ſtones are the third claſs of Agricola's ſyſtem. "Lapis eſt corpus foſſile ſiccum et durum, quod vel aqua longinquo tempore vix mollit, ignis vehemens redigit in pulverem; vel non mollit aqua, ſed maximo ignis liqueſcit calore." The ſtones are ſubdivided into lapis, gemma, marmor, and ſaxum. His definition of metals, being his fourth claſs, is, "corpus foſſile natura vel liquidum vel durum quidem, ſed quod ignis liqueſcit calore." He enumerates ten metals. The laſt claſs of Agricola's ſyſtem comprehends mixed and compound foſſils. 1. Mixtures of ſtones and juices (ſucci). 2. Of earth and metal. 3. Of ſtone and metal. 4. Of juice, ſtone, and metal. To the ſecond and third diviſion he refers the various ores. What has been ſaid may convey an idea of Agricola's ſyſtematic knowledge in mineralogy. Conſidered as a firſt eſſay, his ſyſtem is indeed very valuable, and more logical preciſion in its execution can ſcarcely be expected from its author; but, on the other hand, it cannot be denied that he was often ſtrangely led aſtray by his deficiency in chemical knowledge, nor did he even ſuſpect that the preſervation of unity is at all required in the conſtruction of a ſyſtem.

Moſt of the ſyſtematic mineralogical writers who ſucceeded Agricola were chemiſts, or rather alchemiſts; but even theſe adopted his ſyſtem, although it was more or leſs altered by ſome of them. Thus, Cardanus retained the "ſucci concreti," but he followed the chemiſts in ſeparating the ſalts from the bitumens.

Kentmann, who publiſhed in 1569 his book "De omni rerum foſſilium genere," was a nomenclator who adopted Agricola's ſyſtem almoſt without making any alteration. The earths and the ſucci concreti are, however, ſubdivided in a different manner, and a treatiſe on petrifactions is added, entitled "Alcyonia, conchæ et alia, quæ ex ſalſo liquore maris et ex ejus ſpuma, cum tenuiſſimis ſordibus permiſta concreſcunt."

The celebrated botaniſt, Cæſalpinus, was the firſt who properly ſeparated the ſalts from the inflammable foſſils. The diviſions of his ſyſtem are, 1. Mineralia humore ſolubilia, to which he refers the earths and ſalts. 2. Oleo ſolubilia, which contains the ſulphureous ſubſtances with orpiment. 3. Illiquabilia, comprehending the rocks, and all other ſtones, as alſo corals, animal calculi, &c. 4. Liquabilia, or metals.

Aldrovandus, that voluminous writer, compiled his ſyſtem from Agricola, Cardanus, and Cæſalpinus. With him the petrifactions begin to be conſidered as objects of curioſity.

Beſides the many authors of that period, who buſied themſelves by arranging the minerals of the ancients according to Agricola's ſyſtem, which they now and then altered conformably to the ſuppoſed diſcoveries of the day, there were ſome who, although not ſyſtematic writers themſelves, had conſiderable influence on the ſyſtems of ſucceeding periods. Among theſe was the famous Jeſuit, Athanaſius Kircher, who (in his Mundus ſubterraneus, Amſterd. 1678) ſurpaſſed all his precurſors in the amaſſing of wonderful curioſities and *luſus naturæ;* although Jonſton had not been remiſs in affixing much importance to the ſtrange forms repreſenting celeſtial and ſublunary bodies, preſented to the world in his "Notitia regni mineralis," which appeared at Leipzig in 1661.

Of greater importance were the advantages which the ſcience of mineralogy derived from the inveſtigations of Beccher. This mineralogiſt (in his "Phyſica ſubterranea," firſt publiſhed in 1667,) conſidered water and earth as the remote, and vitreous, inflammable, and mineral earths (ſal, ſulphur, mercurius), as the proximate conſtituent parts of all minerals, which he accordingly arranged under three claſſes; the firſt comprehending ſuch ſtones in which the vitreous earth conſtitutes the principal ingredient; the ſecond and third claſs containing the ſubſtances in which the two remaining earths predominate. Though the principles which thus formed the baſe of his ſyſtem were derived from gratuitous aſſumption, yet they ſerved to prove the poſſibility of a chemical arrangement of the genera, and of applying the differences obſervable in the conſtituent parts of the earths and ſtones as fit characters for diſtinguiſhing them.

The ſtones Beccher divides into thoſe that either calcine or vitrify in the fire; thoſe that preſerve their ſolidity, or become friable when ignited; and thoſe that, when ignited and immerſed in water, either remain ſolid or crumble to pieces. In his work, we for the firſt time find antimony, zinc, and biſmuth, (though, indeed, alſo pyrites,) introduced as imperfect or ſemi-metals. The perfect metals, of which he has ſix in number (for mercury he conſiders as a *decompoſitum*), are claſſed after the following characters: two of them (gold and ſilver) melt in a red heat; two (copper and iron) are red-hot before they melt; and two (tin and lead) melt before they can be heated to redneſs.

The next in ſucceſſion are the *decompoſita*, or ſuch minerals as are compoſed of ſeveral earths and ſtones, earths and metals, &c., or of ſeveral ſpecies belonging to the ſame claſs, ſuch as mixtures of metals; and they are divided into terrea, lapidea, metallica, and aquea.

Bromelius (who publiſhed a book intitled "Catalogus rerum curioſarum," Gothenburg, 1698,) began to refer to the ſame claſs ſulphur and the bituminous ſubſtances, which he called ſulphurea and pinguia: he retained Beccher's diviſion of metallic ſubſtances into perfect and imperfect metals.

Nor ſhould the Swediſh mineralogiſt Hiärne be left unnoticed here, who introduced ſeveral changes into the then prevailing ſyſtem of mineralogy: thus, for inſtance, he was the firſt who ſeparated the common from arſenical pyrites, which before him had conſtantly been united by authors. Like Bromelius he places ſulphur and the bituminous ſubſtances in the ſame claſs; an arrangement which has been retained by all ſucceeding ſyſtematic writers in mineralogy: and though the term "ſuccus concretus" continued to be employed by ſome of them, it was always uſed as a ſynonym of ſalt.

Towards the cloſe of the 17th century Woodward publiſhed his catalogue of minerals. His knowledge of mineralogy was ſuperior to that of any other Engliſh author of his time.

Of the mineralogiſts of the beginning of the 18th century, the moſt celebrated were Beyer, Bütner, and Scheuchzer. Theſe authors, who were leſs ſuperſtitious and more to be depended upon than Aldrovandus and Kircher, principally preſented the world with their obſervations on petrifactions. The two latter, however, were not quite free from prejudice; they introduced an exceſs of biblical teleology into the mineralogical ſcience, and moſt of their obſervations were made with a view to the univerſal deluge. But it is not to be denied that all three contributed largely towards directing the attention of mineralogiſts to the ſtructure of mountain rocks. All the mineralogical writers that had preceded them were chemiſts, practical miners, or at beſt mere oryctognoſians: but about this period naturaliſts began to examine rocks with other than merely metallurgical views; mineralogy was found ſuſceptible of being treated in a ſcientific manner, and it began to go hand in hand with the other branches of phyſical knowledge. Even Scheuchzer and Beyer, and ſome other authors of thoſe times, by not confining themſelves to the mere collecting of petrifactions, but alſo conſidering them as veſtiges of important revolutions, had opened a new field of inveſtigation to the thinking naturaliſt.

Magnus von Bromell, a Swede and pupil of Hiärne and Boerhaave, publiſhed a ſyſtem of mineralogy, (Inledning til kundſcab om Mineralier, &c. Stockh. 1730,) in which he not only availed himſelf of all the improvements made by his maſters, but alſo propoſed a new chemical diviſion of ſtony ſubſtances into ſuch as are refractory (apyri), or calcinable, or vitreſcible, in the fire; to which were added the figured ſtones (figurati.)

After Von Bromell, Linnæus appeared, and it is chiefly from this period that the origin of ſyſtematic mineralogy may be dated, when our ſcience, together with the other branches of natural hiſtory, acquired a degree of popularity which it had never before enjoyed. It has been queſtioned whether Linnæus himſelf contributed to the advancement of the ſcience; and ſome writers have even denied him any knowledge in this department of natural hiſtory. But the fact is that in his earlier years Linnæus devoted a conſiderable ſhare of time to the ſtudy of mineralogy, and whatever his merits in framing his mineralogical ſyſtem may be, certain it is that it beſpeaks the ſame acuteneſs and the ſame original mode of thinking, which we ſo much admire in the other works of this illuſtrious naturaliſt. His mineralogical arrangement cannot, indeed, be compared with the maſterly ſyſtems of zoology and botany, and it even appears that he added it chiefly for the ſake of completing his grand work of a general ſyſtem of nature. It has been juſtly urged againſt the applicability of his ſyſtem, that it is founded on an erroneous principle, *viz.* on the ſuppoſition that the cryſtalline form of mineral ſubſtances is due to different ſalts, and that they are to be claſſed accordingly; but even this erroneous notion ſerved to direct the attention of the ſtudent to the important characters derived from the diverſity of cryſtallization, of which ſubſequent mineralogiſts availed themſelves with ſignal ſucceſs, for the diſtinction and claſſification of mineral ſubſtances. (See CRYSTALLIZATION.) If, moreover, we conſider the advantages which neceſſarily accrued to mineralogy by thoſe general principles that were introduced into natural hiſtory by Linnæus, the preciſion of his terminology, his philoſophical views of claſſification, &c., all of which were equally applicable to our ſcience, it can no longer be a matter of doubt that the labours of the great Swediſh naturaliſt have, at leaſt indirectly, been of eſſential ſervice to the advancement of this important branch of natural knowledge.

The chemical part of mineralogy began, about this period, to be cultivated with great ſucceſs. The diſcoveries of Henkel and Pott, who (if we except Hiärne, and perhaps Becher) may be looked upon as the firſt mineralogical chemiſts, had clearly demonſtrated the important advantages which mineralogy may derive from chemiſtry. The external characters were almoſt entirely rejected by Henkel as vague and unſatisfactory. In his "Idea Generalis de Lapidum Origine," the inflammable mineral ſubſtances (to which, however, he refers alſo vegetable gum and phoſphorus) conſtitute a ſeparate claſs; the claſs of ſalts contains acids, alkalies, and neutral ſalts, and the alkaline are kept diſtinct from the earthy, and the latter from the metallic neutral ſalts; the earths he divides in the ſame manner as Becher, and he ſubdivides them after the degree of heat required for their fuſion; the claſs of ſtones compriſes the calcareæ, ſiliceæ, calcareo-ſiliceæ or limoſæ; a claſſification which he propoſes with great modeſty, although it may indeed be conſidered as a great ſtep in mineralogical chemiſtry. Henkel's "Kies-Hiſtorie" (Hiſtory of Pyrites), conſidering the period in which it was written, diſplays an uncommon degree of accuracy, and contains, as well as others of his works, valuable contributions towards the natural hiſtory of various metallic ſubſtances, and their ores.

More accurate chemical knowledge marks the works of the celebrated Pott, who, on account of the valuable diſcoveries illuſtrative of mineralogy, may juſtly be called the Klaproth of the period in which he flouriſhed. No mineralogiſt before him had ſo clearly demonſtrated that it is the degree of hardneſs alone which diſtinguiſhes earths from ſtones, and that this property, infinitely variable in various ſubſtances, cannot furniſh a principal diſtinctive character for their claſſification. Profound chemical knowledge and unintermitted application enabled him to ſubject the ſimple earths to a cloſer examination, to determine their character with greater preciſion, and alſo to augment their number. His claſſification of the earths, which, with ſome alterations, juſtly became a ſtandard for his ſucceſſors, is the following:—1. *Alcaline earth*, which may be burnt into quick-lime, and is ſoluble with efferveſcence in the acids. 2. *Siliceous earth*, little alterable by calcination, and inſoluble in acids: this he conſidered as the principal cauſe of hardneſs of the ſtones in which it predominates. In his "Lithogeognoſie," Pott called this latter "vitreſcible" earth; but finding afterwards that the property which gave riſe to it is common to all the earths, he diſcontinued the name. 3. *Argillaceous earth*, which, on account of its viſcidity and ductility, is ſuſceptible of being turned on the lathe, becomes hard in the fire, and is inſoluble in the acids. 4. *Gypſeous earth*, which by burning is converted into gypſum, which reſiſts the acids, and is difficultly vitrifiable. The ſpecies of earthy foſſils were diſtributed among theſe claſſes, according as one or the other of the above earths formed the predominant conſtituent part in them. Had this great chemiſt lived to extend to the metals the ſame ſtrict examination to which he ſubjected the earths and ſtones, mineralogy would undoubtedly, in his time, have arrived at that perfection which afterwards reſulted from the laborious experiments of ſucceeding chemical mineralogiſts.

Nearly about the ſame time Wallerius publiſhed his ſyſtem of mineralogy (Mineral-rike indelt och beſkrifvit, Stockholm 1747), in which, as the diſcoveries of Pott were not then known to him, he adopts the claſſification of the older mineralogiſts, ſeparating earths from ſtones, the former of which he divided into pulverulent earths (terræ macræ), argillaceous earths (terræ pingues), mixed earths (terræ minerales ſ. compoſitæ), and ſand (arenæ); the latter (with Bromell the younger) into lime-ſtones (calcarei), vitrifiable ſtones (vitreſcentes), refractory ſtones (apyri), and rocks (ſaxa). The ſubſtances of the third claſs of his ſyſtem are called mineræ, comprehending ſaline ores (ſalia), inflammable ſubſtances (ſulfura), and metals. The fourth claſs contains the concretions (concreta), which are ſubdivided into ſtalactical ſubſtances (pori), petrifactions (petrificata), figured ſtones (figurata), and calculi.

This work of Wallerius was a welcome preſent to the mineralogical world. The genera before its appearance were extremely vague, and the external characters pointed out in the deſcriptions were inſufficient for the determination of a given foſſil ſubſtance; it was indeed required to be previouſly acquainted with minerals in order to underſtand the ſyſtematic works, and the knowledge of foſſils was propagated more by tradition than by ſcientific inſtruction. One of the chief objects of oryctognoſy, the determining a given foſſil from deſcription alone, even without any previous practical knowledge of mineral ſubſtances, was in a great meaſure attained by this new work of Wallerius; the utility of which was greatly enhanced by the addition of a correct and critical ſynonymy of preceding mineralogiſts. But however great the advantages which accrued to the ſcience by the labours of this excellent mineralogiſt, his ſyſtem was ſtill, in many parts, eſſentially defective: thus, for inſtance, the characters of the firſt, ſecond, and fourth claſſes were derived from the external form, thoſe of the third, on the other hand, from the mode of occurrence of the ſubſtances which it contains; the orders are chemically determined in the three firſt claſſes, while thoſe of the fourth claſs are derived from the form, and even the origin of the minerals referred to it. Nothing can be more vague than the definition he gives of concretions, which to him are "mineral ſubſtances compoſed of a foſſil and common matter, formed in the uſual manner, but hardened, and, as it were, cemented, either by fire or water, and therefore different from other minerals in their origin, figure, and the localities in which they occur."

Wolterſdorf, a pupil of Pott, propoſed to frame a ſyſtem, embracing the whole mineral kingdom, in the manner of his maſter's ſyſtem of lapideous ſubſtances; but his chemical knowledge appears to have been inadequate to the taſk which he undertook: his ſyſtem, therefore, not being ſufficiently ſupported by experiments, ſhared the fate of all attempts at natural arrangement not founded on actual obſervation, and proved abortive.

Pott's diſcoveries had paved the way to a more judicious and proper mode of framing claſſes and orders in mineralogy. In the ſame manner as botaniſts, in former times, ſeparated trees from plants, mineralogiſts, equally miſled by an apparently important external character, had kept the ſtones diſtinct from the earths; it was principally Pott who ſhewed the impropriety of this ſeparation, and alſo that both earths and ſtones are diviſible into ſeveral genera, according to the greater or leſs proportion they contain of the ſeveral chemically ſimple earths. The idea now preſented itſelf, that perhaps in future the genera might be ſucceſsfully determined after the number of earths which enter the compoſition of each, and that this principle of claſſification might be made ſubſervient to the preſervation of unity of the ſyſtem. The ſalts were already arranged, alſo in the mineralogical ſyſtems, according to their more obvious chemical differences. To the claſs of metallic ſubſtances all ſuch minerals were referred as chiefly contained metals, and the mineralized ores were no longer ſeparated from the native metals. On the other hand, the writers on petrifactions, Bourguet, d'Argenville, &c. ſtill followed cloſely the footſteps of Scheuchzer. Luſus naturæ, foſſil productions imitative of organic ſtructure, ſtill occupied a conſpicuous place in their arrangements, from which no ſyſtematic writer had yet dared to exclude them. To do this was reſerved for Cronſtedt.

With Cronſtedt begins the ſecond principal era of the ſcience of mineralogy, if the firſt is to be dated from Agricola. In his work (Forſög til Mineralogie, &c. Stockh. 1758,) he ſets out with giving ſome highly intereſting and important obſervations on the gradual effects of fire and water on minerals, and on the ſlow but unintermitted changes they experience by phyſical and chemical agents in the bowels of the earth.

The minerals are divided by Cronſtedt into earths, bitumens, ſalts, and metals. The earths are ſubdivided according to the difference in their mixture, as far as it was then known, into the following nine orders:—1. Calcareous ſtones; to which order alſo gypſum is referred. 2. Siliceous ſubſtances. 3. Granitic ſubſtances (garnet, baſalt, ſhorl.) 4. Argillaceous ſubſtances. 5. Micaceous ſubſtances (mica, talc.) 6. Fluoric ſubſtances (fluor ſpar.) 7. Aſbeſtine ſubſtances. 8. Zeolite, to which he refers alſo the lapis lazuli. 9. Manganeſian ſubſtances (manganeſe, wolfram.) The ſalts are claſſed according to the acids or alkalies. The claſs of inflammables, which till then had been but little elucidated, has hardly undergone any alterations. He has, however, added the plumbago or graphite to it. The claſs of metals comprehends as many genera as ſimple metals were known in the author's time. For the firſt time we find here the then newly diſcovered platina, and alſo nickel, one of Cronſtedt's own diſcoveries.

One of the principal and moſt ſtriking advantages of this ſyſtem, is the ſtrict unity obſerved in the principle of claſſification, which is throughout chemical; and the principles on which theſe claſſes and orders are eſtabliſhed are ſtill pretty generally acknowledged as genuine by the ſyſtematic mineralogiſts of the preſent day. The garnets were not ſeparated by Cronſtedt, from ſuppoſing them to contain a peculiar earth; on the contrary, he himſelf conſiders them as a mere variety of iron-ſhot quartz, and the ſeparation was ſuggeſted by ſome peculiarities of external and phyſical characters preſented by the garnets and ſhorls, the component parts of which were not as yet known to him. This unacquaintance with the conſtituent parts, and their peculiar chemical properties, likewiſe induced him to ſeparate mica, talc, aſbeſt, fluor, zeolite, and azur ſtone, manganeſe and wolfram from the other earths: though he actually ſuſpected that the two former of theſe ſubſtances contained argillaceous earth, and that manganeſe and wolfram were known metals. Soon after, a new acid was diſcovered in fluor ſpar, a new earth in talc and aſbeſt, and new metals in manganeſe and wolfram. In ſome inſtances he has deviated from the unity of his claſſification, particularly in the claſs of inflammable ſubſtances, to which, probably, on account of its uſe, iron pyrites is referred, though it does not diſplay thoſe properties which are mentioned as characteriſtic of that claſs. As, on one hand, Cronſtedt's ſyſtem is enriched with many new ſpecies, ſo, on the the other hand, this mineralogiſt properly rejected a great number of ſubſtances, which occupied a conſpicuous place in the writings of his predeceſſors; for inſtance, the luſus naturæ, figured ſtones, &c. He alſo ſhewed that petrifactions cannot claim a ſeparate place in the ſyſtem merely becauſe they have retained part of their original form; as alſo that compound mountain rocks are not admiſſible into a ſyſtem which comprehends mineralogically ſimple ſubſtances. Both theſe natural productions are treated on in an appendix.

No work on mineralogy ever created greater ſenſation than that of Cronſtedt. A ſhort time after its appearance, it was tranſlated into almoſt all European languages, the ſyſtem was ſtudied in all civilized countries, and with ſome occaſional, often unneceſſary deviations, was adopted by all writers on mineralogy. Yet with all this, Cronſtedt's ſyſtem is not without its great defects: thus, for inſtance, it is a matter of great difficulty to become acquainted with a mineral ſubſtance by conſulting the deſcription he gives of it. Cronſtedt improved the claſſification of minerals, but the taſk of giving the greateſt poſſible perfection to deſcription, ſo indiſpenſably neceſſary for the diagnoſis of foſſils, was reſerved for ſucceeding mineralogiſts. He even neglected thoſe external characters which were known and adopted in his time; but theſe, it muſt be confeſſed, were, for the greateſt part, unſettled and vague.

At the ſame time with Cronſtedt's Mineralogy, or immediately after, Lehmann and Vogel publiſhed their Syſtems, which, however, did not contribute much to the advancement of the ſcience.

Marggraf demonſtrated the peculiar nature of magneſian earth, which became the foundation for a new order of earthy ſubſtances. His writings contain, moreover, many diſcoveries highly important to chemiſtry, but which it is not neceſſary to detail in this place.

Wallerius was the firſt by whom the principles on which ſyſtematic writers had hitherto arranged mineral ſubſtances, were ſubjected to a ſtrict examination. He rejected all characters derived from the value, uſe, and geognoſtic ſituation, and eſtabliſhed it as a rule, that the orders and genera ſhould be founded on chemical characters alone, while the ſpecies ſhould principally be determined by their external characters. Theſe principles he employed in the new edition of his "Mineralogical Syſtem," publiſhed at Stockholm in 1772. The nomenclature of no mineralogical writer before him had been equally correct and preciſe. His external characters, combined with the chemical ones then known, enabled the ſtudent, at leaſt in ſome meaſure, to diſcriminate minerals by means of theſe improved deſcriptions. The genera, too, were diſtinguiſhed by him with greater preciſion, and augmented with many new ones. In theſe reſpects Wallerius holds a moſt diſtinguiſhed place among mineralogical writers, and his work ſtill deſerves to be conſulted by the ſtudent in oryctognoſy. It cannot, however, be denied that his terminology is ſtill much too vague, and his external characters far from being ſufficiently complete; for, as Werner very juſtly remarks, deſcription is one of the principal objects of oryctognoſy, and it is better to ſee a mineral badly arranged and well deſcribed, than well arranged and badly deſcribed. But even in his arrangement Wallerius has fallen into errors, which latter diſcoveries might have taught him to avoid. In ſeparating earths from ſtones he is not even faithful to his own principles of claſſification; and the reaſons he aſſigns for ſo doing are, indeed, very unſatisfactory. His retaining the faulty diviſion into vitreſcible and fixed ſtones, his referring to one and the ſame claſs the ſalts, the ſulphureous and bituminous ſubſtances, together with the metals, were among the more important defects in his claſſification.

It was about this time that Engſtröm, by pointing out a more convenient method of trying ſome of the chemical properties of minerals by ſubjecting them to the flame urged by the blowpipe, greatly contributed toward facilitating the diagnoſis of minerals, eſpecially that of metallic ſubſtances.

Werner now publiſhed his claſſical work on the external characters of minerals, (Von den äuſſern Kennzeichen der Foſſilien, Leipzig 1774,) upon the appearance of which the vague terminology which had, till then, rendered deſcription almoſt uſeleſs, gave way to a ſettled and determinate language, and the foundation was laid of a ſyſtem which has deſervedly procured its framer the title of the father of ſyſtematic mineralogy. In the work juſt mentioned, all characters are deſcribed with uncommon preciſion, which may appear pedantic to thoſe who are ignorant of the ſalutary effects which this very circumſtance has on the diſcrimination of minerals. In 1780, Werner publiſhed a German tranſlation of Cronſtedt's Mineralogy, accompanied with notes, in which he makes us acquainted with his ideas reſpecting a ſyſtem of oryctognoſy. This was followed, in 1791, by a deſcriptive Catalogue of the Mineral Collection of M. Pabſt von Ohein, in which we have the firſt authentic ſketch of his ſyſtem. Theſe two works, and ſome highly intereſting memoirs in "The Bergmänniſhe Journal," and ſome other periodical publications, is all that has been publiſhed by this great and modeſt mineralogiſt. All the expoſitions of his ſyſtem which we poſſeſs are by his pupils; they are of various merit, and ſome of them are but ill calculated to convey an adequate idea of its excellencies. The late Mr. Kirwan, in his "Syſtem of Mineralogy," (a work of peculiar merit, on account of the many original obſervations which it contains) was the firſt who made the Wernerian ſyſtem known in England; and after him profeſſor Jameſon, a diſtinguiſhed pupil of the Freiberg ſchool, has publiſhed an elaborate work in three volumes, the two firſt of which contain the ſyſtem of oryctognoſy according to the method of Werner, the third giving a complete expoſition of his ſyſtem of geognoſy.

The fundamental principle laid down by Werner, in the ſyſtematical arrangement of foſſils, is their natural affinity, which he allows to be founded on the chemical mixture of their component parts. Theſe may be diſtinguiſhed into eſſential and accidental component parts; the former of which alone are conſidered in the claſſification of mineral ſubſtances. The eſſential component parts are ſubdivided into predominant and characteriſtic ones; and generally the characteriſtic happen to be, at the ſame time, the predominant conſtituents. By Humboldt the former are called the enveloping conſtituent parts. All mineral ſubſtances are diſtributed by Werner into four claſſes, which are founded on what is called the fundamental conſtituent parts, *viz.* the earthy, ſaline, inflammable, and metallic; each claſs being called after that fundamental conſtituent part which predominates in and characterizes it. Thus we have the earths, the ſalts, the inflammables, and the metals. Theſe claſſes are ſubdivided into genera, which are derived from the variety in the component parts of the minerals comprehended in each claſs; there being as many diſtinct genera as there are predominating, or, at leaſt, characteriſtic conſtituent parts diſcovered in their mixture. Werner has himſelf diſregarded this rule in ſeveral inſtances, and we ſuppoſe has now even entirely diſcontinued the diviſion into genera; at leaſt, ſeveral of his pupils have, in their ſyſtematic works, introduced *families* as the only diviſion between claſs and ſpecies; each family being a group of ſpecies that manifeſt cloſe affinity to each other, ſuch as the "Feldſpar family," the "Zeolite family," &c. By this means the ſyſtem is ſo far freed from the ſhackles of chemiſtry, and the contradictions are avoided, which ſo frequently ſtrike the ſtudent of the Wernerian ſyſtem. In the ſame manner perhaps, alſo, the ſpecies might in ſome meaſure be made independent of chemiſtry. The character of the ſpecies, according to the original idea of the founder of this ſyſtem, was to be derived from the chemical mixture, and from the differences in the quantity and quality of the conſtituent parts. But in moſt caſes, where no analyſes exiſted of minerals, or no ſatisfactory ones, external characters were ſubſtituted the more readily, as it is an axiom with Werner that a difference in external characters is indicative of a correſponding difference in the component parts, whether it be in their quantity and quality, or in the particular ſtate of their chemical combination. If, therefore, a mineral differs from another related ſubſtance in three or more external characters, it is now conſidered as a diſtinct ſpecies. This circumſtance accounts for the conſiderable number of ſpecies in the Wernerian ſyſtem, compared with thoſe of Haüy's, whoſe characters employed for ſpecification are confined within a far more narrow compaſs. We ſhall ſhew in another place, that the laws for framing ſpecies in mineralogy, whatever the characters may be on which they are founded, muſt always be arbitrary: but fortunately for the ſcience, the different opinions entertained by different ſchools reſpecting the nature of the ſpecies, is a mere matter of ſpeculation, exerting little or no influence either on the diagnoſis or the arrangement of mineral ſubſtances: for, provided the natural connection between two mineral ſubſtances remain undiſturbed, it is certainly of no great importance whether one of them be degraded into a mere variety of its neighbour, or raiſed to the rank of a diſtinct ſpecies. Werner enumerates three different kinds of affinity of minerals, *viz.* the chemical, depending on the ſimilarity of their conſtituent parts; the oryctognoſtical, conſiſting in the approximating reſemblances of their external characters; and the geognoſtic affinity, denoting ſimilarity in occurrence, relative age, &c. The ſpecies is ſubdivided by Werner into *ſubſpecies* and *variety:* by the former are meant foſſils belonging to the ſame ſpecies with another, but differing from it in two or three particular external characters; the latter is produced by the difference in any ſingle external character, ſuch as colour, fracture, &c.

The following is a tabular view of the Wernerian oryctognoſtic ſyſtem, according to the improvements it has experienced up to 1803; to which are ſubjoined the additions lately made by its founder.

Claſs I. EARTHY FOSSILS. A. *Diamond Genus:* 1. Diamond. B. *Zircon Genus:* 2. Zircon. 3. Hyacinth. 4. Cinnamon-ſtone. C. *Flint Genus: Chryſolite Family:* 5. Chryſoberyl. 6. Chryſolite. 7. Olivine. 8. Coccolite. 9. Augite. 10. Piſtacite. 11. Veſuvian.—*Garnet Family:* 12. Leucite. 13. Melanite. 14. Garnet; noble, common. 15. Staurolite. 16. Pyrope.—*Ruby Family:* 17. Spinelle. 18. Sapphire. 19. Emery. 20. Corundum. 21. Diamond ſpar. 22. Ceylanite. 23. Topaz.—*Shorl Family:* 24. Euclaſe. 25. Emerald. 26. Beryl; noble, ſhorlous. 27. Shorl; common. Tourmaline. 28. Axinite.—*Quartz Family:* 29. Quartz amethyſt; (common, thick fibrous). Rock cryſtal. Milk quartz. Common quartz. Praſe. 30. Iron flint. 31. Hornſtone; ſplintery, conchoidal, wood-ſtone. 32. Flint ſlate; common, Lydian-ſtone. 33. Flint. 34. Calcedony; common, carnelian. 35. Hyalite. 36. Opal; noble, common, ſemi-opal, wood-opal. 37. Menilite 38. Jaſper; Egyptian (red, brown), ſtriped, porcelain, common (conchoidal, earthy). 39. Heliotrope. 40. Chryſopraſe. 41. Plaſma. 42. Cat's-eye.—*Pitch-ſtone Family:* 43. Obſidian. 44. Pitch-ſtone. 45. Pearl-ſtone. 46. Pumice.—*Zeolite Family:* 47. Prehnite; fibrous, foliated. 48. Zeolite; mealy, fibrous, foliated, radiated. 49. Cubicite. 50. Croſs-ſtone. 51. Lomonite. 52. Schmelzſtein (Dipyre, H.) 53. Natrolite. 54. Lazulite. 55. Azure-ſtone.—*Feldſpar Family:* 56. Andaluſit. 57. Feldſpar; adularia. Labrador, common, (freſh, diſintegrated), compact, hollow ſpar. 58. Scapolite. 59. Arctizite. 60. Spodumene. 61. Ichthyophthalmite.—D. *Clay genus: Clay Family:* 62. Pure clay. 63. Porcelain earth. 64. Common clay; loam, pipe-clay, potters' clay, (earthy,) variegated, and ſlate-clay. 65. Clay-ſtone. 66. Adheſive ſlate. 67. Poliſhing ſlate. 68. Tripoli. 69. Float-ſtone. 70. Alum-ſtone.—*Clay-ſlate Family:* 71. Alum-ſlate; common, gloſſy. 72. Bituminous ſhale. 73. Drawing-ſlate. 74. Whet-ſlate. 75. Clay-ſlate:—*Mica Family:* 76. Lepidolite. 77. Mica. 78. Pinite. 79. Pot-ſtone. 80. Chlorite; chloritic earth, chlorite ſlate, common and foliated chlorite.—*Trap Family:* 81. Hornblende; common, Labrador, baſaltic, hornblende ſlate. 82. Baſalt. 83. Wacke. 84. Clink-ſtone. 85. Iron-clay. 86. Lava.—*Lithomarge Family:* 87. Green earth. 88. Lithomarge; friable, indurated. 89. Rock-ſoap. 90. Umbra. 91. Yellow earth.—E. *Talc Genus: Soap-ſtone Family:* 92. Native magneſia. 93. Bole. 94. Meerſchaum. 95. Fullers'-earth. 96. Steatite. 97. Bildſtein.—*Talc Family:* 98. Nephrite; common, axe-ſtone. 99. Serpentine; common, noble, (conchoidal, ſplintery). 100. Schillerſtein. 101. Talc; earthy, common, indurated. 102. Aſbeſt; rock-cork, amianth, common aſbeſt, rock-wood.—*Actinote Family:* 103. Kyanite. 104. Strahlſtein; aſbeſtous, common, glaſſy. 105. Tremolite; aſbeſtous, common, glaſſy. 106. Salite.—F. *Lime-ſtone Genus: Carbonats:* 107. Rock-milk. 108. Chalc. 109. Lime-ſtone; compact, (common, roe-ſtone), foliated, (granular, calc. ſpar), fibrous, (common, calc. ſinter,) pea-ſtone. 110. Lime-tuff. 111. Foam earth. 112. Slate-ſpar. 113. Brown ſpar; foliated, fibrous. 114. Schaalſtein. 115. Dolomite. 116. Rhomb ſpar. 117. Stink-ſtone. 118. Marl; marl-earth, indurated m. 119. Bituminous marl-ſlate. 120. Arragon.—*Phoſphats:* 121. Appatite. 122. Aſparagus-ſtone. 123. Phoſphorite.—*Fluats:* 124. Fluor; compact, F. ſpar.—*Sulphats:* Gypſum; earthy, compact, foliated, fibrous. 126. Selenite. 127. Anhydrite. 128. Cube ſpar.—F. *Baryte Genus:* 129. Witherite. 130. Heavy ſpar; earthy, compact, granular, curved lamellar, ſtraight lamellar, columnar ſpar, priſmatic ſpar, Bologneſe ſpar.—G. *Strontian Genus:* 131. Strontian. 132. Celeſtine; fibrous, foliated.—H. *Halite Genus:* 133. Boracite. 134. Cryolite.

Claſs II. FOSSIL SALTS.—*Carbonats:* 135. Natural ſoda.—*Nitrats:* Natural nitre.—*Muriats:* Natural rock-ſalt; rock-ſalt, (foliated, fibrous,) lake-ſalt. 138. Natural ſal-ammoniac.—*Sulphats:* 139. Natural vitriol. 140. Hair-ſalt. 141. Rock-butter. 142. Natural Epſom-ſalt. 143. Natural Glauber-ſalt.

Claſs III. INFLAMMABLE FOSSILS.—*Sulphur Genus:* 144. Natural ſulphur; common, volcanic.—*Bituminous Genus:* 145. Mineral oil. 146. Mineral pitch; elaſtic, earthy, flaggy. 147. Brown coal; bituminous wood, earth coal, alum earth, common brown coal, moor coal. 148. Black coal; pitch coal, columnar, ſlaty, foliated, coarſe, cannel coal.—*Graphite Genus:* 149. Glance coal; conchoidal, ſlaty, ſcaly, compact. 151. Mineral charcoal.—*Reſin Genus:* Amber; white, yellow. 153. Honey-ſtone.

Claſs IV. METALLIC FOSSILS.—*Platina Genus:* 154. Native platina.—*Gold Genus:* 155. Native gold: gold-yellow, braſs-yellow, greyiſh-yellow.—*Mercury Genus:* 156. Native mercury. 157. Native amalgam; ſemi fluid, ſolid. 158. Mercurial horn-ore. 159. Mercurial liver-ore; compact, ſlaty. 160. Cinnabar; dark, light-red.—*Silver Genus:* 161. Native ſilver; common, auriferous. 162. Antimonial ſilver. 163. Arſenical ſilver. 164. Corneous ſilver-ore. 165. Silver black. 166. Silver glance. 167. Brittle ſilver glance. 168. Red ſilver-ore; dark, light. 169. White ſilver-ore. 170. Black ſilver-ore.—*Copper Genus:* 171. Native copper. 172. Copper glance; compact, foliated. 173. Variegated copper-ore. 174. Copper pyrites. 175. White copper-ore. 176. Grey copper-ore. 177. Copper black. 178. Red copper-ore; compact, foliated, capillary. 179. Tile ore; earthy, indurated. 180. Copper azure; earthy, indurated. 181. Malachite; compact, fibrous. 182. Copper green. 183. Iron-ſhot copper green; earthy, flaggy. 184. Copper emerald. 185. Copper mica. 186. Lenticular ore. 187. Olive ore. 188. Copper muriat.—*Iron Genus!* 189. Native iron. 190. Iron pyrites; common, radiated, hepatic, capillary. 191. Magnetic pyrites. 192. Magnetic iron-ſtone; common, arenaceous. 193. Iron glance; common, (compact, foliated,) micaceous. 194. Red iron-ſtone; red iron-froth, ochrey and compact red iron-ſtone, red hematite. 195. Brown iron-ſtone; brown iron-froth, ochrey and compact iron-ſtone, brown hematite. 198. Clay iron-ſtone; reddle, columnar, lenticular, jaſpery, common, reniform, and piſiform clay-ſtone. 199. Bog iron-ore; moraſs-ore, ſwamp-ore, meadow-ore. 200. Blue iron-earth. 201. Pitchy iron-ore. 202. Gadolinite. 203. Green iron-earth. 204. Cube-ore.—*Lead Genus:* 205. Galena; common, compact. 206. Blue lead-ore. 207. Brown lead-ore. 208. Black lead-ore. 209. White lead-ore. 210. Green lead-ore. 211. Red lead-ore. 212. Yellow lead-ore. 213. Lead-vitriol. 214. Lead-earth; coherent, friable.—*Tin Genus:* 215. Tin pyrites. 216. Tin-ſtone. 217. Wood-tin.—*Biſmuth Genus:* 218. Native biſmuth. 219. Biſmuth glance. 220. Biſmuth ochre.—*Zinc Genus:* 221. Blende; yellow, brown, black. 222. Calamine.—*Antimony Genus:* 223. Native antimony. 224. Grey antimony; compact, foliated, radiated, plumoſe. 225. Black antimony. 226. Red antimony. 227. White antimony. 228. Antimony ochre.—*Cobalt Genus:* 229. White cobalt ore. 230. Grey cobalt ore. 231. Cobalt glance. 232. Black cobalt ochre; earthy, indurated. 233. Brown cobalt ochre. 234. Yellow cobalt ochre. 235. Red cobalt ochre; cobalt cruſt, cobalt bloom.—*Nickel Genus:* 236. Copper nickel. 237. Nickel ochre.—*Manganeſe Genus:* 238. Grey manganeſe ore; radiated, foliated, compact, earthy. 239. Black manganeſe. 240. Red manganeſe.—*Molybdena Genus:* 241. Molybdena.—*Arſenic Genus:* 242. Native arſenic. 243. Arſenical pyrites; common, argentiferous. 244. Orpiment; yellow, red. 245. Arſenic bloom.—*Scheele Genus:* 246. Tungſten. 247. Wolfram.—*Menachine Genus:* 248. Menachan. 249. Octahedrite. 250. Rutile. 251. Nigrine. 252. Iſerine.—*Uran Genus:* 253 Pitch ore. 254. Uran mica. 255. Uran ochre.—*Sylvan Genus:* 256. Native ſylva. 257. Graphic ore. 258. Yellow ſylvan ore. 259. Black ſylvan ore.—*Chrome Genus:* 260. Acicular ore. 261. Chrome ochre.

Werner has ſince added ſeveral new ſpecies to this liſt, and from the place aſſigned to one or two of them in the arrangement, it follows that this latter muſt alſo have undergone ſome ſlight alterations. Thus zoiſite is placed between piſtacite and axinite, which in the above tabular view are placed at ſome diſtance from each other. Augite is divided into common, foliated, conchoidal, and granular; and, as next ſpecies to it, the coccolite is added. The Siberian green garnet forms a diſtinct ſpecies next to garnet, under the name of groſſular. To the ſame natural family, Werner has now alſo added the cinnamon ſtone, (which, after Lampadius' incorrect analyſis, had before been placed in the zircon genus,) and the allochroit of d' Andrada. Between plaſma and cat's eye, the fettſtein or elæolite of Klaproth is placed. The ſpecies pumice is divided into three ſubſpecies, common, glaſſy, and porphyritic p. The dichroïte of Cordier is added, as iolite, to the pitch-ſtone family. The blue feldſpar of Stiria now forms a ſpecies diſtinct from, but next to feldſpar, under the name of blau-ſpath. A variety of compact feldſpar (jade of Sauſſure) is called variolite. Porcelain earth now ſtands next to feldſpar, from which it originates. Alſo the meionite and ſommit are united with this family. Potters' clay is now ſub-divided into earthy (formerly called pipe-clay) and ſlaty. To the three ſubſpecies of ſtrahlſtein or actinote is added a fourth, the granular. Silver-black is divided into friable and indurated. What was called capillary iron pyrites, has, by Klaproth's analyſis, proved to be native nickel. The menachine genus has received two additional ſpecies in the brown and the yellow menachan, inſerted after iſerine.

Having given this general idea of Werner's ſyſtem, we cannot proceed to that of Haüy, without making honourable mention of the celebrated Romé de l'Iſle, whoſe indefatigable reſearches ſo eminently contributed to the progreſs of the ſcience of mineralogy in general, and whoſe "Cryſtallographie" (of which the firſt edition appeared in 1773) is deſervedly characterized as the reſult of labours immenſe in their extent, almoſt entirely novel in their object, and of the higheſt importance on account of their utility. His claſſification of minerals has nothing peculiar; but for the accuracy, completeneſs, and elegance of his deſcriptions, and particularly his ſcientific method of determining the cryſtalline forms, he ſtood unrivalled among the mineralogiſts of his time. For an account of the labours of this father of cryſtallography, the reader is referred to the article Crystals.

Several memoirs of Haüy, illuſtrative of his theory of the ſtructure of cryſtals, were followed, in 1801, by that celebrated profeſſor's great work, entitled "Traité de Minéralogie." In this important and truly claſſical production, the new theory (of which a detailed view is given under the article Crystallography) is alſo made ſubſervient to the claſſification of mineral ſubſtances. Haüy has defined the mineralogical ſpecies "an aſſemblage of bodies, the integrant molecules of which are ſimilar to each other, and have the ſame compoſition." According to his mode of viewing the ſubject, minerals have both a geometrical and a chemical limit; the former conſiſts in the invariable form of the molecule, the other in the compoſition of the ſame molecule. Haüy prefers making uſe of the geometrical limit for determining the ſpecies, not only becauſe minerals being in general more or leſs mixed with heterogeneous matter, it often happens that the chemical limit is but imperfectly repreſented by the reſults of the analyſis, whereas mechanical diviſion invariably furniſhes the ſame form of the molecule; but principally becauſe the geometrical limit is far more obvious and palpable, ſince to obtain it nothing is in many caſes required but the mechanical diviſion of the cryſtal. In caſes where the integrant molecule belongs excluſively to a determined combination of component principles, it alone is ſufficient to diſtinguiſh the ſpecies; but there are forms of molecules which are common to ſeveral diſtinct ſpecies; and theſe forms, as far as they are known, happen to poſſeſs the peculiar character of ſymmetry and regularity, conſtituting, as it were, limits with reſpect to other forms. As in this latter caſe the character derived from the integrant molecule is not ſufficient, Haüy adds to it another, chemical or phyſical, character for the diſcrimination of the ſpecies: thus, for inſtance, the property of diſſolving in water, ſuper-added to the cubic form determines muriate of ſoda, or common ſalt; but if the ſame form is united to the property of becoming electric by heat, we have borate of magneſia, or boracite. The type of the ſpecies, according to Haüy, being once determined, it is comparatively eaſy to arrange the varieties of cryſtallization belonging to the ſame ſubſtance, by aſcertaining, with the aſſiſtance of the theory of decrements, whether all their forms, even thoſe which no longer retain a trace of the primitive form, are in exact correſpondence with the latter. With regard to the varieties, ſuch as thoſe compoſed of fibrous, granular, or compact maſſes, of which the type, though it ſtill exiſts in them, can no longer be determined, their diſcrimination depends on the phyſical and chemical properties of the ſubſtance, ſuch as hardneſs, ſpecific gravity, electricity, &c. What regards the genera and upper diviſions, the diſtribution is made after the component parts or chemical properties common to all the ſubſtances contained in the ſame diviſion. The method adopted by Haüy, in his deſcription of the mineral ſpecies, is the following. At the head of the deſcription of each mineral is placed the eſſential character, founded on the moſt conſtant properties which diſtinguiſh its individuals; after which follow the phyſical, the geometrical (comprehending the cleavages and primitive form of the ſubſtance), and the chemical character; to which is added the diſtinctive character, in which the differences are pointed out which diſtinguiſh the ſubſtance in queſtion from others which might be eaſily miſtaken for it. Theſe general characters are followed by the enumeration of the varieties of form (divided into determinable and undeterminable), the varieties depending on light, ſuch as colour, tranſparency, &c.

The following outline of Haüy's diſtribution is principally taken from his "Tableau comparatif des Réſultats de la Cryſtallographie, et de l'Analyſe chimique," Paris, 1809. The names included in parentheſes are thoſe of the Wernerian ſchool.

Claſs I. *Acidiferous Subſtances. Order* I. Diſengaged acidiferous ſubſtances. 1. Sulphuric acid. 2. Boracic acid. *Order* II. Earthy acidiferous ſubſtances. A. With ſimple baſe:—*Firſt Genus:* Chaux (lime), ſp. 1. 3. Chaux carbonatée, (compriſing all the Wernerian ſpecies of carbonates of lime, with the exception of the following ſpecies). 4. Arragonite. 5. Chaux phoſphatée (apatite). 6. Ch. fluatée (fluor). 7. Ch. ſulfatée (gypſum and ſelenite). 8. Ch. anhydro-ſulfatée (anhydrite). 9. Ch. nitratée. 10. Ch. arſeniatée (arſenic bloom; pharmacolite, Klapr.)—*Second Genus:* Baryte. 11. Baryte ſulfatée (barytes or heavy ſpar). 12. Baryte carbonatée (witherite).—*Third Genus:* Strontian. 13. S. ſulfatée (celeſtine). 14. S. carbonatée (ſtrontian). —*Fourth Genus:* Magneſie. 15. M. ſulfatée (natural Epſom or bitter ſalt). 16 M. boratée (boracite). 17. M. carbonatée (native magneſia or talc earth).—*Fifth Genus:* Lime and ſilica. 18. Chaux boratée ſiliceuſe (datholite).—*Sixth Genus:* Silica and alumine. 19. Silice fluatée alumineuſe (topaz and pycnite, or ſhorl beryl).

Order III. Acidiferous alkaline ſubſtances.—*Firſt Genus:* Potaſſe. 20. P. nitratée (natural nitre).—*Second Genus:* Soude. 21. S. ſulfatée (natural Glauber ſalt). 22. S. muriatée (rock-ſalt). 23. S. boratée (tinkal, K.) 24. S. carbonatée (natural ſoda or natron).—*Third Genus:* Ammoniaque. 25. A. ſulfatée (maſcagnin, K.). 26. A. muriatée (natural ſal ammoniac).

Order IV. Acidiferous alkaline-earthy ſubſtances. 27. Alumine ſulfatée alcaline (alum)—*Appendix.* 28. Alumine fluatée alcaline (kryolite). 29. Glauberite.

Claſs II. Earthy ſubſtances. (No ſubdiviſion into orders) 30. Quarz (the whole of Werner's quarz family compriſing fourteen of his ſpecies). 31. Zircon (zircon and hyacinth). 32. Corindon (corundum, ſapphire, diamond-ſpar, emery). 33. Cymophane (chryſoberyl). 34. Spinelle (ſpinel, ceylanit). 35. Emeraude (emerald, beryl). 36. Euclaſe. 37. Grenat (garnet, melanite). 38. Amphigène (leucite). 39. Idocraſe (Veſuvian). 40. Meïonite. 41. Feld-ſpath (feldſpar). 42. Apophyllite (fiſh-eye ſtone, or ichthyophthalmite). 43. Triphane (ſpodumen). 44. Axinite. 45. Tourmaline (ſhorl). 46. Amphibole (all the ſub-ſpecies of hornblende, except Labrador hornbl., actinote, augite and tremolite partly). 47. Pyroxène (augite, ſahlite). 48. Yenite. 49. Staurotide (ſtaurolite). 50. Epidote (piſtazite, zoiſit). 51. Hyperſthène (Labrador hornblende). 52. Wernerite (arktizit). 53. Paranthine (ſcapolite). 54. Diallage (var. of actinote, ſchillerſtein). 55. Gadolinite. 56. Lazulite (azur-ſtone). 57. Meſotype (fibrous and mealy zeolite, nadelſtein). 58. Stilbite (radiated and foliated zeolite). 59. Laumonite (lomonit). 60. Prehnite. 61. Chabaſie (ſchabaſit). 62. Analcime (kubizit). 63. Nepheline (nephelin; ſommit, K.) 64. Harmotome (croſs-ſtone). 65. Peridot (chryſolite, olivine). 66. Mica (glimmer or mica). 67. Pinite. 68 Diſthène (cyanite). 69. Dipyre (ſchmelz-ſtein; dipyr, K.) 70. Aſbeſte. 71. Talc. 72. Marle (hollow ſpar; chiaſtolite, K.)

To this claſs are appended the following ſubſtances, the characters of which are not ſufficiently well underſtood to aſſign them their reſpective places in the ſyſtem.

Allochroite (ſplintery garnet, K.) Alumine pure (pure clay). Amianthoïde. Antophyllit, Schum. and Wern. Aplome. Bergmannit, Schum. Diaſpore. Feldſpathapyre, H. (andaluſit). Feld-ſpath bleu (var. of compact feldſpar). Fibrolite, Bourn. Gabbronite, Schum. Jade (common nephrite, axe-ſtone). Jolithe, W. and K. Kaneel or cinnamon ſtone, W. Lazulit, W. Latialite (Haüyne). Lepidolite, W. Melilite, Fleuriau. Natrolite, W. Pſeudo-ſommit, Fleur de B. Spath en tables (ſchaalſtein). Spinellane. Spinelle zincifère? (automalite). Spinthère, H. Talc? granuleux (earthy talc), and T. glaphique (bildſtein; agalmatolite, Kl.)

Claſs III. Combuſtible not metallic ſubſtances.—*Ord.* I. Simple. 73. Soufre (ſulphur). 74. Diamant (diamond). 75. Anthracite (kohlenblende, glanz-kohle).—*Ord.* II. Compounds. 76. Graphite. 77. Bitume (mineral oil; mineral pitch). 78. Houille (black coal). 79. Jayet (pitch coal). 80. Succin (amber). 81. Mellite (honey-ſtone).

Claſs IV. Metallic ſubſtances.—*Ord.* I. Not immediately oxidable, except by a very high degree of heat, and immediately reducible.—*Firſt Genus:* Platina. 82. P. natif ferrifère (native platina).—*Second Genus:* Or. 83. O. natif. (native gold).—*Third Genus:* Argent. 84. A. natif (native ſilver). 85. A. antimonial (antimonial ſilver); as appendix to it, A. antimonial ferro-arſénifère (arſenical ſilver). 86. A. ſulfuré (vitreous ſilver-ore). 87. A. antimonié ſulfuré (red-ſilver-ore); and as appendix to it, A. antimonié ſulfuré noir (brittle vitreous ſilver). 88. A. carbonaté. 89. A. muriaté (horn-ore or horn-ſilver).—*Ord.* II. Immediately oxidable and reducible: Mercure. 90. M. natif (native mercury). 91. M. argental (native amalgam). 92. M. ſulfuré (cinnabar); and as appendix, Mercure ſulfuré bituminifère (mercurial liver-ore). 93. Mercure muriaté (mercurial horn-ore).—*Ord.* III. Oxidable, but not immediately reducible: *a,* ſenſibly ductile.—*Firſt Genus:* Plomb. 94. P. natif volcanique. 95. P. ſulfuré (galena); by way of appendix, P. ſulf. antimonifère, and P. ſulf. antimonifère et argentifère (weiſſgultig-erz). 96. P. oxydé rouge. 97. P. arſeniaté (flokken-erz, K.) 98. P. chromaté (red lead-ore). 99. P. carbonaté (white lead-ore); and, as appendix, P. carb. noir (black lead-ore, lead earth), and P. carb. cuprifère. 100. P. phoſphaté (brown and green lead-ore). 101. P. molybdaté (yellow lead-ore). 102. P. ſulfaté (natural lead vitriol).—*Second Genus:* Nickel. 103. N. natif (capillary iron pyrites). 104. N. arſenical (copper nickel). 105. N. oxydé (nickel ochre).—*Third Genus:* Cuivre. 106. C. natif (native copper) 107. C. pyriteux (copper pyrites); and, as appendix, C pyr. hépatique (variegated copper ore). 108. C. gris (grey copper ore). 109. C. ſulfuré (vitreous copper ore). 110. C. oxydulé (red copper ore and tile ore). 111. C. muriaté (ſaltz-kupfer). 112. C. carbonaté bleu (copper azur). 113. C. carb. vert (malachite; copper green). 114. C. arſeniaté (lenticular copper ore; olive ore); as appendix, C. arſen. ferrifère (cupreous arſeniate of iron, Bourn.) 115. C. dioptaſe (copper emerald). 116. C. phoſphaté. 117. C. ſulfaté (copper vitriol, K.)—*Fourth Genus:* Fer. 118. Fer natif (native iron). 119. F. oxydulé (magnetic iron-ſtone); and, by way of appendix, F. oxydulé granuliforme (iron-ſand). 120. F. oligiſte (ſpecular iron, iron mica, red iron froth, red hematite; compact red iron-ſtone, columnar clay iron-ſtone). 121. F. arſenical (common arſenical pyrites); and, as appendix, F. arſenical argentifère (weiſs-ertz, W. noble arſenical pyrites, K.) 122 F. ſulfuré (common pyrites); and, as appendix, F. ſulfuré épigène (leberkies, but not of Werner), and F. ſulfuré ferrifère (magnetical pyrites). 123. F. oxydé (brown hematite; reniform and lenticular clay iron-ſtone; green iron-earth); and, as appendix, F. oxydé réſinite (eiſenpech-erz, or pitchy iron-ore); alſo part of F. oxydé carbonaté (ſparry iron-ſtone). 124. F. phoſphaté (blue iron earth). 125. F. chromaté (eiſen-chrom, K.) 126. F. arſeniaté (cube ore). 127. F.

ſulfaté (native vitriol).—*Fifth Genus:* Etain. 128. E. oxydé (tin-ſtone); and, as appendix, E. oxydé concrétionné (Corniſh tin ore, or wood-tin). 129. E. ſulfuré (tin pyrites).—*Sixth Genus:* Zinc. 130. Z. oxydé (calamine). 131. Z. carbonaté. 132. Z. ſulfuré (blende). 133. Z. ſulfaté (zinc vitriol, K.)—*b*, not ductile.—*Seventh Genus:* Biſmuth. 134. B. natif (native biſmuth). 135. B. ſulfuré (biſmuth glance); and, as appendix, B. ſulf. plumbo-cuprifère (needle ore). 135. B. oxydé (biſmuth ochre).—*Eighth Genus:* Cobalt. 137. C. arſenical (white and grey cobalt-ore). 138. C. gris (cobalt glance). 139. C. oxydé noir (black cobalt ochre). 140. C. arſeniaté (red cobalt ochre).—*Ninth Genus:* Arſenic. 141. A. natif (native arſenic). 142. A. oxydé (arſenic bloom). 143. A. ſulfuré (yellow and red orpiment).—*Tenth Genus:* Manganèſe. 144. M. oxydé (grey and black manganeſe ore); and, as appendix, M. oxydé carbonaté (red manganeſe ore). 145. M. ſulfuré (manganeſe glance, K.) 146. M. phoſphaté ferrifère (phoſphor. mangan, K.)—*Eleventh Genus:* Antimony. 147. A. natif. (native antimony). 148. A. ſulfuré (grey antimony ore). 149. A. oxydé (white antimony ore; antimony ochre). 150. A. oxyde ſulfuré (red antimony ore).—*Twelfth Genus:* Uran. 151. U. oxydulé (pitch ore). 152. U. oxydé (uran mica; uran ochre).—*Thirteenth Genus:* Molybdena. 153. M. ſulfuré (molybdena).—*Fourteenth Genus:* Titane. 154. T. oxydé (rutil; menakan). 155. T. anataſe (octaedrit). 156. T. ſiliceo-calcaire (ſphen).—*Fifteenth Genus:* Scheelin. 157. S. ferruginé (wolfram). 158. S. calcaire (tungſten).—*Sixteenth Genus:* Tellure. 159. T. natif; auro-ferrifère (native ſylvan), argentifère (graphic ore); auro-plombifère (nagyag ore).—*Seventeenth Genus:* Tantale. 160. T. oxydé ferro-manganéſifère (tantalit, K.) and yttrifère (yttro-tantalite, K.)—*Eighteenth Genus:* Cerium. 161. C. oxydé ſilicifère (cererit, K.)

Two appendices contain, the one, all the compound rocks; the other, the volcanic productious. As neither of theſe claſſes of minerals form a prominent or diſtinctive feature in the ſyſtem, it is only neceſſary in this place to mention the ſubdiviſion of thoſe aſſemblages. The rocks are divided into aggregates of primary, ſecondary, and tertiary formation, and into thoſe compoſed of fragments or detritus cemented together ſubſequent to the formation of the ſubſtances to which they belonged. The volcanic productions are divided into ſix claſſes: 1. Lavas, (ſubdivided into lithoid, glaſſy, and ſcorified). 2. Thermantides, or ſubſtances preſenting only ſlight traces of volcanization. 3. Products of ſublimation, ſuch as ſulphur, &c. 4. Altered lavas. 5. Volcanic tuffas. 6. Subſtances formed in the interior of lavas, ſuch as meſotype, &c. Conf. Anon. über das Studium der Mineralogie. Haüy's Tabl. comparatif. Lucas' Tabl. des Eſpèces minerales.

MINERVA, La, in *Geography*, a town of Naples, in the province of Otranto; 20 miles E.S.E. of Matera.

Minerva, in *Mythology*, derived according to ſome *à minis*, from the threats of her ſtern countenance, otherwiſe called *Pallas*, is the goddeſs of wiſdom and the arts; and the only one of the offspring of Jupiter to whom pertain the prerogatives of the ſupreme rank of divinity. Minerva is repreſented, both by the painters and poets of antiquity, as a beauty of the ſeverer kind: the diſtinguiſhing character of her face is dignity and a certain ſternneſs, which has more of maſculine than feminine in it: and, therefore, more apt to ſtrike one with awe and terror, than to charm one, at firſt ſight. Her dreſs and attributes are adapted to the characters of her face; ſhe moſt uſually appeared with a helmet on her head, and a plume that nodded formidably in the air; in her right hand ſhe ſhook her ſpear, and in her other graſped her ſhield, with the head of the dying Meduſa upon it; the ſame figure appears alſo on her breaſt-plate called Egis, which was the ſkin of a goat, or, as others ſay, of a monſter ſo called, which vomited fire and committed dreadful havoc in Phrygia, Phœnicia, Egypt and Libya, and which was killed by Minerva, and hence ſhe wore its ſkin upon her buckler; and ſometimes the goddeſs herſelf is repreſented as having living ſerpents about her breaſts, and about her ſhoulders; ſhe is alſo accompanied with a cock, which is a fighting bird, and correſponding to her character as the inventreſs and preſident of war, and an owl, which ſees in the dark, and, therefore, is the image of wiſdom. It is probable that the Romans conſidered Jupiter, Juno, and Minerva, as one and the ſame divinity, under three different names: among which names, that of Jupiter might ſignify ſupreme goodneſs; that of Minerva, ſupreme wiſdom; and that of Juno, ſupreme power: thus the learned Dr. Cudworth obſerves, Intell. Syſt. b. i. c. 4. p. 450, that the three Capitoline gods, Jupiter, Juno, and Minerva, may be underſtood to have been nothing elſe but ſeveral names and notions of one ſupreme deity, according to its ſeveral attributes and manifeſtations. Cicero mentions five goddeſſes of the name of Minerva, and Clemens Alexandrinus admits alſo the ſame number. Several cities were diſtinguiſhed by the worſhip which they paid to Minerva; among others Rhodes and Athens, but Sais in this reſpect rivalled all the cities in the world, for here this goddeſs had a magnificent temple, which Herodotus has particularly deſcribed. The ſame author alſo ſpeaks of temples conſecrated to this goddeſs in ſeveral cities of Greece; but the iſland Dio, or Naxos, though conſecrated to Bacchus, was more remarkable for the worſhip of Minerva, which appears by her repreſentation on three medals of that city. At Athens ſhe had a magnificent temple, called "Parthenos," the virgin, which Phidias adorned with a ſtatue of gold and ivory, reckoned his maſter-piece. The worſhip of Minerva was rendered ſtill more ſolemn by a feſtival, called "Atheneia," celebrated to her honour, and the pomp of which invited ſpectators from all Greece. This feſtival afterwards took the name of "Panathenaia," in which was a proceſſion, when the people carried about the "peplus" of Minerva, which was a white robe without ſleeves, wrought with gold, on which were repreſented the combats and great achievements of Minerva, Jupiter, and the Hermes.

Minerva is alſo ranked among the muſical deities, to whom the invention of the flute is aſcribed. See Flute.

MINERVALIA, among the Romans, called alſo *Quinquatria*, were feaſts celebrated in honour of Minerva. One of theſe feaſts commenced on the 3d of January, and another on March 19th, and laſted five days. The firſt day was ſpent in prayers to the goddeſs; the reſt in offering ſacrifice, ſeeing gladiators fight, acting tragedies upon mount Albanus, and reciting pieces of wit, wherein the conqueror had a prize given him. Scholars had then a vacation, and made a preſent to their maſters, which was called *Minerval.*

MINEUR, Fr., **Minor**, Lat., a muſical term applied to ſuch concords and intervals, as are rendered as flat or ſmall as poſſible, without being falſe and out of tune. Mineur is ſaid alſo of a key or mode in which the third above the key note is minor or flat. See Mode, Major, and Interval.

MINGALLA, in *Geography*, one of the ſmall weſtern iſlands of Scotland, the largeſt of thoſe called "Biſhop's iſlands," about three miles long and one broad. N. lat. 56° 48′. W. long. 7° 35′.

MINGAN Islands, a cluſter of iſlands near the ſouth coaſt of Labrador, in the gulf of St. Laurence, ſo called from the name of the principal of them. N. lat. 50° 15′. W. long. 64°.

MINGHIOL, ſignifying "Thouſand Springs," a mountain in the northern part of Armenia, abounding with ſprings; from which the Euphrates originates.

MINGO, an Indian town on the W. bank of the Ohio river, 40 miles ſouth-weſterly of Pittſburg. In the creek, where it is ſituated, there are ſprings, that yield the "petrol," a bituminous liquid.

MINGOES, an Indian nation, inhabiting the vicinity of the ſouthern branch of the Scioto river. The number of warriors is 40.

MINGOLZHEIM, a town of the duchy of Baden; 14 miles S.E. of Spire.

MINGOTTI, Regina, in *Biography*, a female opera ſinger and actreſs of great abilities and celebrity, was born in Carinthia, a German province, in the dominions of Auſtria, and though a native of a tranſalpine country, ſhe became one of the moſt eminent vocal performers on the Italian opera ſtage during the laſt century. After ſeeing and hearing her frequently in England, where ſhe arrived in the year 1754, we met with her, in 1772, at Munich, in Bavaria, and in converſation obtained from her the following ſketch of her active profeſſional life.

Her parents were Germans; her father, an officer in the Auſtrian ſervice, being called to Naples upon duty, his wife travelled with him thither during her pregnancy, and was there brought to bed of this daughter; who, however, was carried to Gratz, in Sileſia, before ſhe was a year old; and her father dying while ſhe was young, her uncle placed her in a convent of Urſulines, where ſhe was educated, and where ſhe received her firſt leſſons of muſic.

She told us, that during her childhood, ſhe remembers being ſo pleaſed with the muſic performed in the chapel of her convent, particularly with the Litany ſung there one feſtival, that ſhe went to the abbeſs, with tears in her eyes, and trembling, both with fear of anger, and of a refuſal, to intreat her to teach her to ſing, as *ſhe* did in the chapel. The abbeſs put her off, with ſaying, that ſhe was very buſy that day, but would think of it. The next day ſhe ſent one of the elder nuns to aſk her who bid her make that requeſt, when the little Regina, as ſhe was then called, replied, that nobody had bid her, but that it was merely her own love for muſic which inſpired the thought. After this the abbeſs ſent for her, and told her, that ſhe had very little time to ſpare; but if ſhe would promiſe to be diligent, ſhe would teach her herſelf; adding, that ſhe could only afford her half an hour a day; but with that, ſhe ſhould ſoon find what her genius and induſtry were likely to produce, and ſhe ſhould go on with, or diſcontinue her inſtructions accordingly.

Regina was in rapture with this compliance of the abbeſs, who began to inſtruct her the next day, *à table ſec*, as ſhe expreſſed it, without a harpſichord, or any other inſtrument. She applied to the harpſichord ſeveral years after, and ſtill accompanied on it very well. But it was perhaps owing to her manner of learning to ſing *without* an inſtrument, that ſhe acquired the firmneſs in performance, for which ſhe has always been remarkable.

In this manner ſhe was taught the elements of muſic and *ſolfeggi*, with the principles of harmony, and was obliged to ſing the treble, while the abbeſs ſung the baſe. She ſhewed us a very ſmall book, in which all her firſt leſſons were written: the explanations were in the German language.

She remained in this convent till ſhe had attained her 14th year, at which time, upon the death of her uncle, ſhe went home to her mother. During the life of her uncle, ſhe had been intended for the veil. When ſhe quitted the convent, ſhe appeared, in the eyes of her mother and ſiſters, to be one of the moſt uſeleſs and helpleſs of beings; they looked upon her as a fine lady, brought up in a boarding ſchool, without knowing any thing of houſhold concerns; and her mother neither knew what to do with her, or her fine voice, which both ſhe and her ſiſters deſpiſed, not foreſeeing that it would one day be productive of ſo much honour and profit to the poſſeſſor.

Not many years after ſhe quitted the convent, ſignor Mingotti, an old Venetian, and manager of the opera at Dreſden, was propoſed as a huſband for her. She deteſted him, but was at length worried into a compliance, which was the ſooner extorted from her, perhaps, as ſhe, like other young women, imagined that by loſing, ſhe ſhould gain her liberty.

People talked very much of her fine voice and manner of ſinging. Porpora was at this time in the late king of Poland's ſervice, at Dreſden: he had heard her ſing, and ſpoke of her at court as a young perſon of great expectations; which occaſioned a propoſal to her huſband for her entering into the ſervice of the elector: he had before marriage promiſed never to ſuffer her to ſing on the ſtage; however, he came home one day, and aſked her, if ſhe ſhould like to engage in the ſervice of the court. She thought this was done in deriſion, and gave him a ſhort and peeviſh anſwer; but he continuing to teize her on the ſubject, at length convinced her that he was in earneſt, and had a commiſſion to treat with her. She liked the thoughts of ſinging, and turning her voice to ſome account, and therefore gladly entered into articles for a ſmall ſtipend, not above 3 or 400 crowns a-year.

When her voice had been heard at court, it was ſuppoſed to raiſe a jealouſy in Fauſtina, who was then in that ſervice, but upon the point of retiring; and conſequently, in Haſſe, her huſband, particularly when he heard that Porpora, his old and conſtant rival, was to have 100 crowns a month for teaching her. He ſaid it was Porpora's laſt ſtake; the only twig he had to catch at; *un clou pour s'accrocher*. However, her talents made ſuch a noiſe at Dreſden, that the fame of them reached Naples, to which place ſhe was invited to ſing at the great theatre. In her way thither from Dreſden ſhe paſſed through Vienna, where ſhe viſited unexpectedly Metaſtaſio, in whoſe "Attilio Regolo" ſhe had diſtinguiſhed herſelf; of which viſit he gives the following account to the princeſs di Belmonte.

"Signora Regina Mingotti, one of the principal ornaments of the vocal band at Dreſden, being engaged at Naples in the ſame rank, has not eſcaped the epidemic deſire of bringing with her a letter from me to your excellence. This requeſt, however, would have been fruitleſs, had ſhe not moſt wickedly and maliciouſly hit upon the following expedient, for vanquiſhing my well-known repugnance to give way to ſuch applications. When ſhe left the court of Dreſden, what does ſhe do but poſt away to Vienna; and without giving me the leaſt previous notice of my danger, early one fine morning preſents herſelf in my room, and in a military habit, preceded only by her fame, and accompanied by all the graces of youth, vivacity, talents, and what is ſtill worſe, entitled to the chief credit of the ſucceſs of my "Attilio" in Dreſden. Now tell me madam, with your uſual candour, if ever you heard of ſo cunning a muſical trick, it was like putting a knife to the throat of a poor Chriſtian. I know not what Socrates, Cato, or Ariſtotle would have done in ſuch a caſe; but this I know, that I could not help writing the letter, and even devoutly thanking heaven, that ſhe had the moderation to limit her pretenſions to a letter only."

This letter has no date, but it muſt have been written in 1751, when "Attilio" was firſt repreſented at Naples.

At this time ſhe knew but little Italian; however, ſhe now went ſeriouſly to work in ſtudying it.

The firſt character ſhe appeared in was Ariſtæa in the opera of the "Olimpiade," ſet by Galuppi. Monticelli performed the part of Megacles. On this occaſion her talents, as an actreſs, gained her as much applauſe as her ſinging: ſhe was bold and enterpriſing; and, ſeeing the character in a different light from what others had done before her, would, in ſpite of the advice of old actors, who durſt not deviate from cuſtom, play it in a way quite different from any one of her predeceſſors. It was in this original and courageous manner, that our Garrick firſt ſurpriſed and charmed an Engliſh audience, and, in defiance of contracted rules, which had been eſtabliſhed by ignorance, prejudice, and want of genius, ſtruck out a ſtyle of ſpeaking and acting, which the whole nation has ever ſince continued to approve, with acclamation, rather than applauſe.

After this ſucceſs at Naples, Signora Mingotti received letters from all parts of Europe, to offer her terms for engaging at different operas; but ſhe was not then at liberty to accept of any of them, being obliged to return to the court of Dreſden, in which ſervice ſhe was ſtill a penſioner; however, her ſalary was conſiderably augmented, and ſhe frequently expreſſed her gratitude to that court, and ſaid ſhe owed to it all her fame and fortune. Here ſhe repeated, with great applauſe, her part in the "Olimpiade;" every one agreed, that in point of voice, execution, and acting, her powers were very great; but many thought that ſhe was wholly unfit for any thing pathetic or tender.

Haſſe was now employed to ſet "Demofoonte;" and ſhe imagined that he kindly gave her an adagio, accompanied by the violins, Pizzicati, merely to expoſe and ſhew her defects. But ſuſpecting the ſnare, ſhe ſtudied hard to eſcape it; and in the ſong, "Se tutti i Mali Miei," which ſhe afterwards ſung in England with great applauſe, ſhe ſucceeded ſo well, as to ſilence even Fauſtina herſelf. Sir Ch. H. Williams was Engliſh miniſter here at this time, and being intimate with Haſſe and his wife, had joined their party, publicly declaring that Mingotti was utterly unable to ſing a ſlow and pathetic ſong; but when he had heard her, he made a public recantation, aſking her pardon for doubting of her abilities, and ever after remained her firm friend and adherent.

She went next to Spain, where ſhe ſung with Gizziello, in the operas under the direction of Farinelli; who, ſhe ſaid, was ſo rigid a diſciplinarian, that he would not allow her to ſing any where but in the opera at court, or even to practiſe in a room next the ſtreet. She was requeſted to ſing at private concerts by many of the firſt nobility and grandees of Spain, but could not obtain permiſſion from the director; who carried his prohibition ſo far, as to deny a pregnant lady, of great rank, the ſatisfaction of hearing her, though ſhe was unable to go to the theatre, and declared that ſhe longed for a ſong from Mingotti. The Spaniards have a religious reſpect for theſe involuntary and unruly affections in females thus circumſtanced, however they may be treated as problematic by M. Buffon and others. The huſband, therefore, of the lady, complained to the king of the cruelty of the opera director, who, he ſaid, would kill both his wife and child, if his majeſty did not interfere. The king lent a favourable ear to the complaint, and ordered Mingotti to receive the lady at her houſe, in which his majeſty was implicitly obeyed, the lady's deſire was ſatisfied, and the child prevented, perhaps, from being marked in ſome part of its body with a muſic paper, or from having an Italian ſong written with indelible characters on its face.

Mingotti remained two years in Spain, whence ſhe came to England, for the firſt time, in 1754. How much her performance was then admired many perſons now living can well remember, and tradition has told the reſt. She afterwards ſung in every great city of Italy: but always regarded Dreſden as her home during the life of Auguſtus, the late king of Poland. She was now ſettled at Munich, more it was thought from economy than attachment. She had no penſion from the court of Bavaria, as was reported; but with care and prudence, ſhe had juſt ſufficient from her ſavings to bring her ſafely through the year. She ſeemed to live very comfortably, to be well received at court, and to be eſteemed by all ſuch as were able to appreciate her underſtanding, and enjoy her converſation.

It gave us great pleaſure to hear her ſpeak concerning dramatic muſic, which ſhe did with more intelligence than any maeſtro di cappella with whom we ever converſed. Her knowledge and experience in ſinging, and powers of expreſſion in different ſtyles, were ſtill aſtoniſhing, and muſt have delighted all ſuch as could receive pleaſure from ſong unaccompanied with the blandiſhments of youth and beauty. She ſpoke three different languages, German, French, and Italian, ſo well, that it was difficult to ſay which was her own. Engliſh ſhe likewiſe ſpoke, and Spaniſh, well enough to converſe in them, and underſtood Latin; but in the three languages firſt mentioned ſhe was truly eloquent.

Her ſtyle of ſinging was always grand, dramatic, and ſuch as diſcovered her to be a perfect miſtreſs of her art; ſhe was a moſt judicious and complete actreſs, extending her intelligence to the poetry, decorations, and every part of the drama. Yet her greateſt admirers allowed that her voice and manner would have been more irreſiſtible, if nature had allowed her a little more female grace and ſoftneſs. Her performance of male parts, however, obviated every objection that her greateſt enemies could make to her perfection, either as a ſinger or actreſs.

The firſt time Mingotti came to England, ſhe remained here three years; during part of which time ſhe and Giardini were joint managers; by which their celebrity was more increaſed by their talents, than their fortune by the profits of the theatre.

MINGRAY, in *Geography*, a town of Spain, in Catalonia, near the mouth of the Tet; 15 miles E. of Gerona.

MINGRELIA, a country of Aſia, the ancient *Colchis*, (which ſee), is bounded on the N. by Circaſſia, on the E. and S E. by Imeritia, on the S. by Guriel, and on the W. by the Black ſea and Abaſcia. This country is woody, intermixed with a ſmall proportion of arable land, which is ſo ſoft as ſcarcely to bear the plough. The climate as well as the ſoil is relaxed by moiſture; and it is ſaid that in many places the ground ſounds hollow, from which circumſtance originates an opinion, that the Euxine and Caſpian are connected by a ſubterraneous communication. Mingrelia is watered by the Phaſis, and a great number of other rivers. The chief food of the inhabitants is "gom," a grain reſembling millet; wheaten bread is uſed only by the prince and nobility. This country was originally rich in gold, and hence, it has been ſaid, the Argonauts fetched the golden fleece; but the mines of precious metals are now unwrought. Ancient Colchis, of which Mingrelia is a part, contained a great number of cities and towns, moſt of which have long ſince ſunk into oblivion. The preſent capital of this part of Turkey in Aſia, called Cotatis or

Cutais, comprehends hardly 200 houſes, though it is the reſidence of the prince. The air is rendered inſalubrious by frequent rains, and the inhabitants ſeldom protract their lives beyond 60 years. The vines of the country produce excellent wine, and the paſtures, which are excellent, feed many horſes. The men, as well as women, are generally well formed and handſome; but they are reckoned, in general, to be thieviſh, perfidious, cruel, drunken, and licentious in their amours. Infants, that have no means of ſupport, are often put to death, as well as ſick perſons, of whoſe recovery there is no reaſonable expectation. The people are generally employed in the chaſe, and they think themſelves peculiarly happy, if they poſſeſs a horſe, a good dog, and a well-trained falcon. The peaſants are ſlaves to the nobility; who have the power of life and death over their vaſſals in Mingrelia, as well as Imeritia, Guriel, and Georgia. Their religion is that of the Greek church. The principality is hereditary, and the prince or chief of Mingrelia and Guriel aſſumes the title of "Dadian," or the chief of juſtice; and the tribute exacted by the Turks is a quantity of linen cloth, manufactured in the country. The principal commerce is in ſlaves.

MINHO, Lat. Minius, which is ſaid to derive its name from "Minium," or vermilion, found in its neighbourhood, is a river of Spain, that riſes on the E. of the Sierra Mondonado, in the province of Galicia, receives the waters of the Cuytella and the Ouaria, paſſes to Lugo, receives the Chouro, and at San Martino de Coba the Sil, and then purſuing the boundary of Galicia, ſeparates it from Portugal, whence it proceeds and falls into the ocean near the port of Guardia; its courſe is about 52 leagues, firſt from N. to S., then to the S.W.

MINIACI, or Casalino, a town of Sicily, in the valley of Demona; 10 miles S.W. of Randazzo.

MINIATO, St., a town of Etruria, on the Arno, the ſee of a biſhop, containing four churches beſides the cathedral and nine convents; 20 miles W. of Florence. N. lat. 43° 44'. E. long. 10° 49'.

MINIATURE, in *Painting*, a word borrowed of the French, and derived, as ſome ſay, from the Latin *minimum*. It properly ſignifies the repreſentation of natural objects, by figures drawn and painted in ſmall proportions; but there is ſomething arbitrary in its preſent uſe, as it is almoſt entirely confined to portraits painted with water-colours on paper, vellum, or ivory; and is not applied to ſmall figures painted in oil, on wood, ſtone, or canvas. Thus, Gerard Dow's and Adam Elſheimer's very finely executed works, wherein ſometimes are figures not more than two or three inches high, and conſequently far ſmaller than miniature portraits are uſually painted, which ought therefore, according to the preceding etymology of the word, to be called miniatures, never are ſo, but are conſtantly ſpoken of as ſmall pictures. But we conceive that the term miniature is derived, agreeably to the ſtatement of other writers, from *minium*, vermilion, whence the perſons who put the red letters, and illuminations in ancient manuſcripts, were called *miniatores*.

In this branch of the art of painting, the ſame feeling of character, the ſame taſte and underſtanding of drawing and chiaro-ſcuro are requiſite, as in oil painting; but the uſe of its materials is more facile, and leſs likely to produce, in unſkilful hands, ſuch diſcordant and unpleaſant effects, though the proceſs is more tedious. It requires great ingenuity and patience in the artiſt, as it is wholly performed with the point of the pencil, either applied in the manner termed hatching, which conſiſts of fine ſtrokes croſſing or intermingling with each other; or that of ſtippling, or laying dots of various colours over the ſurface of the picture. One of theſe modes of proceeding is neceſſary to produce ſoftneſs, with fullneſs and richneſs in miniature; becauſe ivory and vellum, from the peculiarity of their textures and ſurfaces, do not admit of the ſyſtem called waſhing, or blending the colours together in a broad ſoft manner, like aqua-tint: and in works like theſe, whoſe beauties are not diſcernible but on a near inſpection, great neatneſs and perfection in the finiſhing are imperiouſly demanded.

The miniatures which are of the oldeſt date in England were chiefly wrought on vellum, though the cabinets of our nobility and gentry contain ſome few in oil colours on thin copper-plates: and this latter ſyſtem might well have been adopted generally, but for the difficulty of producing the eſſential beauties of miniature, *viz.* clearneſs and purity, with ſo groſs a vehicle as oil is, when compared with water; and alſo, that there is much danger, if the picture be worn, of ſome of the colours changing, and becoming dark: otherwiſe, and if merely hung up for ornament, a decided preference muſt be given them for their durability over thoſe painted in water colours.

The adoption of ivory for miniature painting, in preference to vellum, which, although limited in ſize, is now almoſt univerſal, is founded on three circumſtances, *viz.* its being ſo much leſs likely to be affected by damp, capable of receiving a ſmoother texture, and having a more agreeable hue of colour, which greatly blends with the freſher hue of the fleſh, and gives it warmth and harmony. It alſo poſſeſſes a degree of abſorption, which renders the colours leſs likely to fade. So great is the effect of damp upon vellum, or of the ſubſtances employed to ſmooth and prepare its ſurface for the artiſt, that there are few miniatures painted upon it, of recent date, even the colours of which are not in ſome meaſure impaired; and in many they are almoſt totally deſtroyed.

The colours beſt adapted for miniature painting are thoſe that have the leaſt body, and that work clear and clean in hue; ſuch as lakes, carmine, ultramarine, browns, yellows, and greens made of the juices of certain herbs and flowers. Moſt of the earthy colours, as the ochres, by no means are eaſily applied to this purpoſe: their opacity and body render them unfit agents, where all ſhould be light, ſplendid, and clear. The vehicle which beſt ſuits the purpoſe is water, in which either gum Arabic or gum tragacanth is diſſolved. The colours ſhould be firſt ground in pure water, and the gum-water added afterwards, in ſufficient quantity to give them tenacity, that they may not eaſily rub off the ſurface of the ivory or vellum; but if too much gum be uſed, there is great danger of the colours cracking and falling off.

In the proceſs of miniature painting, our modern artiſts cover the ivory with colours more than was uſually done by thoſe of an early period, who were accuſtomed to leave the naked ground or colour of that ſubſtance in a large proportion in the fleſhy parts, and contented themſelves with little more than drawing very delicately the features of their ſitters on it, and rounding the extremities with ſhadows. Though much more rotundity and richneſs of effect is gained by the preſent proceſs, when ſkilfully employed; yet in hands leſs ingenious, there is great danger of heavineſs, and loſs of character and ſimplicity, thoſe prime and ineſtimable qualities in all works of art, the want of which cannot be compenſated for by all the colour and delicacy of finiſh the utmoſt ſtretch of art, without them, is capable of producing. But, in fact, the capabilities of water colours are become far more known and underſtood of late, as well as the beſt modes of applying them. A new ſchool in that branch of art has ariſen in the courſe of the laſt ten or fifteen years; ſince when, effects have been produced by them, which leave all former experience of their power far behind, and of which nothing could have been expected. Of this more under the article WATER-*Colours*.

The moſt ſucceſsful artiſts in miniature in this country, till the preſent period, were Nicholas Hilliard and Iſaac Oliver, in the time of Elizabeth; and P. Oliver and S. Cooper, in that of Charles I. The works of the latter are particularly ſtriking, and worthy of obſervation, for the extraordinary breadth of manner, which he appears to have caught of Vandyke; many of whoſe pictures he copied in miniature, and which his own pictures reſemble ſo much, that a magnifying glaſs only exhibits to greater effect the ſimplicity of the ſtyle in which they are wrought.

We now poſſeſs a great number of very ingenious artiſts in this branch of the profeſſion: but to particularize any one, when ſo many ſtand on nearly the ſame level, would be invidious; and the public have ample opportunities of deciding on their reſpective merits.

For the method of preparing ivory for miniatures, ſee IVORY.

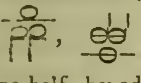
MINICULATOR, among the Romans, a ſervant who embelliſhed any writing with minium.

MINIET, or MINIEH, in *Geography*, a ſmall but ſomewhat handſome town, compared with other places in the ſame country, in Upper Egypt, on the weſt banks of the Nile. Its ſtreets, however, are narrow and duſty: the houſes are built of unbaked bricks, cemented with mud; and many of its edifices are clumſy and irregular. The houſe occupied by the kiaſchef or cachef, as well as thoſe of ſome other perſons, are built of ſtone, and their whiteneſs relieves the uniform reddiſh-grey of the reſt. The bazars, or places where the merchants meet, are tolerably commodious; and the crowds which frequent them announce a numerous population, as well as ſome briſkneſs of trade. Government has here eſtabliſhed a toll for loaded veſſels, which is eaſily collected, as the Nile is not wide at this place. Here are manufactured earthen veſſels, called "bardacks," formed of clay in the neighbourhood, and ſerving to preſerve the water cool. Columns of granite, broken and thrown down, and ſome ſtill ſtanding, beſides heaps of rubbiſh, intimate that Miniet occupies the place of a more ancient city; which, according to ſome, was "Hermopolis," and, according to others, "Cynopolis," where the dog was worſhipped. Mr. Bruce ſuppoſes Miniet to be the ancient "Philæ." It is about 50 leagues from Cairo, 22 miles S. of Abu Girgé, and 14 N. of Aſhmuneim, or Achmounim.

MINIET *Rahiné*, a town of Egypt; 6 miles S. of Gizeh.

MINIET *Selamé*, a town of Egypt; 10 miles S. of Faoué.

MINIET *Semannud*, a town of Egypt; 8 miles S. of Manſora.

MINIM, in *Muſic*, from *minimus*, Lat., the leaſt. In the firſt time-table that was framed, where the ſemibreve was the ſhorteſt note, and the firſt in a round form, the reſt were ſquare. But as the art of counterpoint was improved, and different parts in notes of different value were attempted, it was found neceſſary to divide the ſemibreve in two equal parts, ; diminiſhing the length of a ſemibreve one half, by adding a tail to it. This invention has frequently been aſcribed to Vitriaco; but it ſeems more properly to belong to Franco, as appears by a manuſcript tract in the Bodleian library at Oxford. Franco flouriſhed 200 years before Vitriaco. See MUSICA *Menſurabilis*, TIME, MEASURE, and *Muſical* CHARACTERS.

MINIM, *Sextuple of the*. See SEXTUPLE.

MINIMA NATURÆ, or *Minima Naturalia*, among *Philoſophers*, the primary particles of which bodies conſiſt; the ſame with what are otherwiſe called *corpuſcles*, and *atoms*.

MINIMA, in the *Higher Geometry*, the ſmalleſt quantities attainable in any given caſe. See MAXIMA.

MINIMA, *Per*. See PER *Minima*.

MINIME, in old French *Muſic*, was the ſame character for time as is now called *une blanche*. See MINIM and TIME-TABLE.

MINIMENTS, or MUNIMENTS. See MUNIMENTS.

MINIMI *Digiti Extenſor*. See EXTENSOR.

MINIMI *Digiti Pedis Abductor*. See ABDUCTOR.

MINIMS, MINIMI, an order of religious, inſtituted about the year 1440, by S. Francis de Paulo, confirmed in 1473, by Sixtus IV., and by Julius II. in 1507. See BONS-*Hommes*.

Theſe have improved on the humility of the Minors, by terming themſelves *Minimi* or *Minims*, *q. d.* leaſt, or ſmalleſt.

MINIMUS GLUTEUS. See GLUTEUS.

MINING, *Hiſtory of*. To trace this ſubject up to its earlieſt ſtages, and to exhibit the various combinations of human ingenuity which it has in ſucceſſive periods produced, though an inquiry which might afford matter for curious ſpeculation, would be one which, if we were to take into the view the progreſs of mining in all the different countries where metals have been found, would extend the ſubject to a length hardly admiſſible in any work not wholly devoted to this object.

From the ſimpleſt operations, mankind have been gradually led, by following the purſuit of the metals, to efforts the moſt complex and aſtoniſhing. At firſt it may be aſſumed, not only from the probability of the thing, but from evidence which even this country affords, in the remains of ancient works of this kind, that metals were procured from detached fragments of the ores, ſuch as had been ſeparated by various cauſes from the upper parts of the veins in which they were originally depoſited: and in this manner is gold yet procured, by waſhing the ſands of certain rivers; and tin even now ſought after, under beds of gravel, in the vallies of Cornwall and Devon.

The purſuit of ſcattered pieces of ore naturally would conduct the perſons, who were thus employed, to the beds from which they had been detached; and in turning over the ſoil to procure the looſe fragments, the backs of the veins would be laid open and diſcovered. This is a proceſs which is even now daily going on in mining diſtricts, only with a different object: for having found an accidental ſtone of ore, the miner does not now dig over the earth on the ſurface, for the ſake of theſe caſual depoſits; but reaſoning from their appearance that a vein is near at hand, goes at once to work in order to find it.

If we allow that this account of the origin of mining be true, it ought to follow that thoſe metals were moſt anciently worked, whoſe ores are moſt attractive in their appearance, moſt eaſily reduced into a metallic ſtate, or ſuch as are moſt uſually found near the ſurface of the earth. As far as the Engliſh mines afford us the means of judging, all this may be aſſerted to be true. The tin of Cornwall was undoubtedly the firſt metal ſought after in Britain, and probably the firſt article of commerce with other nations; and the ores of tin, from their great weight, indicate their metallic contents, and yield them to the ſimpleſt treatment with fire, and are ſtill found at inconſiderable depths. It may alſo be obſerved, that the traces of the moſt ancient tin works exhibit no ſymptoms of their having been purſued, but in ſituations where the ſoil, with which it was mixed, could be eaſily and expeditiouſly removed; or where it could be waſhed away by ſtreams of water, conducted over it for the purpoſe, and which, by carrying off the lighter parts of the ſoil, laid bare the ores, which are kept from moving by their ſuperior ſpecific gravity.

This latter was an ingenious improvement upon the firſt ruder efforts, and is ſtill the mode employed in many of the tin ſtream works; while there are numerous traces of theſe attempts accompanied with circumſtances, which prove them of very conſiderable antiquity.

Lead is another metal, which not only is often found near the ſurface, but the ores exhibit tô the eye the appearance of metal, and in general yield their contents to the heat of a moderate fire. This metal, therefore, was probably an object of purſuit in the early ages of mining.

Copper, on the other hand, is ſeldom found without penetrating the earth to conſiderable depths; and the proportion of metal in moſt of the ores is ſo ſmall, that a certain progreſs in the arts of mining and ſmelting muſt be preſumed to have been made, before it could have become an object of reſearch. We believe this to have been the fact in moſt countries, as well as in this, where copper was certainly diſcovered by working mines in purſuit of tin or lead.

From the proceſſes for finding and ſeparating metallic ores from alluvial matter in which they were caſually mixed, the next ſtep was to procure them by digging out the veins themſelves, and following them into the ſolid rocks in which they are formed. At firſt this could only have been done, where, by the elevation of the mountains, it was poſſible to work high enough for the waters to diſcharge themſelves by conduits or adits from the works; and where the rock was not ſo hard but to yield to tools rudely formed, or perhaps to the agency of fire, which would, however, produce but a limited effect in moſt caſes.

It was not until machines were applied to pump the waters, that the metals could be followed to any conſiderable depth, and not until gunpowder had furniſhed the means of ſplitting the hardeſt rock, that man was enabled to penetrate ſtrata of every deſcription that oppoſed his progreſs.

Theſe inventions, therefore, form moſt important epochs in the hiſtory of mining; for, ſince mankind have called in the aſſiſtance of ſuch powerful agents, neither the influx of conſtantly flowing water, nor the barriers which the moſt indurated rock can preſent, are obſtacles in the way of the miner, where rich and productive veins of ore tempt the purſuit.

The firſt important era was the period in which the application of gunpowder to the purpoſes of mining took place, which happened in Hungary, or Germany, about the year 1620, and was firſt introduced into England at the copper-mine at Ecton, in Staffordſhire, about the year 1670, by ſome German miners brought over by prince Rupert. It was in uſe in Somerſetſhire about 1684, and it was not until after this period, probably, that the Corniſh miners became acquainted with this powerful aſſiſtant to their operations.

Its importance may be judged of by the amount of the preſent conſumption in the mines of Cornwall alone, which has been calculated at an annual value of about forty thouſand pounds ſterling.

There are many mines which could not poſſibly have been worked without the aid of gunpowder, and, until it was uſed, ſubterranean operations muſt have been difficult and very uncertain. The hammer and wedges were probably the firſt inſtruments employed for ſplitting rocks, and the *pick* followed, which is uſed both as a hammer and a wedge. The change of form in theſe inſtruments obſerved in thoſe which have been found in old works, as well as the materials of which they are ſometimes made, offer evidence of conſiderable antiquity.

Many tools of oak have been occaſionally met with, which tradition among the Corniſh tinners make to have belonged to the Saxons or Danes, but it is probable that they were employed before the time of their having a footing in the country, and moſt likely when iron was little known here.

Wedges of dry wood were made uſe of by driving them into clefts of the rock, and then wetting them, ſo as to cauſe them to ſwell, and thus by repeated ſimilar inſertions to force the ground aſunder.

Agricola deſcribes the application of fire to the ſplitting of rocks, but there is no tradition of its having been applied to this purpoſe in England.

The means employed for raiſing or throwing up the ores and waſte ſtuff to the ſurface, were at firſt as rude as the other operations of mining. The *windlaſs and bucket* may be reckoned an improvement which took place in a later ſtage of mining, as ſimple a one as it certainly is, and now in a great meaſure ſuperſeded by more effective machinery. It was, however, at the time an important addition to the apparatus of mines, as water as well as ore could thus be raiſed to moderate heights; and by the employment of much manual labour with a number of ſuch machines, even conſiderable excavations were kept free from water, and had their produce lifted to the ſurface.

The windlaſs, probably, like moſt of the early improvements in mining, had its origin in Germany, and before it was introduced here from that country, the mode adopted for throwing up the ſtuff dug in the bottom of the deeper pits, was by making ſucceſſive ſteps, or ſtages, which were called in Cornwall *ſhammels;* upon each of which men were placed, who raiſed the excavated matter from one to the other, until it thus reached the higheſt point.

In South America the windlaſs is even yet hardly known, and the ores are either carried up by the Indians employed in the mines, or, where the ſituation admits of ſloping roads being made to the bottoms, are conveyed to the ſurface on the backs of mules.

When mines were worked deep, the labour of raiſing the water which was conſtantly collecting, became too great for mere manual exertion, and hydraulic machines were invented or employed for the purpoſe. Pumps were adapted to the ſhafts, and their conſtant action ſecured by giving motion to their piſtons by wheels turned by deſcending ſtreams of water. Where ſupplies of this agent can be obtained, and the form of the country admits of its application with conſiderable falls, nothing better can be deſired, as it is a more regular power than ſteam, and infinitely leſs expenſive; it has, therefore, continued in uſe to the preſent day, where circumſtances admit of its being applied.

The German miners ſeem in all probability to have had the merit of theſe inventions, as they appear to have been completely in uſe among them when Agricola wrote, who fully deſcribes their conſtruction and application.

But though Germany may fairly claim the invention of theſe engines for this purpoſe, yet nothing more has been done there; but, on the contrary, they are ſaid to remain now there in nearly the ſame ſtate as at their original introduction. The Engliſh miner has improved the pump-work and the water-engines to their preſent high ſtate of perfection in this country.

It is in ſome degree owing to neceſſity that this has been the caſe, as there are ſingle mines in England which require that as much water be diſcharged from them, as the pumps of a whole province of German mines could effect. There is, indeed, no need to prove the capacity of Engliſh artiſts for mechanical improvement.

Hydraulic machines, however, as they require falls of water to put them into motion, can only be erected where the circumſtances of a country afford the means of working them; and if nothing further had been done, many of our moſt valuable mines in Cornwall, not to mention our collieries and lead mines, would have remained unexplored and unproductive. The invention of the *ſteam-engine* gave to the miner a power capable of univerſal application, and of an effect that added, as it were, new regions of ſubterranean country to his controul. Depths hitherto unattainable are now placed at his command, and no limit can be aſſigned to his exertion, but that of the expence compared with the value of the produce.

The hiſtory of the ſteam-engine will be a ſubject for another place; but we may here obſerve, that the invention very early excited the attention of the mine owners of Cornwall, who ſucceſſively adopted and encouraged the improvements of Savary, Newcomen, and Watt.

In this diſtrict ſome of the earlieſt efforts of theſe ingenious men were ſeconded and rewarded, and in return the mines have gained ſuch aſſiſtance as could not have been formerly anticipated or imagined.

The general hiſtory of mining in England has never been very accurately traced; the diſtricts famous for their mineral products have no communication with each other on this account, and have no common mineral laws or cuſtoms.

In other countries mining has been foſtered and protected by the ſtate, immunities have been granted, the workmen have been ſurrounded by particular privileges, and their operations encouraged by grants of timber from royal foreſts, or the free uſe of lands and waters. Thus peculiar ſyſtems of laws have often ariſen where the mines were important as a ſource of revenue to the ſtate. Something of this ſort is indeed to be traced in the ſtannary laws of Cornwall; theſe laws, however, are not operative in the other mining diſtricts England, but are confined to the counties of Devon and Cornwall, which are both included in the royal duchy which bears the name of the latter. Here the ſtannary laws ſtill exiſting, now afford the miner but ſcanty aſſiſtance, though they effectually provide for the ſecure payment of the mineral revenue to the duke of Cornwall. To this object, and to the adjuſting diſputes touching the affairs of tin mines, the preſent adminiſtration of theſe laws may be ſaid to be directed. The protection to the perſon of the tinner, as to military ſervice and proceſſes from other courts, has been gradually removed, and the rights of embounding lands for his purſuits, and of obtaining water-courſes for his engines, have been queſtioned, and, in ſome caſes, rendered doubtful. It cannot, perhaps, be contended that theſe laws could now be exerciſed in their former conſtruction in the preſent ſtate of property; but a reviſion, accommodating them to the fair wants of the miner, without prejudice to the land owner, would be attended with much benefit to the mining intereſt.

The copper-mines, being altogether of later date than thoſe of tin, partake of none of the advantages which the ſtannary laws afford, and are therefore governed more by cuſtom than any thing elſe; an extenſion of the privileges of the tin mines to theſe, and a legal proviſion for the peculiar arrangements which ſuch undertakings require, would remove many ſerious obſtacles to their proſecution.

Mining in England had a very early origin, compared with the progreſs of other arts in the country; it was in all probability the firſt ſource of trade to theſe iſlands, and the tin of Britain was known in diſtant parts of the world at a very remote period. It is generally believed that the Phœnicians were the nation principally engaged in trading to Britain for this metal. Tin works were carried on before iron was in uſe in England, as may be preſumed from the tools of oak which have been found in ancient mines. Cicero affirmed that no ſilver was to be found in Britain, and though it has ſince been proved that he was wrong in that reſpect, yet the notice taken of the ſubject ſerves to ſhew that the metals of the country were the principal temptation to the Roman conquerors.

The Saxons neglected the purſuit of the metals, but the Normans appear to have worked for them to advantage, and from this time, until the reign of king John, the mines were moſtly in the hands of Jews, when they are ſaid not to have been ſucceſsful, but in the reign enſuing they were worked by the ſame people with more effect. Edward I. cauſed the Jews to be baniſhed, and the mines were, in conſequence, neglected, until Edmund, the elder ſon of that king, and earl of Cornwall, willing to reſtore what had produced ſo large a proportion of the revenues of his domain, made grants important to the miner, which were confirmed by the king, by a charter in the 33d year of his reign; which ſtates that

"For the advancement of the ſtannaries, he frees the tinners from all pleas of the natives touching the court, and from anſwering before any juſtices, &c. ſave only the keeper of the ſtannaries; (pleas of land, life, and member excepted) neither are they to be kept from work but by the ſaid keeper." And it further "indemnifies them from tolls, &c., gives them libertie to dig tin and turf any where in the ſaid countie, and to turn water-courſes for their works at pleaſure; with many other privileges."

It is from this time that the enactment of laws for the government of the ſtannaries may principally be dated.

Power to ſearch for other metals beſides tin was granted to individuals immediately from the crown, and we find that various perſons held the right of ſearching for mines in the reigns of Edward III. Richard II. Hen. IV. and Hen. VI. In ſome of theſe grants, gold, ſilver, and copper are mentioned as well as lead.

The privileges of the tinners were not interfered with by any queſtion relating to theſe metals, nor, on the other hand, did the juriſdiction of the ſtannaries extend to affairs connected with them.

Thus we find an appeal to the exchequer in the reign of Henry VI. relative to lead mines. *From the records, Eaſter term, anno 36. Regni. Devon Memorand.* "That John Bottwright, governor of the mines of Bury Ferrers in Devon, complains to this court that Robert Glover, at the command of Roger Champernown, took away 144 bouls of glance oar, valued at 15*l.* 6*s.* 8*d.* and made profit of the ſame without any thing allowed to the king, to the king's damage of 100*l.* and thereupon deſireth the advice of the court."

The mines continued to be protected by the crown, and particularly by Henry VII., until Edward VI., when they were neglected; and fell into complete decay during the diſaſtrous government of Mary.

When Elizabeth ſucceeded to the crown, the mines of the kingdom partook of the attention which this enterpriſing queen beſtowed on every object from which an increaſe to the reſources, or an addition to the ſtrength of her government, might be derived.

The failure of the mines had diminiſhed the number, and annihilated the ſkill, of the Engliſh miners; the queen therefore invited over Germans, and made extenſive grants in different parts of England to Houghſetter and Thurland, and likewiſe others to William Humphreys and Chriſtopher Shutz. She alſo eſtabliſhed, in 1568, a corporation, which ſtill exiſts, called "The Society for the Mines Royal," which had certain grants and privileges in ſeveral counties, and of which William, earl of Pembroke, was the firſt governor. It does not appear that this ſociety, which was originally a mining company, though now engaged in ſmelting ores only, produced any important effect upon the diſcovery of metals in England; the tin mines of Cornwall were not worked by them, but remained in the hands of private adventurers, under the juriſdiction of the ſtannaries, and increaſed in produce and value in proportion to the demand for this metal. The whole amount of tin annually raiſed in Devon and Cornwall, in the following reigns of James I. and Charles, was from fourteen hundred to ſixteen hundred tons. It is probable that the civil wars which ſucceeded injured the workings of the mines, as in the reign of Charles II. it appears from a note of Mr. Scawen, of Molinek, who was vice warden of the ſtannaries, and quoted by Dr. Pryce, that the tin revenues were very ſmall.

In the reigns of Anne and George I. the produce of tin had again become conſiderable, and amounted, one year with another, to ſomething more than ſixteen hundred tons; ſo that in the ſpace of 110 years its mean proportion was equal to fifteen hundred tons *per annum.*

Since the foregoing time a gradual increaſe took place in the enſuing thirty years; for in the year 1742 a propoſal was made by the Mines Royal Company in London to raiſe one hundred and forty thouſand pounds to encourage the tin trade by farming that commodity for ſeven years at a certain price. A committee of Corniſh gentlemen were appointed to conſider of the propoſal; and they reported, "That the quantity of tin raiſed yearly in Cornwall, at an average for many years laſt paſt, hath been about two thouſand one hundred tons;" and reſolved, "That three pounds nine ſhillings for grain tin, and three pounds five ſhillings *per* hundred weight for common tin, are the loweſt prices for which ſuch tin will be ſold to the contractors, excluſive of all coinage duties and fees."

The produce of the tin mines was much more conſiderable afterwards, and from 1760 to 1780 it was reckoned at about two thouſand eight hundred tons a-year, which was worth the annual ſum of about 180,000*l.*

Copper began to be worked in Cornwall in the beginning of the 18th century, and the amount had attained at the period juſt quoted to about the ſame annual ſum of 180,000*l.* making the mineral returns of this diſtrict at this period, *viz.* about 1780, to be of the yearly value of 360,000*l.*

The tin mines have not been ſo important to the Corniſh miners ſince the diſcovery of copper as they were before, the produce of the latter having increaſed moſt rapidly, while the former have not made any proportional progreſs. As the ſubject is very intereſting in eſtimating the power of this country to ſupply raw materials for its numerous manufactures, we ſhall give ſtatements of the produce and other particulars of the tin and copper mines of Cornwall and Devon, from the early part of the laſt century to the preſent time.

We ſhall firſt ſtate the produce of the tin mines, and afterwards give a more detailed account of the effect of the diſcovery of copper on the mining intereſt as well as the trade of the country.

The chief part of the tin in the following ſtatement was produced from the mines of Cornwall alone, as although Devon had anciently yielded a large proportion of tin, yet before this period the mines, or rather the ſtream works of the latter county had become exhauſted, and were incapable of producing any notable proportion of ore.

Account of the Quantity and Value of Tin raiſed in Cornwall and Devon, from 1700 to 1800.

Dates.	Number of Blocks 6½ to a Ton.	Number of Tons.	Price *per* Ton.			Periods.	Annual Quantity in Tons.	Annual Value.		
			£.	*s.*	*d.*			£.	*s.*	*d.*
1700 to 1720	208,000	32,000				20 years	1600			
1720 to 1740	273,000	42,000	66	0	0	20 years	2100	138,600	0	0
1740 to 1750	162,500	25,000	65	0	0	10 years	2500	162,500	0	0
1750 to 1760	172,779	26,580	63	7	6	10 years	2658	168,450	15	0
1760 to 1770	177,302	27,277	66	6	8	10 years	2728	180,957	6	8
1770 to 1780	178,737	27,498	60	2	0	10 years	2750	165,275	0	0
1780 to 1790	192,295	29,583	68	2	0	10 years	2958	201,439	8	0
1790 to 1800	210,928	32,450	73	1	0	10 years	3245	227,047	2	6

From this table we may obſerve a regular increaſe in the quantities raiſed, the improvements in mining which took place having contributed, without doubt, to produce this effect. The price of the metal did not advance in proportion to the increaſe of the charges on labour, and the enhanced value of the articles uſed in the mines, and therefore we cannot account for the greater produce from increaſed demand, but from the power derived by improved means of working, and thus of bringing the metal to market at a cheaper rate. About the year 1770 the quantity raiſed appears to have been greater than the demand required, and the price ſeems to have been lower than at any former period, which was probably likewiſe affected by the war, and by the influx of tin imported into Europe by the Dutch from their poſſeſſions in the Eaſt Indies, where it is raiſed as well as in England. The advance in price that followed in the next period, may be attributed to the revival of trade, in conſequence of the peace which followed the American war, but this again produced an over quantity in the market, followed by a depreſſion in value, very injurious to the miners, which was ſeverely felt about 1789, when, by the exertions of Mr. G. Unwin, an export of tin to China, through the Eaſt India company, took place, that abſorbed the ſurplus which the European market did not require, and thus the price advanced again to a rate higher than any preceding one. This export to India has continued ever ſince, and may probably increaſe notwithſtanding that tin is found in ſome conſiderable quantity in Aſia.

From 1800 to the preſent time the tin mines of Cornwall have rather declined, and are probably gradually exhauſting, this metal not being found to penetrate ſo far into the earth as copper, and therefore but few mines have been found to continue productive at very conſiderable depths.

Any decline that may have taken place in the tin mines of Cornwall has, however, been more than compenſated by the rapid advances which the copper mines have made in that and the neighbouring diſtrict, which of late years have been ſo great as to render them of the higheſt conſideration, and to give theſe concerns the precedence over all ſimilar undertakings of any country. For whether we conſider the quantity of their produce, the immenſe capitals inveſted, the power and number of their engines, the ſkill with which they are conducted, or the ſpirited and rapid execution of the works, they will probably be found to take the rank here aſſigned to them.

Cornwall poſſeſſes many eminent advantages as a mining country, of which its maritime ſituation is among the moſt important, but another is that it is peopled by a race of men peculiarly fitted for this employment. The Corniſh miners unite great courage to perſonal ſtrength and activity, while we may obſerve in their character intelligence mixed with perſevering enterprize, and patience of fatigue with a conſiderable independence of ſpirit.

There is no doubt but that the ſyſtem of management adopted in the mines, which long uſage has matured into a ſyſtem as beneficial to the mine owners as ſtimulating to the exertions of the workmen, has tended much to render the latter what they now are, though their inſulated ſituation has likewiſe probably preſerved to them much of their original character as a people.

With ſuch advantages, and with a ſufficient quantity of the metallic ores diſtributed throughout it, a diſtrict only requires capitaliſts of ſufficient wealth, intelligence, and enterprize, to render it of conſequence as a mining country, and it has happened to Cornwall to have gentlemen poſſeſſed of all theſe requiſites.

The ſtatements which follow will ſhew how the diſcovery of a valuable metal has been followed up, and an intimate acquaintance with the Corniſh mines would prove how great the exertions muſt have been, to have produced effects in a ſhort time which the labour of ages in other countries have ſcarcely equalled.

We have before obſerved that copper began to be ſought after in Cornwall about the beginning of the eighteenth century, and, as might be expected, we have no exact accounts of the ſucceſs of the undertakings for its purſuit in their earlieſt ſtage. In a few years, however, the quantity produced had attained to a conſiderable amount, and we ſhall be enabled to trace pretty accurately the progreſs afterwards made.

The firſt document on the ſubject is the following:

Statement of the Returns of Copper Ores in Cornwall, from 1726 to 1775.

Years.	Tons of Ore.	Average Price *per* Ton.			Amount.	Annual Quantity of Fine Copper.
		£	*s.*	*d.*	£	(Probably)
1726 to 1735	64,800	7	15	10	473,500	700 Tons.
1736 1745	75,520	7	8	6	560,106	830
1746 1755	98,790	7	8	0	731,457	1080
1756 1765	169,699	7	6	6	1,243,045	1800
1766 1775	264,273	6	14	6	1,778,337	2650

This account is taken from Pryce's "Mineralogia Cornubienſis," excepting the laſt column of the quantities of metal produced from the ores, which it was deſirable to exhibit, in order to compare the increaſe of late years, of which the quantity of *fine copper* is the only true criterion, the ores often differing materially in their metallic content. The ſtatement is, however, given as reſpects this part of it only as a near approach to the truth, as we have no certain data to calculate from; the aſſay and price of copper, by which the value paid to the miner was determined, being in a great part of the period above quoted not eaſily aſcertained. The amount of metal is, however, calculated from the moſt probable ſuppoſition.

From the table we ſee, that in Cornwall the produce of copper increaſed in fifty years from about 700 tons of fine metal *per annum* to 2650 tons.

Copper mines were not attended to in England much before the dates in the preceding table, the diſcovery of this metal probably having taken place in working the tin mines, which had been wrought time immemorial. Soon after that diſcovery, in 1691, a charter was granted to ſir Joſeph Herne and others, merchants of London, who were thereby incorporated as a company for the purpoſes of refining and purifying copper ores.

This company ſtill exiſts, and is now commonly called the Engliſh Copper Company.

The Mines Royal Company, which had been incorporated near 100 years before this time, appear originally to have deſigned to apply their reſources to the opening and working mines in various parts of the kingdom, and they had grants for ſearching for copper among other metals, although it does not appear that any important diſcovery of this metal took place in conſequence of their exertions, nor is mining one of thoſe purſuits which is ever likely to flouriſh in the hands of large companies.

In 1694, a copper coinage of halfpence and farthings took place, and government paid at the rate of 18*d.* a pound for the copper, which was of Swediſh produce.

In 1717, a further coinage took place, to the amount of 700 tons of Engliſh copper, for which government paid at the rate of 15¾*d. per* pound, or 147*l. per* ton.

In 1702, the firſt braſs work in England was erected near Briſtol, which has continued to this time, but with great additions and improvements. Many other copper and braſs houſes have been ſince erected in this country, and by that ſpirit, energy, and enterprize, for which the people of it are ſo diſtinguiſhed above all others, the moſt valuable branches of the copper and braſs trade have been eſtabliſhed in England, which had before been altogether, and for ages, carried on in Germany and Holland.

For the firſt twenty or thirty years of the laſt century, and always before, moſt of the copper and braſs utenſils for culinary and other purpoſes of this country were imported from Hamburgh and Holland, procured from the manufactories immemorially eſtabliſhed at Nuremberg and various other parts of Germany; even braſs pans for the purpoſes of the dairies of our country could not be procured but of the German make.

So late as 1745, 1746, and 1750, copper tea-kettles, ſaucepans, and pots of all ſizes were imported here in large quantities from Hamburgh and Holland; but through the perſevering induſtry, capitals, and enterpriſing ſpirit of our miners and manufacturers, theſe imports became totally unneceſſary, being all made here, and far better than any other country could produce.

During all this time the price of copper will be found to have been as high as it has been in the laſt three or four years, 1808, 1809, 1810, and 1811, notwithſtanding the great difference in the value of money, and conſequent advance of price on materials uſed in mining, and of the wages of labour employed therein.

It appears above that government paid for copper uſed in their coinages in the year 1694 at the rate of 18*d.* a pound, or 168*l.* a ton for metal the produce of Sweden; and in 1717, they were ſupplied with Engliſh copper at the rate of 15¾*d.* a pound, or 147*l.* a ton.

The reduction here ſpecified in value may fairly be accounted for by the increaſing produce of the Engliſh mines, and accordingly the price went on to lower nearly in proportion to the quantity which was thus brought into the market.

In the year 1720 copper was ſold for about 130*l.* a ton, and declined towards the year 1772 to the price of 100*l.* a ton.

About the year 1773, new copper mines being diſcovered in Derbyſhire and Wales, and freſh ſupplies of fine copper coming from thence to market in competition with the Corniſh copper, the price of it fell gradually until 1781. In this year the Eaſt India company firſt paid ſo little as 79*l.* a ton for cake copper. This great reduction was owing to a warm conteſt which took place between the owners of the Corniſh mines and thoſe of the Paris Mountain mine in Angleſea, which had become amazingly productive, and ſo as to alarm the fears of the former.

Arrangements were afterwards made between the parties principally concerned in the mines of theſe two diſtricts, by which the price was ſomewhat advanced, but did not exceed at any time 84*l.* a ton, and continued at nearly the ſame rate until the year 1791.

By this time England, inſtead of depending upon foreign mines for a ſupply of copper, had become one of the principal ſources from which the world at large was furniſhed with this uſeful metal.

Accordingly, in the year 1791 we find that the exports of different articles in which copper either formed the whole or the principal ingredient, amounted to a very conſiderable branch of trade, and that theſe articles went in large quantities to thoſe very countries upon which England had formerly depended for a ſupply. Among theſe may be noticed Holland, Germany, and even Sweden itſelf.

The total exports were, in 1791,

	Tons.	C.	qrs.	lbs.		£	*s.*	*d.*
Wrought copper	3082	3	3	11	value	358,844	9	1
Braſs and plated goods	2324	2	0	11		209,769	8	9
	5406	5	3	22		568,613	17	10

Comparing this with the produce of copper in Cornwall in the year 1775, as above quoted from Dr. Pryce, which was only 2650 tons, and allowing for what might be brought to market from Angleſea, we may, in ſome meaſure, judge of the increaſe in the quantity of metal from the Corniſh mines in this period of ſixteen years, even under the diſcouraging circumſtance of great competition and reduced prices.

Beſides this vaſt export, a new ſource of conſumption for copper had in the mean time ariſen at home in the uſe of it very extenſively in ſheathing and faſtening ſhips, and this alone would require conſiderable quantities.

The demand having apparently kept pace with the quantity brought to market, the queſtion will naturally be aſked, how it happened that the price continued to fall, or at leaſt to remain at a rate ſo much under what it brought 100 years before? Though the anſwer to this queſtion muſt include other conſiderations than thoſe connected with mere mining, it may be proper to go a little out of our way to anſwer it, particularly as it relates to the mines of Cornwall, which were at one time threatened almoſt with ruin, from the value of their produce not bearing any proportion to the increaſe in their expences, from the diminiſhed value of money, and the rapidly accumulating charges occurring from the great depths to which moſt of the productive mines were by this time worked.

The reaſon, then, of the price of copper not bearing a proportion to the coſt of procuring it, and the demand of the article, appears to have been ſimply this. Neither the miners nor the great conſumers of the copper were ſmelters of the ore; but this buſineſs was in the hands of a very few companies, employing immenſe capitals in their works, who thus had the power of managing the market, and of preventing that ſalutary competition, which alone can regulate fairly the due courſe of trade.

The principal ſmelters, by a contract which had been entered into improvidently with them by the majority of the miners, had poſſeſſed themſelves of the greater part of the copper ores of the county of Cornwall at a fixed price; and this price being found inadequate to meet the increaſing charges of working the mines, diſcontents aroſe, which ſpread among the labouring miners, who feared the loſs of their employ by the ruin of the mines, which was anticipated. Many of the proprietors, or adventurers as they are uſually called, who were not perſonally parties to the contract, refuſed to be bound by the act of their co-adventurers, and conſiderable confuſion enſued.

The ſmall proportion of the ores, not included in the contract, continued to go to public ſale, where the price was advancing; but theſe ſales were attended by a few ſmelting companies only who had not joined the others, until the following circumſtance occurred, which materially contributed to open a free market to the miner for the ſale of his ores, upon a plan that enſures a fair and equitable price, according to the demand, as far as is poſſible, where the number of buyers muſt be neceſſarily ſmall.

Many of the principal manufacturers of Birmingham, who were large conſumers of copper, had obſerved the difference between the price of the metal in the ore paid to the miner, and the price at which they bought it when ſmelted. They ſaw no other reaſon for the intervention of a third party between the miner and conſumer, but the capital neceſſary for the erection of ſmelting works; and this being eaſily raiſed by ſhares, a company was formed under the name of the Birmingham Mining and Copper Company: their object being to encourage the production of copper, by adventuring in the mines, as well as to procure it for their manufacture, by purchaſing and ſmelting the ores.

As ſoon as the company was eſtabliſhed, they propoſed to revive the old mode of the ſale of ores, which had, owing to the contract, nearly fallen into diſuſe, called a *ticketing;* by which, on certain days, the ores of any number of mines, being previouſly ſampled and aſſayed, are offered for ſale by tenders or tickets, produced by the agents of each ſmelting company, and delivered to the chairman of the meeting which is held for the purpoſe, who declares the offer of each, and the higheſt the buyer.

This revival of the ticketings was effected by the Birmingham company joining the ſmall number of ſmelting companies who were not concerned in the contract, and the competition was rendered complete. A new ſpirit was infuſed into the working mines, by an increaſe of the price of their produce. Other ſmelting companies were afterwards formed upon ſimilar principles; and the demand for copper advancing rapidly, while the quantity produced in Angleſea and other parts of England leſſened, the mines of Cornwall flouriſhed in proportion.

The advance on copper began to be felt about 1792, when it had attained the price of 100*l.* *per* ton; and in a very few years after (1799), it had reached 124*l.*: being ſtill, however, much lower than it was in the beginning of the 18th century.

We may recollect that the quantity of copper raiſed in Cornwall, in the year 1775, was about 2650 tons a-year: in 1789 it had increaſed to about 3000 tons; which increaſe was progreſſive, as in the year 1797, according to the report laid before the houſe of commons, the quantity amounted to 5093 tons; and in the following year (1798), was 5427 tons.

So that we ſee in the period of about 70 years from 1726, the annual quantity produced by this diſtrict had riſen from 750 to 5427 tons; and that the aggregate amount of an article, valuable as a raw material, affording, after it paſſes from the hands of the miner, the means of ſubſiſtence and profit to thouſands, had riſen from the ſum of 47,350*l.* to about 600,000*l.* a-year. Even this great increaſe of produce was far exceeded in the courſe of the next eight or nine years, when, as we ſhall ſee heareafter, half as much more was added to the quantity, and more than that proportion to the value.

Early in the year 1799 the Birmingham manufacturers, finding the price of copper rapidly increaſing, began to be alarmed leſt a diminution of their trade ſhould be the conſequence, and having apparently overlooked the plain rule of commerce, that, without unfair reſtraint, demand muſt govern price, applied to government to impoſe prohibitions on the export, and other regulations, which would have amounted in effect to the fixing a maximum on the price, and conſequently a ruinous reſtraint on a valuable ſource of national wealth, and laudable enterpriſe and exertion. It may be juſtly wondered at, that any miniſtry ſhould have liſtened to ſuch a propoſal; but great as were the boaſted talents of the then premier, he appears to have been led to the warm ſupport of it, by the narrow conſideration which was held out to him, of ſupplying the navy with copper at a ſomewhat lower price; not looking forward to the probability that any ſtep which might ruin the Britiſh copper mines, muſt eventually make the Britiſh navy dependent on other countries for this eſſential article of equipment.

The conteſt that enſued between the miners and the manufacturers produced many curious documents, which were laid before the committee of the houſe of commons appointed to inveſtigate the ſubject, and from which we are now enabled to ſtate particulars of the mines of Cornwall, more exactly than could have been obtained, had not ſuch an occaſion called them forth.

The matter came fully before parliament, the good ſenſe of which defeated the impolitic wiſhes of the propoſers of the reſtrictions, and left a miniſtry unaccuſtomed to defeat in a minority on the queſtion.

That the predictions of the manufacturers were groundleſs may be inferred from what took place afterwards: the price of copper advanced 50 *per cent.* in the next ſeven years, and the Birmingham trade, notwithſtanding, increaſed in activity and conſequence. The high price ſtimulated the enterpriſe of the miner, until an over-ſupply began to operate; and in the laſt few years, this, together with the unfortunate ſtate of foreign trade, has again reduced the price of copper, ſo as once more to endanger the exiſtence of a great proportion of the copper mines.

From the documents before alluded to, we find that, in February 1799, there were in Cornwall then working ſixty copper mines, which were divided into claſſes, to ſhew their relative conditions. The accounts are made up for the ſix months preceding the ſtatement.

Claſs 1. Includes the old deep mines, which produced in the ſix months more than half of all the copper raiſed in Cornwall.

2. Includes the profitable mines, which produced about three-eighths of the copper.

3. The new mines which were carrying on in the hopes of their improvement, and the greater number of which, in fact, had not begun to yield any ore.

The reſult of the ſtatement is as follows, in which it is to be obſerved that the value of the ores is accounted for, after deducting the proportion paid to the owner of the ſoil, and therefore does not exhibit an account of all that was raiſed. The firſt column of loſs refers to the money ſunk in the ſix months for which the account is taken; and the laſt column of unrecovered loſs includes all the money laid out from the commencement of each mine, which had not been paid off by adequate returns.

State of the Copper Mines of Cornwall for ſix Months, to the end of February 1799.

	Quantity of fine Copper.				Adventurers' Amount of the Value.			Coſt of working the Mines.			Total of Profit on ſome Mines.			Total of Loſs on others.			Capital employed in the Mines.			Unrecovered Loſs.		
	Tons.	C.	q.	lbs.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Claſs 1. — Including ten old and deep mines -	1388	3	1	21	115,121	13	10	116,209	1	6	3153	0	3	4240	7	11	102,489	0	0	69,181	2	10
Claſs 2. — Seven profitable mines -	1083	12	2	24	86,377	15	3	49,311	11	1	37,066	4	2				66,813	0	0	5483	17	2
Claſs 3.—Forty-three new mines, of which thirteen only had begun to raiſe any ores -	141	17	1	13	14,517	13	3	31,813	5	9				17,295	12	6	16,267	0	0	90,124	16	8
	2613	13	2	2	216,017	2	4	197,333	18	4	40,219	4	5	21,536	0	5	185,569	0	0	164,789	16	8

By this ſtatement we ſee, that the total profit of the ſix months, in all the mines, exceeded the loſs by the ſum of 18,683*l.* 4*s.* 0*d.*, and in the loſs is included a conſiderable amount, which it does not ſeem clear ſhould have been placed there, *viz.* the ſums expended on the new mines in the period, as this may more properly be called an inveſtment of capital with a view to future expected profit.

The unrecovered loſs is ſubject to the ſame remark, though it is uſual to reckon in mining the expenditure as loſs until the profits have repaid it. The capital, however, which means the value of ſtock upon the mines, ought to be deducted from this unrecovered loſs; and if this be done, and a fair allowance be made for the value of ſuch new mines as might have been ſuppoſed likely to become profitable, the account gives no unfavourable impreſſion of the general reſult at that time.

Another obſervation may be made on this account which ſeems neceſſary, as it does not appear on the face of it. Credit is only given for the adventurers' part of copper ores; but ſeveral of theſe mines returned tin as well as copper, of which no account is taken, and which muſt, in all probability, have increaſed the profits of the ſix months, if ſtated.

The next table ſhews the general receipts and diſburſements on the copper mines of Cornwall for ſeven years, ending the 31ſt December, 1798, which cannot be deemed ſo favourable as the former, which related to the latter part of this ſame period.

General State of the Copper Mines of Cornwall for Seven Years, ending the 31ſt of December, 1798.

Years.	Adventurers' Amount of Ores.			Labour.			Materials.			Total Coſt.			Profit.			Loſs.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
1792	279,331	15	10	150,824	12	3	91,361	6	4	251,865	19	11	27,465	15	11			
1793	283,853	12	11	176,333	2	7	110,122	15	2	294,226	15	0				10,373	2	1
1794	293,853	10	11	179,187	15	5	111,093	19	11	294,775	19	5				922	8	6
1795	305,320	6	9	189,713	10	1	111,640	2	3	312,047	7	5				6727	0	8
1796	348,836	12	11	201,995	18	6	105,925	12	1	324,897	18	4	23,938	14	7			
1797	320,606	15	9	189,821	15	11	109,008	7	3	309,060	14	10	11,546	0	11			
1798	405,488	15	9	253,601	12	3	146,253	16	3	408,248	7	11				2759	12	2
	2,237,291	10	10	1,341,478	7	0	785,405	19	3	2,195,123	2	10	62,950	11	5	20,782	3	5

N. B.—The columns of labour and materials, added together, do not make up the total coſt, becauſe the accounts ſent from ſome mines do not diſtinguiſh the amount of labour from materials; and, therefore, could be no otherwiſe arranged than by being carried at once to the column of total coſt.

The average annual coſt of working the copper mines of Cornwall for this period appears to have been 313,589*l.* Out of this ſum the labour appears to have coſt about 197,640*l.*, and the materials employed about 115,950*l.* The proportion of the one to the other being nearly as 5 to 3.

The great amount of the latter may be attributed to the great depth of many of the mines, whereby the charge for coals for the ſteam-engines, and the wear and tear in the ſhafts of cordage and other articles, is prodigiouſly increaſed.

If, taking the amount of labour at the above ſum, we allow 40*l.* as the annual earnings of each man employed, which is nearly the uſual proportion, we ſhall find it would ſhew that there are about 5000 men employed. But as a certain proportion belongs to the boys working under ground, and the women and children who dreſs the ores on the ſurface, who altogether are paid after a much lower rate, the whole number of hands, including men, women, and children, may not, at this period, perhaps be over-rated at from 6 to 7000.

In order to ſhew the reſpective ſtate of each mine at this time, we inſert the following table, which exhibits the name of each, with the particulars of their expenditure and returns, as far at leaſt as copper is concerned; for, as was remarked before, no notice is taken of the tin produced from any of them.

We take the year 1798, the laſt of the ſeven years to which the ſtatement given above refers to.

Such is the fluctuation of concerns of this ſort, that at the preſent time, 1812, very few of thoſe which appear at the head of the following liſt as moſt important in conſequence and produce, are now working to much extent, while others, which either then lay neglected, or in which diſcoveries had not been made, have ſucceeded to ſupply their places.

State of the Copper Mines in Cornwall for the Year 1798.

Mines.	Adventurers' Amount of Ores			Labour.			Materials.			Total Coſt.			Profit.			Loſs.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
North Downs -	52,388	14	6	33,350	2	1	18,890	19	9	52,241	1	10	147	12	8			
United Mines -	36,194	8	4	20,196	0	3	20,241	19	3	40,437	19	6				4243	11	2
Conſolidated Mines	35,613	11	10	21,547	4	2	10,877	14	0	32,424	18	2	3188	13	8			
Herland -	29,233	10	9	16,922	2	0	13,789	11	6	30,711	13	6				1478	2	9
Stray Park and Wheal Gons	12,125	10	10	6660	11	0	3182	13	0	9843	4	0	2282	6	10			
Poldice -	6993	19	9	4945	19	3	5677	3	1	10,623	2	4				3629	2	7
Wheal Unity -	41,330	8	7	10,851	2	5	13,510	17	10	24,362	0	3	16,968	8	4			
Crenver and Oatfield -	19,429	14	7	9392	10	2	10,016	9	11	19,409	0	1	20	14	6			
Wheal Treaſury -	19,978	4	10	20,050	18	8	5541	4	2	25,592	2	10				5613	18	0
Cook's Kitchen -	18,098	5	4	16,102	2	4	3468	13	7	19,570	15	11				1472	10	7
Wheal Rock -	995	19	7	1533	5	6	417	10	4	1950	15	10				954	16	3
Tin Croft -	35,242	17	1	15,233	10	2	6105	4	3	21,338	14	5	13,904	2	8			
Treſavean -	7609	2	9	5437	1	9	3069	2	3	8506	4	0				897	1	3
Prince George -	12,538	16	5	9045	3	5	1068	4	0	10,113	7	5	2425	9	0			
Camberne Vean -	6456	17	3							2885	1	2	3571	16	1			
Wheal Jewel -	19,035	18	2	10,710	6	8	5311	3	3	16,021	9	11	3014	8	3			
Pednandrea -	5078	7	10	10,587	16	8	7287	9	1	17,875	5	9				12,796	17	11
Wheal Fortune -	20,767	0	3	9450	18	7	2560	13	10	12,011	12	5	8755	7	10			
Wheal Gorland -	9032	0	8	3975	17	0	1893	19	5	5869	16	5	3162	4	3			
Wheal Providence	257	8	0							252	7	4	5	0	8			
Wheal Hope -				400	3	6	247	9	6	647	13	0				647	13	0
Scorrier -	102	14	6	509	10	6	103	14	7	613	5	1				510	10	7
Cherry Garden -	22	13	9	321	3	0	56	11	11	377	14	11				355	1	2
Wheal Suſan -	1407	8	9	1956	13	0	1465	1	8	3421	14	8				2014	5	11
Wheal Squire -										820	3	7				820	3	7
Eaſt Wheal Sparnon -				356	6	3	45	10	5	401	16	8				401	16	8
Drollas Downs -	1075	14	7	1847	5	11	41	19	2	1889	5	1				813	10	6
Wheal Captain -	643	9	9							1617	16	7				974	6	10
Creegbraws -	77	3	10	1054	7	3	154	18	6	1209	5	9				1132	1	11
Weſt Wl. Unity -										83	19	9				83	19	9
Wheal Penroſe -				108	6	8	12	0	2	120	6	10				120	6	10
Wheal Tremayne				127	14	5	2	19	0	130	13	5				130	13	5
Wheal St. Aubyn				53	19	10	15	1	3	69	1	1				69	1	1
Roſe Lobby -				270	7	8	138	9	5	408	17	1				408	17	1
Heart's Eaſe -				273	13	8	4	19	10	278	13	6				278	13	6
Boſprowall -	1377	11	3	1413	1	0	398	5	2	1811	6	2				433	14	11
Druid -	17	18	11	421	12	4	264	5	1	685	17	5				667	18	6
Wheal Fanny -				640	16	4	468	19	6	1109	15	10				1109	15	10
New Roſkeir -	475	19	3	1106	9	3	1280	1	2	2386	10	5				1910	11	2
Polgine -										1220	3	9				1220	3	9
Wheal Chriſtoe -				43	7	10	10	19	0	54	6	10				54	6	10
Wheal Drim -										56	16	5				56	16	5
Dopps -	15	10	0	241	12	7	31	9	10	273	2	5				257	12	5
Nanjiles -				71	3	7	18	18	0	90	1	7				90	1	7
Weſt Downs -				612	2	10	187	13	2	799	16	0				799	16	0
Wheal Abraham -				1618	11	5	815	18	5	2434	9	10				2434	9	10
Weſt Good Succeſs				156	12	2	34	7	9	190	19	11				190	19	11
Whitefield -				418	3	6	198	5	4	616	8	10				616	8	10
Wheal Pink -										118	18	9				118	18	9
Penſtruthell -				195	11	2	33	18	7	229	9	9				229	9	9
Wheal Damſel -				373	14	5	101	16	5	475	10	10				475	10	10
Wheal Quick -	121	17	7	537	9	5	204	13	2	742	2	7				620	5	0
North Good Succeſs				81	0	5	1	6	7	82	7	0				82	7	0
Carried over	393,738	19	6	241,203	12	0	139,250	5	1	387,509	4	5	57,446	4	9	51,216	9	8

Mines.	Adventurers' Amount of Ores.			Labour.			Materials.			Total Coſt.			Profit.			Loſs.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Brought over	393,738	19	6	241,203	12	0	139,250	5	1	387,509	4	5	57,446	4	9	51,216	9	8
Wheal Bounty -				122	9	10	61	11	4	184	1	2				184	1	2
Wheal Rachel -				123	6	5	20	1	9	143	8	2				143	8	2
Wheal Royal -										66	16	1				66	16	1
Wheal Clinton -				60	2	0	38	9	8	98	11	8				98	11	8
Tolcarne -	641	6	1	1248	0	9	532	12	4	1780	13	1				1139	7	0
Weſt Tolcarne -	13	4	8	98	3	2	24	13	8	122	16	10				109	12	2
Wheal Union -				102	14	0	20	10	6	123	4	6				123	4	6
Eaſt Wheal Vogue				71	15	4	17	3	0	88	18	4				88	18	4
Wheal Spinſter -				36	2	6	4	5	4	40	7	10				40	7	10
Treſkerby -				111	8	4	14	16	3	126	4	7				126	4	7
Cardrew -	30	2	6	212	2	0	23	14	0	235	16	0				205	13	6
Wheal Leeds -	39	6	4	430	19	9	447	11	5	878	11	2				839	4	10
Trenethick Wood										685	6	5				685	6	5
Wheal Muttral -	639	9	8	641	17	8	18	2	11	660	0	7				20	10	11
Treſkow -	7495	14	8	5375	19	8	2576	18	10	7952	18	6				457	3	10
Penberthy Crofts	281	2	9	1912	0	6	686	8	3	2598	8	9				2317	6	0
Wheal Kayle -				135	17	3				135	17	3				135	17	3
Eaſt Wheal Park				345	5	6	160	6	0	505	11	6				505	11	6
Wheal Ruth -				136	9	5				136	9	5				136	9	5
Wheal Carpenter										53	1	11				53	1	11
Wheal Chance -										226	14	0				226	14	0
Weſt Wheal Jewel	1551	17	5	1243	6	2	2356	5	11	3599	12	1				2047	14	8
Wheal Bog, ore and materials ſold	1057	12	2							295	13	7	761	18	7			
	405,488	15	9	253,611	12	3	146,253	16	3	408,248	7	10	58,208	3	4	60,967	15	5

About this period a part of the county of Devon began to attract notice as a mining diſtrict, although it might rather ſeem to belong to Cornwall, if a diviſion had been made between the counties by a line that an obſerver of the geology would have chalked out, rather than by the arbitrary limit of a river. The mines of Devon may, therefore, fairly be ranked as a branch of the great mineral country adjoining, as their features are nearly alike, the products very ſimilar, and the ſyſtem of working derived from Cornwall. A ſpace of no inconſiderable extent indeed is to be found lying between the weſtern and moſt conſiderable mines in Cornwall, and thoſe on its eaſtern limits, which intervening tract is comparatively unproductive in mineral treaſures.

The tin mines of Devon have been before alluded to, and we have ſeen that they had gradually declined into inſignificance. Copper had now been found, and purſued with ſome ſucceſs, and though the quantity was not very great at this period, it ſoon led to greater exertion, which in turn was repaid by the diſcovery of new mines and an enlarged return of valuable produce.

It is probable that before 1800 the mines of Devon, which are moſtly ſituate within a few miles of the town of Taviſtock, did not yield more in any one year than about 100 tons of fine copper, and even this was a very recent diſcovery; we ſhall now ſee that they went on, together with thoſe of Cornwall, augmenting in importance.

From 1798 to 1804, the produce of the Corniſh mines appears to have continued pretty ſteadily at about 5500 tons of fine copper a-year; while the Devon mines in the ſame period increaſed their returns very rapidly, which had reached, about this time, to about 300 tons of fine copper a-year.

The price of the metal we mentioned to have been, in 1799, about 124*l*. a ton, and until 1804 a gradual increaſe was experienced, although the ſupply was at leaſt ſomewhat larger. In the following year, however, owing to the flouriſhing ſtate of the export trade, the value of copper roſe very rapidly, and reached the unprecedented price of 180*l*. a ton to the miner. The conſequences of this were ſoon felt, and, by the exertion produced by this ſtimulus, the returns of the Corniſh and Devon mines reached to more than 7000 tons of fine copper, fetching, at the firſt hand, the ſum of 1,260,000*l*.

From this time to the preſent, the value of copper has experienced violent and rapid fluctuations, being, at one time, at half the price of the year 1805; and as this has proved a cauſe of great embarraſſment and loſs to the adventurers in the mines, ſo it has tended to reduce again the quantity of copper raiſed.

The year or two following 1805 were, as might be expected, even more productive than that in which the price attained its higheſt pitch, for the exertions it cauſed operated long after the price began to decline.

The following Table exhibits a Statement of the Quantity of Copper Ores and Fine Copper produced by the Mines of Cornwall and Devon during the laſt four Years, taken up to the End of June in each Year, and the Value calculated according to the Average Standard, or Miner's Price of the Metal.

		Copper Ores.			Fine Copper.				Average Standard *per* Ton.			Annual Amount after deducting Charges of Smelting.		
		Tons.	cwt.	qrs.	Tons.	cwt.	qrs.	lbs.	£	*s.*	*d.*	£	*s.*	*d.*
1808	Cornwall -	73,434	2	1	7118	5	1	17						
	Devon - -	3725	0	0	369	10	0	0						
		77,159	2	1	7487	15	1	17	107	0	0	781,348	16	7
1809	Cornwall -	72,038	12	2	6972	17	0	24						
	Devon - -	3210	0	0	365	1	3	0						
		75,248	12	2	7337	18	3	24	122	0	0	875,784	2	3
1810	Cornwall -	76,525	14	3	6651	18	2	5						
	Devon - -	3713	0	0	354	15	0	0						
		80,238	14	3	7006	13	2	5	141	0	0	969,376	19	0
1811	Cornwall -	70,039	0	1	5948	7	0	22						
	Devon - -	3540	0	0	323	13	0	0						
		73,579	0	1	6272	0	0	22	125	0	0	767,379	4	0

We have now brought the hiſtory of the copper mines up to the preſent period, and we have found what has been done in one diſtrict in the ſpace of about 100 years after the diſcovery of the metal. We may obſerve, that in the beginning of the 18th century the annual produce of the mines conſiſted of about 6500 tons of ore, and 700 tons of fine copper, yielding to the miners, who, from their ignorance of the ſubject, did not then receive from the ſmelters a price for their ores adequate to the value of the metal they contained, no more than 45,000*l.* a-year. And we have ſound this produce increaſed, at the early part of the preſent century, to the annual quantity of near 80,000 tons of ore, yielding more than 7000 tons of fine copper, worth to the miners an annual ſum little ſhort of 1,000,000*l.*

The copper mines now working in Cornwall and Devon may be known from the following liſt, which contains ſuch only as are more or leſs productive, and does not include ſuch as make no returns, but may, notwithſtanding, be proſecuting with a view to future diſcovery, many of which kind were ſtated in the former account of the mines working in Cornwall in 1798.

By referring to that ſtatement, we ſhall find the productive mines to be ſorty in number, and the unproductive to amount to thirty-ſix.

The following liſt will be found to contain ſixty-one productive mines, with the quantity of ores eſtimated from the account of ſales at the ticketings, where the computed weight of each parcel of ore is ſtated, and the exact quantity determined after the ſale has taken place.

It is poſſible that ſome few mines may exiſt which do not appear in this liſt, and which ſell their ores by private contract, but they are not important.

We ſubjoin to the liſt the Devon mines, with their quantities of ore, taking account, as in Cornwall, of ſuch only as are productive; and the whole is made up to the end of December 1811.

A liſt of Copper Mines, with the Quantities of Ore offered for Sale at the Ticketings from each, in the Year 1811.

In the county of Cornwall there are 61 mines.

Names of the Mines.	Tons of Ore.
Wheal Alfred - - -	8946
Dolcoath - - -	8544
Wheal Unity - - -	5545
Wheal Abraham - -	3950
Poldice - - -	3659
Wheal Damſel - - -	3357
Gunnis Lake - - -	2600
Weſt Wheal Fortune - -	2594
Wheal Towan - -	2158
Wheal Fanny - - -	1802
Crennis - - -	1696
Oatfield - - - -	1630
Treſkirby - - -	1578
Wheal Gorland - - -	1485
Cook's Kitchen - -	1342
Crenver - - -	1287
Tin Croft - - -	1138
North Downs - - -	1153
Wheal Friendſhip - -	1038
Wheal Jewel - - -	968
Wheal Virgin - -	942
Saint George - - -	938
United Mines - - -	934
Weſt Wheal Virgin - -	921
Wheal Fortune - - -	916
Wheal Quick - - -	679
Camborne Vean - -	655
Wheal Chance - - - -	597
Wheal Spinſter - - -	584
Carried over	63,636

Brought over	63,636	
Wheal Neptune	539	
Wheal Gons	443	
Godolphin	411	
Creegbraws	316	
Treſavean	311	
Nangiles	266	
Botallack	244	
Penberthy Crofts	212	
Wheal Clinton	209	
Chacewater	204	
Wheal Baſſett	204	
Wheal Dolphin	183	
Wheal Druid	177	
United Hills	177	
Benner Downs	175	
Wheal Maid	151	
Wheal Strawberry	148	
Union	146	
Wheal Muſic	145	
Wheal Sparnon	97	
Wheal Maudlin	95	
Wheal Margaret	90	
Wheal Luſhington	81	
Unanimity	49	
Wheal Squire	45	
Reliſtian	41	
Wheal Spearn	20	
Wheal Mary	20	
Trenowith	18	
Wheal Freedom	16	
Roſkear	10	
Roſewarne	7	
		68,886
In the county of Devon ſeven Mines.		
Wheal Friendſhip	1102	
Wheal Crebor (*Taviſtock Canal*)	1308	
Wheal Crowndale	863	
Eaſt Crowndale	913	
Ding Dong	250	
Wheal Hope	6	
Wheal Huckworthy	10	
		4,452
	Tons	73,338

Hence it will appear, that the copper mines have of late been declining in their produce, which is to be referred to the general ſtate of trade rendering the price of the metal unequal to the charge of producing it.

The preſent value of copper, as was obſerved in a former part of this article, is as low as it was 100 years ago, and we may account for the poſſibility of this happening without abſolute ruin to the mines, by the facilities which the great improvements in all the various operations of mining have given for leſſening manual labour and conſequent expence.

This very improvement has, however, contributed to a more rapid exhauſtion of the ores, and though diſcovery has hitherto in this diſtrict kept pace with the gradual waſte, yet it is impoſſible not to foreſee that as the country is even now very fully explored, a time muſt arrive when the quantity of metal produced will grow leſs, and the price in conſequence muſt advance.

This period we conceive is not ſo diſtant as ſome may imagine, but it is a ſubject not eaſily reduced to any very probable calculation.

The hiſtory of the mining of a particular diſtrict would naturally lead to an intereſting enquiry on this ſubject, and to the diſcuſſion on the probability of a future and continuing ſupply of the metals which the bowels of the earth have hitherto yielded ſo abundantly. As this queſtion regards one country, it may be aſſumed that the ſupply muſt have its limits; as it regards the whole world, it becomes difficult even to conceive what extent or number of depoſits of metal may exiſt.

That certain diſtricts may become exhauſted is more than probable, but others now unexplored by the hand of man may be found. New powers, as far ſurpaſſing thoſe of the ſteam engine as they did all former ones, may give the means of penetrating the earth to depths now unattainable, and veins may hereafter be followed to ſituations which are forbidden at preſent by the value of their produce or the want of ſufficient exertion.

The ſtores which the earth yields from its bowels are unlike thoſe which its ſurface produces; the former are limited and are not renewed, the latter are conſtantly produced by the encouraging hand of induſtry. The one are gradually exhauſting, and ſeem to demand frugality in their expenditure, the other grow and increaſe in proportion to our care and exertion.

The reſult of a gradual exhauſtion of mines now exiſting ſeems likely to be this; at firſt the price of metals will increaſe in proportion to their ſcarcity, this advance in value will lead to a greater produce by new efforts even in the diſtricts which are exhauſting, and after theſe begin again to fail, which they will do more rapidly from the increaſed exhauſtion, new diſtricts will be ſought after, and perhaps uncultivated countries even become peopled by the want of what is now become ſo neceſſary to human life.

The variation in theſe affairs may at ſome time make material changes in the ſtate of civilization, a poſition which will not be denied by thoſe who duly conſider the effects that the ſtores of coal and metal have had on the proſperity of Britain.

MINING *Proceſſes*, according to the practice of the mineral diſtricts of Cornwall and Devon.

The means purſued for the diſcovery of veins containing metal, and the appearances which ſerve as indications of the probable quantity which may be found in them, are treated of in a former article. See LODE.

The works which follow the diſcovery are at firſt but ſimple and limited, but they increaſe afterwards in proportion as the proſpects of future ſucceſs become more certain; or, on the contrary, they are diſcontinued when the trial offers but little encouragement to proceed with the adventure.

By a reference to the article above quoted, it will be underſtood how the depoſits of metal are uſually ſituated in the veins; and as the miner's object in his firſt operations is to get at ſome ſhoot or bunch of ore as quickly as poſſible, and to open as much of the lode as he conveniently can, the moſt promiſing part on the ſurface is choſen for the commencement of a *ſhaft*, which is either ſunk upon the vein ſo as to follow its dip or underlay, or otherwiſe is carried down perpendicularly from ſome ſpot on the ſide to which it dips, ſo as to interſect it at a given depth, and then is uſually called an *underlayer*.

As water is commonly ſoon met with in ſuch quantities as to impede the workmen, means for removing it muſt be provided, and it ſpeedily becomes neceſſary to take ſteps for this purpoſe. Where the elevation of the ground will admit of an *adit* or water-level being made, this is uſually firſt had recourſe to, particularly when it may be obtained by driving a moderate a moderate diſtance, or when it can be purſued on the courſe of the lode, and ſo ſerve the double purpoſe of a drain and a level for trying the appearances of the vein.

When the ſhaft becomes deeper than the adit, or indeed when the latter cannot well be had, machinery to draw out the water is erected and employed, ſuch as ſteam-engines, or overſhot water-wheels where ſtreams to drive them can be obtained: in both caſes theſe engines are employed to work pumps to raiſe the water.

As ſoon as a ſhaft is ſunk ſufficiently deep, and it becomes deſirable to purſue the lode horizontally, it is ſtopped for a time, and a level is commenced on each ſide of it, and this is uſually continued in two oppoſite directions upon the courſe of the vein. The ends of this level being driven out of the way of the ſhaft, ſinking may again be undertaken, and continued until it is deemed proper to drive another level; and thus a ſucceſſion of theſe galleries or drifts are opened under each other, and the vein is divided into parallel portions, which are left to be worked for the ore contained therein, and which portions are called *backs*.

New openings to the ſurface from theſe levels are afterwards made by ſinking more ſhafts at proper diſtances, and communications from one level to another are formed by ſinking a kind of ſmall underground ſhaft, called a *winze*, probably becauſe the only machine employed in their execution for hauling the ſtuff is the common windlaſs, which, in Cornwall, has generally the ſame abbreviated or corrupt appellation.

When a mine is put into this ſtate, and any quantity of ore diſcovered, proper engines provided with ſufficient power to admit the conſtant deepening of the mine by keeping the bottom of the engine ſhaft, called the *ſump*, dry, ſo as to be regularly ſinking: when the ventilation is completed by proper means for that purpoſe, and machines conſtructed for hauling up the ores and waſte to the ſurface called *whims*, a mine, in the technical language of Cornwall, is ſaid to be in due courſe of working.

The agents who attend daily to the works are called *captains*; they contract with the different claſſes of miners, and direct the operations, under the orders either of the principal adventurers, or a manager appointed by them.

The ſhafts and levels are kept regularly ſinking and driving to lead to further diſcovery, or to open more of the lode for working, and the parts of the vein or lode left between the paſſages thus made are worked away, where the ore will pay the expence of ſo doing, by men, who contract for this work within certain limits, being paid a proportion of the value when merchantable, which is called a *tribute*, and which varies with the degrees of facility with which the ore can be procured, either from the different ſtates of richneſs of the lode, or the hardneſs or ſoftneſs of the rock which muſt be broken to obtain it.

The ore is uſually conveyed in wheelbarrows through the levels under ground by boys to the neareſt ſhaft, and there raiſed in buckets or *kibbles* to the ſurface. Theſe kibbles are wound up by the whims, which are turned either by horſes, ſteam, or water.

In preparing the ores for ſmelting, a variety of proceſſes is employed, which require the labour of many hands; theſe are carried on upon the ſurface, and chiefly by women and children. The object being to ſeparate from the ore both the ſtony and ſparry waſte, and the mundic or other uſeleſs metallic mixtures with which it is combined, conſiderable ſkill is required, from the different ſpecific gravities of the various ſubſtances, which render it impoſſible by mere waſhing to ſeparate the ores entirely from the different mixtures which accompany it.

To dreſs ore properly, it is eſſential that the whole ſhould firſt be brought into ſuch a ſtate of diviſion, that the different parts may be ſeparated by waſhing or ſifting: and, therefore, the richer the ſtate in which the whole is raiſed from under ground, the leſs the labour required in breaking or ſtamping. The better parts of the ore are broken to a proper ſize for ſmelting, either by flat hammers, or, as is now uſual in the mines in Devon, by iron cylinders driven by water. For the coarſer parts much more labour is required in ſtamping, ſifting, and waſhing, the particular detail of which will be found under the article ORE.

The ſtamping-mills, and other apparatus for dreſſing the ores, are uſually fixed as near the mouths of the ſhafts on the ſurface as poſſible, conſiſtently with the power of leading ſtreams of water to them. And plots, or *floors*, are prepared near them for receiving the merchantable ores until they are ſold to the ſmelting companies.

The management of theſe proceſſes is uſually confided to a *dreſſer* or *graſs captain*, who regulates the whole, the expence being borne by the men who raiſe the ore on tribute, who take their proportion of the value according to the amount of the ſales, and, therefore, pay every previous charge.

The erections on the ſurface of a mine comprize, beſides ſteam or water-engines, whims, ſtamping-mills, and ſheds on the dreſſing floors, a ſuitable counting-houſe for the captains and clerks, where the people are paid monthly, and the bargains or contracts made by a kind of public auction. A forge, or blackſmith's ſhop, accommodated to the extent of the mine, where men are generally at work by night as well as by day, to ſharpen tools as well as to make or repair the iron-work of the different engines. A carpenter's ſhop, or *timber-houſe*, for work of that deſcription, which is always going on to a conſiderable extent.

From the account given in the *Hiſtory of* MINING, and the ſtatement of the diſburſements and returns there exhibited of all the concerns of that deſcription in Cornwall and Devon, it may be ſeen how extenſive ſome of them are in that reſpect. It may further be here obſerved that great depth has been attained in many of the older ones; in Dolcoath, which we believe is rather the deepeſt, the loweſt part is ſomewhat more than 220 fathoms from the ſurface. Some individual mines in Cornwall employ near 1000 perſons, and have ſeveral ſteam-engines working for the different purpoſes of pumping the water and raiſing the ore. In the county of Devon, ſtreams of water being at hand, large over-ſhot wheels are employed for working the pumps, and ſeveral have been erected of late years equal in power to the larger ſteam-engines. Within a very late period, the ſame economical means have been applied in a very ingenious manner to the winding up the ores from under ground, which, from the crookedneſs of the ſhafts of copper mines, was a work of more difficulty than might at firſt appear.

We propoſe to give more detailed accounts of the proceſſes of breaking, raiſing, and dreſſing the *Ores*, under the article bearing that title; and ſhall deſcribe the operations of ſinking ſhafts and driving the levels from them under the head of SHAFT. The pump-work of mines, and the means for ventilating drifts, will be treated of in their proper places.

MINION, in *Geography*, a ſmall iſland in the ſtraits of Mozambique, near the W. coaſt of Madagaſcar. S. lat. 12° 40′. E. long. 49° 32′.

MINION, a ſort of cannon, or piece of ordnance, of which there were formerly two kinds; large and ordinary, anſwering to our ſix-pounders. See CANNON.

MINION is alſo the name of a type uſed by printers.

MINISH, or Mynish, in *Geography*, one of the many iſlands on the weſt coaſt of the county of Galway, Ireland. It belongs to the barony of Ballinahinch.

MINISINK, a town or rather village of America, in New Jerſey, in the N.W. corner of the ſtate, and on the W. ſide of Delaware river; 57 miles N.W. of Brunſwick.—Alſo, a townſhip of Orange county, New York; containing 3594 inhabitants.

MINISTER, one that ſerves or conducts the public worſhip of God.

In the reformed church, prieſts, or thoſe ordained to preach and do the other functions of the prieſthood, are called abſolutely and ſimply miniſters.

In which ſenſe, biſhops, &c. are ſaid to be miniſters of God, miniſters of the Word, of the Goſpel, &c. In ſome churches they are alſo called *paſtors*.

Ministers *of the Altar* are properly thoſe who attend and aſſiſt the prieſt at the adminiſtration of the euchariſt. See Deacon and Subdeacon.

Officers of ſtate, &c. are called the king's miniſters; as adminiſtering the affairs of juſtice, policy, &c. for him.

Minister *of State*, is he with whom a prince entruſts the adminiſtration of his government; or to whom he commits the care and direction of the principal affairs thereof.

Boethius is propoſed as a model for miniſters of ſtate.

The grand vizier is the prime miniſter of the Ottoman empire.

Ministers, *Foreign*, or the miniſters of foreign princes, are their ambaſſadors, envoys, agents, or reſidents in the courts of other princes.

There are two kinds of foreign miniſters. Miniſters of the firſt rank, who are alſo called *ambaſſadors*, and *envoys extraordinary*.

And miniſters of the ſecond rank, who are the ordinary reſidents.

Thoſe of the firſt rank have a repreſentative character, which the others have not; though theſe laſt are ſometimes inveſted with fuller powers than the former.

Minister is alſo the title which certain religious orders give to their ſuperior.

In this ſenſe we ſay, the miniſter of the Mathurins, or Trinitarians.

Minister, among the *Jeſuits*, is the ſecond ſuperior for each houſe; thus called, as being an aſſiſtant to the ſuperior, or rector.

The general of the Cordeliers order is alſo called the *miniſter-general*. See Jesuits.

MINISTRY, or Ministery, a profeſſion, office, or employment, which a perſon diſcharges for the ſervice of God, the public, or ſome particular perſon.

In which ſenſe we ſay, a biſhop muſt account to God for his miniſtry, &c.

Ministry is alſo uſed for the government of a ſtate, by ſome great miniſter, under the ſovereign authority.

In which ſenſe we ſay, the miniſtry of the cardinal de Richelieu, &c.

Ministry is alſo frequently uſed as a collective word, ſignifying the miniſters or officers of ſtate.

Thus we ſay, the miniſtry oppoſed a thing; meaning the miniſters oppoſed it.

MINITOBA, in *Geography*, a lake of Canada, 100 miles long, and from 10 to 15 wide. N. lat 50° 40′. W. long. 100° 20′.

MINIUM, in the *Natural Hiſtory of the Ancients*, a name given to what we now call cinnabar, or native mineral of a ſhining red colour, out of which quickſilver was extracted. See Mercury.

As the prepared cinnabar is much preferable to the native as a pigment, it has long been a conſiderable article of chemical manufacture; and the Dutch having had the reputation of making the beſt, we ſhall ſubjoin their method of proceeding, given by M. Tuckert (Ann. de Chem. iv. p. 25.) cited in Aikin's Dictionary. This manufacture conſiſts of two diſtinct operations, the one being the preparation of the æthiops, the other the converſion of the æthiops into cinnabar. To make the æthiops, a boiler of iron poliſhed on the inſide, and about $2\frac{1}{2}$ feet in diameter, and 1 in depth, is charged with 1080lbs. of mercury, and 150lbs. of ſulphur (or *per cent*. 87.8 mercury, and 12.2 ſulphur); a moderate heat is then applied gradually increaſing, and accompanied by ſuitable ſtirring of the ingredients till the whole appears to be thoroughly mixed and combined. The black ſulphuret of mercury thus formed, is then removed from the boiler and pulverized. In order to convert this into cinnabar, three large earthen ſubliming pots are placed in a furnace, and gradually brought to a red heat by means of turf: at this time the cover of each (which conſiſts of a ſimple ſquare plate of iron) is removed, and the contents of an earthen veſſel, holding about a pint and a half of æthiops, are poured into each pot. In a few ſeconds a column of flame riſes out of the pots, to the height of five or ſix feet, and, as ſoon as it begins to leſſen, the further eſcape of the contents is prevented by putting on the iron cover. In a ſhort time after a ſecond charge is poured in, to which ſucceeds a third, and ſo on, till at the end of thirty-four hours the whole of the æthiops has been equally divided between the three pots, making 410lbs. for each. The fire is now kept up as ſteadily as poſſible for thirty-ſix hours longer, in order to accompliſh the ſublimation, care being taken to ſtir up the materials at the bottom of the veſſels at leaſt once every half hour, by an iron rod made for the purpoſe and introduced at the top. At the ſame time the workman aſcertains how the proceſs is going on by the flame which appears when the cover is removed; if it riſes to the height of two or three feet, the heat is too great, as on the other hand it is too feeble if the flame only lightly quivers about the mouth of the pot; the proper temperature is marked by the flame riſing vigorouſly, yet not exceeding three or four inches in height. When the laſt thirty-ſix hours are expired, the furnace is extinguiſhed, and the whole allowed to cool: the ſubliming pots are then taken out, the iron hoops with which they are bound are knocked off, and the pots themſelves are broken; the cinnabar is found ſublimed in the upper part of the veſſel to the amount of 400lbs. being 10lbs. leſs than the æthiops that was put in: or, in other words, the loſs of weight ſuſtained by the converſion of æthiops into cinnabar, amounts to $2\frac{1}{8}$ *per cent*.

Minium, or red lead, is a calx of lead of a vivid yellowiſh-red colour, which colour it acquires by a ſlow calcination and reverberation.

The method in which minium is made in large quantities with us, is conciſely deſcribed in our article Lead.

The proceſs by which minium is prepared is deſcribed in the following manner by M. Jars. The furnace is of the reverberatory kind, with two fire-places at the ends; each fire-place being ſeparated from the area, or body of the furnace, by a wall twelve inches high. The fire-places are fifteen inches broad, and their length is equal to the breadth of the whole furnace, which is about eight or nine feet. The length of the area from one place to the other is nine or ten feet. The quantity of lead uſed in one operation is about 1500 pounds, of which nine parts are lead obtained from furnaces where the ore is ſmelted, and one part is lead extracted from the ſcoria which is formed in ſmelting the ore.

This latter kind is ſaid to be neceſſary, as the former could not alone be reduced into powder. All the lead is at once put into the area, the bottom of which is level. The calx, as faſt as it is formed, is drawn to one ſide by means of a rake ſuſpended by a chain before the mouth of the furnace. In four or five hours the whole quantity of the lead is calcined; or, if any pieces remain uncalcined, they are ſeparated and kept for the next operation. The heat employed is that of a cherry-red, and the fire-places and mouth are kept open, that the air may accelerate the calcination. The powder or calx is to be frequently ſtirred to prevent its concreting, and when this operation has been continued about twenty-four hours, the matter is taken out of the furnace, and laid on a flat pavement. Then cold water is thrown on it, to give it weight, as the workmen ſay; but rather (as M. Jars thinks) to make it friable. It is then to be ground in a mill, and the finer part is ſeparated by waſhing, while the coarſer part, reſerved for ſome following operation, is to be placed at the mouth of the furnace in order to retain the melted lead. The fine powder, which is now of a yellow colour, is again put into the ſame or a ſimilar furnace, and expoſed to a very moderate fire, from thirty-ſix to forty-eight hours: during which time it is ſtirred frequently to prevent its concreting; and the powder gradually acquires its proper red colour. The minium is then to be taken out of the furnace, cooled, and ſifted through an iron ſieve placed in a caſk. Mem. de l'Academie Royale à Paris, 1770. In Holywell, Flintſhire, minium is made from litharge, which ſaves the previous calcination.

A portion of the lead during the operation is loſt by volatilization; part of it being diſſipated in the air and part ſettling in the chimnies, and on the roofs of the furnace, in form of a yellowiſh-white ſoot, with cryſtallized lumps intermixed: this is collected from time to time, and either reduced into lead, or mixed with the lead in the ſubſequent calcination. The quantity of ſublimate thus collected cannot be accurately aſcertained. Dr. (biſhop) Watſon, in his "Eſſays," eſtimates it at about $\frac{1}{400}$dth of the minium produced. From the circumſtances above recited it is not poſſible to determine the full increaſe of weight which lead ſhould acquire by its converſion into minium. On an average the actual increaſe is about $\frac{1}{10}$th; 20 cwt. of lead producing 22 cwt. of minium.

Minium, in the *Materia Medica*, and the *Arts*, &c. For medical purpoſes it is uſed externally; it obtunds the acrimony of the humours, allays inflammations, and is excellent in the cleanſing and healing of old ulcers: it is uſed on theſe occaſions in many of the plaiſters and ointments of the ſhops; it is an ingredient in the officinal compoſition, called *emplaſtrum de minio*, uſed as a deſiccative and cicatrizer; though more rarely than that made in the ſame manner with litharge, becauſe it does not ſtick ſo well, and is more difficult of preparation. See Emplastrum, Lead, in *Medicine*, and Unguent.

It was with minium the ancient Roman and Grecian ladies tinged their nails and faces of a red colour. For, as to our modern paints, without doubt, they were not known in thoſe days.

The bright orange colour of minium might render it valuable in painting, if it could ſtand with certainty in either oil or water. But as it is ſubject to become black, it cannot be ſafely truſted, except in hard varniſhes: and is, therefore, ſeldom uſed in oil, or even in water, unleſs for very groſs purpoſes, or as a ground for vermilion. The goodneſs of the minium may be diſtinguiſhed by the brightneſs of its colour: and the adulteration to which it is liable may be detected, by putting an ounce of it into a crucible, with an equal quantity of charcoal-duſt, well mixed together, and placing the crucible in a common fire ſufficient to melt lead, which is to be covered with another ſmall crucible inverted into it. When it has been continued for ſome time on the fire, take it out and ſtrike it againſt the ground, the minium will thus be reduced to its metallic ſtate; and its diminiſhed weight, when freed from the charcoal-duſt and cold, will indicate the proportion of adulterated matter. Minium is alſo uſed as a flux in forming the enamel for grounds, and in glazing, &c.

MINNIGAFF, in *Geography*, a town of Scotland, in the county of Kircudbright; 15 miles S.W. of New Galloway.

MINNIN, a ſtringed inſtrument of muſic among the ancient Hebrews, having three or four chords to it. Though there is reaſon to queſtion the antiquity of this inſtrument; both becauſe it requires a hair-bow, which was a kind of plectrum not known to the ancients, and becauſe it ſo much reſembles the modern viol. Kircher took the figure of this, the *machul chinnor*, and *pſaltery*, from an old book in the Vatican library. Hawkin's Hiſt. Muſic, vol. i. p. 255.

MINO, in *Geography*, one of the ſmaller Philippine iſlands, near the E. coaſt of the iſland of Bool. N. lat. 10° 6'. E. long. 124° 30'.

MINOMEIT, a town of Pruſſia, in Oberland; 13 miles W.N.W. of Heilſperg.

MINONG, or Isle Royal, an iſland of Canada, in lake Superior, 30 miles long and 10 broad. N. lat. 48°. W. long. 89°.

MINOR, a Latin term, literally denoting *leſs*, uſed in oppoſition to *major*, greater.

Thus we ſay, St. James Minor, Aſia Minor, the minor excommunication, &c.

Minor *Ædilis*. See Ædile.

Minor *Anticus Serratus*. See Serratus.

Minor *Barons*. See Baron.

Minor, *Canis*. See Canis.

Minor *Gaſtricus*. See Gastric.

Minor *Oculi Obliquus*. See Obliquus.

Minor *Orders*. See Orders.

Minor, *Rectus*. See Rectus.

Minor, *Teres*. See Teres.

Minor, *Urſa*. See Ursa.

Minor, in *Law*, denotes a perſon under age, or who, by the laws of the country, is not yet arrived at the power of adminiſtering his own affairs, or the poſſeſſion of his eſtate.

Among us, a perſon is a minor till the age of twenty-one; before which time his acts are invalid. See Age and Infant.

It is a maxim in the common law, that in the king there is no minority, and therefore he hath no legal guardian: and his royal aſſents and grants to acts of parliament are good, though he has not in his natural capacity attained the legal age of twenty-one.

The minority of the kings of Sweden, Denmark, and the provinces of the empire, terminates at eighteen years; and that of the kings of France at fourteen, by an ordonnance of Charles V. in 1374.

It is alſo provided by the cuſtom and law of parliament, that no one ſhall ſit and vote in either houſe, unleſs he be twenty-one years of age. This is likewiſe expreſsly declared by ſtat. 7 & 8 Will. III. cap. 25. with regard to the houſe of commons.

Minor, in *Logic*, is the ſecond propoſition of a formal or regular ſyllogiſm, called alſo the aſſumption.

Minor, in *Muſic*, is applied to certain concords, which differ from, or are lower than, others of the ſame denomination, by a leſſer ſemitone, or four commas.

Thus we ſay, a third minor, or leſſer third: or a ſixth major and minor.

Concords that admit of major and minor, *i. e.* greater and leſs, are ſaid to be imperfect concords.

MINORS, or *Friars Minors*, an appellation which the Franciſcans aſſume, out of ſhow of humility; calling themſelves *fratres minores*, i. e. *leſſer brothers*; and ſometimes Minorites.

There is alſo an order of regular Minors at Naples, which was eſtabliſhed in the year 1588, and confirmed by Sixtus V.

MINORBINO, in *Geography*, a town of Naples, in the province of Bari, the ſee of a biſhop; 85 miles S. of Naples. N. lat. 41° 5′. E. long. 15° 59′.

MINORCA, INSULA MINOR, the leſſer, when compared with Majorca, and the ſecond of the Balearic iſles, an iſland of the Mediterranean, is long and narrow, forming part of a circle from the S.E. end to the N.W., the hollow part being towards the S. It is thought to be 13 leagues in length at the longeſt part, and near 38 leagues in circumference: it lies about ten leagues to the N.E. of Majorca, and 50 E. from the mouth of the Ebro. Minorca has ſucceſſively fallen under the dominion of the Carthaginians, the Romans, the Vandals, the Moors, the Aragoneſe, and the Caſtilians; and for a century, from 1708, it has been in the poſſeſſion of the houſe of Auſtria, the Engliſh, French, and Spaniards, by turns. This iſland is ſituated in the middle of a number of ſmall rocks, banks, and iſlands; on the ſouth the ſhore is level. The air is moiſt, and the ſoil dry. The adminiſtration is divided into diſtricts, or terminos, the chief towns of which are Ciudadella, Mahon, Alayor, Ferarias, and Mercadal. The principal ports are Mahon, on the E.; Fornella, on the N.; and Ciudadella, on the W. The iſle is level, and there is only one mountain diſtinguiſhed by its elevation, *viz.* Monte Toro. Ciudadella, or Samna, the capital, is ſituated at a ſmall diſtance from the coaſt, towards the N.W., 11 leagues from Mahon; it was in the fifth century the ſee of a biſhop, and the reſidence of the governor of the iſland, and alſo the ſeat of civil and eccleſiaſtical juriſdiction. In the time of the Carthaginians and Romans it was a conſiderable place; but its ſplendour has declined; and port Mahon diſputed with it the ſuperiority, when the Engliſh eſtabliſhed their tribunals and ſeat of government in the iſland. (See PORT *Mahon.*) The port is ſmall and marſhy, formed by a canal, bounded by rocks. On the right and left are towers, correſponding to each other, to repeat the ſignals, and two cannons of a large calibre, upon ſwivels, ſufficient to ſtop a privateer. The entrance is difficult of acceſs. The city is ſurrounded in part with ancient walls, erected by the Moors; the reſt is modern, formed of baſtions and curtains of hewn-ſtone. The ſtreets are of ancient form, being narrow and ſhady, paved with large unhewn ſtones; and in the city are a cathedral, flanked by a beautiful ſquare tower, and ſuppoſed to be built in the third century, two churches, three convents, and an hoſpital. The termino, of which Ciudadella is the capital, bearing its name, is above 5½ leagues long, and 2¾ wide; and its total population amounts to about 800 perſons. Alayor is ſituated about 4½ leagues from Mahon, being the chief town of the termino of that name, containing about 112 hamlets or manors, and rather more than 4000 people. The ſtreets are uneven, narrow, crooked, and ill paved: but the houſes are well built. At the entrance into the town is a church, built of free ſtone, in a ſimple Gothic ſtyle of architecture without, and within decorated with ſculptures and paintings. The monaſtery of Cordeliers has a handſome church. Here are alſo an hoſpital, and a barrack capable of accommodating 250 men. The town is well provided with ciſterns, and the water is freſh and ſalubrious. About one league from Alayor is *Mercadal*; which ſee. The moſt remarkable ports of this iſland, beſides thoſe of Mahon and Ciudadella, are Fornella and Adaya. Port Fornella is about ſix miles from mount Toro, of a circular form, with a narrow entrance, and facing the north. The bay is capable of containing the largeſt fleet, perfectly ſheltered, and defended at the entrance by a ſmall ſquare ſort, with baſtions and foſſes. The eſtabliſhment is capable of containing 300 men. The entrance to the port of Adaya is concealed by eminences towards the north; it is only uſed for fiſhing. The ſtrength of the iſland depends upon circumſtances. When the Engliſh retook it, in 1798, the Spaniards had in it 6000 troops, and the Engliſh, excluſive of their naval force, diſembarked only 3000 ſoldiers. When the Spaniards, four years after, were reinſtated, they left a garriſon with 3000 infantry, 1500 light infantry, 500 engineers and miners, and 90 heavy cavalry.

Of the iſlands, or iſlets, ſurrounding Minorca, the moſt conſiderable are to the S., about ¾ of a mile from Cabo Bufara. The iſland of Coloms is elevated, and forms with the cape a narrow canal. Near it are two ſmall iſlets. The large and ſmall iſlands of Adaya are near the port of the ſame name. To the S.E. is ſituated the large iſland of Aguila. The iſle of Sanitge is near the port of the ſame name on the W. coaſt; at ſome diſtance is an iſlet, and beyond that the iſland of Bleda. Beyond the rocks of Alayor, are a ſmall iſland named named Galera, and an iſlet called Codrell. The iſle of Layre de Mahon is within reach of the ancient fort of St. Philip, and there are ſeveral ſmall iſlands near Mahon.

Monte Toro is at a little diſtance from Mercadal, and by its elevation commands the whole iſland: at its baſe it is ſome miles in circumference, and its form is that of the fruſtum of a cone. Mount St. Agatha is ſituated N.W. of Mercadal, and riſes above ſeveral mountains that ſurround it. Upon the ſummit is a chapel, held in great veneration. The whole of this canton is inhabited by ſhepherds, whoſe flocks ſubſiſt upon a part of the mountains, and the valley beneath is abundantly fertile.

Minorca is not ſheltered from the north winds, which check vegetation; nevertheleſs ſnow is ſeldom ſeen here in winter, and in the ſpring the air is always temperate and pure; the heat of ſummer is great, and the drought is productive of inconvenience. In the autumn there is much rain. The ſoil of the plains is leſs fertile than that of the coaſt; and the earth upon the mountains, though thinly ſpread over the rocks, is rich and fertile. In the vallies and plain, the ſoil is argillaceous and thin, but it is fertilized with that which is waſhed down from the mountains. Upon the whole, this iſland is, in many parts of it, rich in vegetation. The principal grains cultivated in the iſland are wheat, barley, and a ſmall quantity of maize. Red and white wines are exported; olive trees are numerous, and here is abundance of every kind of fruit, ſuch as oranges, pomegranates, lemons, figs, &c., and the iſland furniſhes great variety of garden and culinary vegetables. The water-melons are very fine; and the honey of the iſland, ſome of which is exported, is reckoned very good. The horſes, mules, and aſſes, are eſtimated at about 2000; the horned cattle at 7000; the ſheep, goats, and ſmall animals, at about 45,000; the pigs at nearly 10,000. Poultry is ſcarce, but birds of different ſpecies are very numerous. The fiſh all round the iſland is abundant at all ſeaſons, and very good. The inhabitants have no manufacture or fabric for furniſhing articles of exchange in commerce. Their export trade conſiſts of a ſmall quantity of cheeſe ſent into Italy, and a ſmall ſurplus of wool, which produce about 2500*l.* ſterling; ſalt, wine, honey, and wax produce from about 17,083*l.* to 17,292*l.* The iſland receives from abroad corn, brandy, rice, ſugar, coffee, tobacco, ſpices, linen, fine cloths, boards, pitch, cordage, &c., and ſome pieces of furniture. The natural hiſtory of this iſland preſents to us a natural and very intereſting grotto, called La Cava Perella, two miles to the S. of Ciudadella; and alſo a ſubterranean lake; a quantity of coral is found near the ſea-ſhore, and a ſmall variety of ſhells. In many parts of the iſland are mines of iron and lead, and quarries of ſtone and marble. The inhabitants are a quiet, peaceable people, attached to their own cuſtoms, and little diſpoſed to change. They regard with reverence the ceremonies of religion. The ſame language is ſpoken in Minorca and Majorca. In this iſland, and particularly in the territory of Alayor, they have ſome altars of ancient date. It has alſo furniſhed Phœnician, Macedonian, Carthaginian, Celtiberian, Grecian, Roman and Spaniſh medals, in gold, ſilver, and large and ſmall bronze. In this iſland, alſo, a ſmall Gothic bronze coin has been diſcovered, the impreſſion on which is a crowned head in the centre of a circle, with theſe words, "Alphonſus Rex;" ſuppoſed to belong to the end of the 13th century. The iſland alſo has preſented to the antiquarian ancient ſepulchres, vaſes, lamps, urns, lacrymatories, compoſed of a reddiſh earth, and marked with illegible inſcriptions. N. lat. 39° 59. E. long 3° 45′.

Minorca, *Cape*, a cape on the E. coaſt of Majorca. N. lat. 39° 50′. E. long. 3° 12′.

MINORE, Ital., the ſame as *minor*, Engl.

MINORESSES. See *St.* Clare.

MINORI, in *Geography*, a town of Naples, in Principato Citra, the ſee of a biſhop, ſuffragan of Amalfi, near the ſea; three miles N.E. of Amalfi. N. lat. 40° 37′. E. long. 14° 26′.

MINOS, a ſmall iſland near the coaſt of South Carolina. N. lat. 33° 48′. W. long. 78° 38′.

Minos, *Los*, a town on the N. coaſt of Maſbate, one of the Philippine iſlands. N. lat. 12° 33′. E. long. 123° 10′.

Minos, in *Mythology*, one of the three judges of hell, of rank ſuperior to the other two, *viz.* Æacus, who, according to Plato, judged the Europeans; and Rhadamanthus, who, having left Crete, and fixed his reſidence in Aſia, had the Aſiatics and Africans for his lot; and Minos, as chief preſident of the infernal court, decided the differences that aroſe between the two other judges. All the poets are agreed in aſſigning to him the ſuperiority over his colleagues. Homer repreſents him as ſitting with a ſceptre in his hand, in the midſt of the ghoſts of departed mortals, who plead their reſpective cauſes in his preſence. Virg. Æn. vi. v. 432, places an urn by him, containing the ſeveral lots of mankind; while the ſtern Rhadamanthus ſees to the execution of the ſentences which his brother pronounces. The particular diſtrict of Ades, over which he was ſuppoſed to preſide, was Erebus: and it was his office to determine the character and final condition of the ſpirits cited to his tribunal. Minos, it is ſaid, was the firſt king of Crete, and conſidered as the wiſeſt legiſlator of antiquity; on which account he obtained the honour of being judge in the inviſible world. This Minos, whoſe inſtitutes are ſaid to have ſerved as a model for thoſe of Lycurgus, flouriſhed, according to Selden, and others, who refer for authority to the Arundelian marbles, 1462 years, but, according to the abbé Banier, only 1340 years before Chriſt.

Minos, with a view of giving greater authority to his laws, retired into a cave at Crete, where he feigned that Jupiter, his father, dictated them to him, and every time he returned from the cave he announced ſome new law. Hence, Homer (Odyſſ. 19.) gives him the title of Jupiter's diſciple, Διος μεγαλȣ ὁ αριστης, which is thus expreſſed by Horace (Odyſſ. 10.), "Et Jovis arcanis Minos admiſſus." Joſephus is the only ancient writer, who ſays that Minos had received his laws from Apollo, and that he had travelled to Delphi to receive them from that god. (Lib. ii. againſt Appian.) This Jewiſh writer owns, that Minos was the only one among the ancients who deſerved to be compared to Moſes. If we give credit to Huetius, Minos was the ſame with Moſes, and he alleges that they lived about the ſame time. But the opinion of the learned prelate is contradicted by the deciſive teſtimony of all antiquity; nor is the parallel which he has ingeniouſly drawn between theſe eminent lawgivers ſufficient to convince impartial and candid inquirers. Banier allows, that ſome confuſed knowledge of the laws of Moſes furniſhed Minos with a model for thoſe of Crete.

Minos, after having governed his ſubjects with a mild and gentle ſway, died in Crete, and being interred there, had this epitaph inſcribed upon his tomb, ΜΙΝΟΣ ΤΟΥ ΔΙΟΣ ΤΑΦΟΣ; Minos F. Jovis Sepulchrum; when in proceſs of time the name of Minos was defaced, and there remained only the two laſt words of the epitaph, the Cretans gave out that this was the tomb of Jupiter. This inſcription, it is ſaid, was defaced by the malice of the Cretans, who boaſted of poſſeſſing the tomb of the father of the gods, whom they pretended to have brought up in his infancy. Accordingly, Callimachus, in a hymn addreſſed to Jupiter, ſharply reproaches them on this account; for he ſays thus to the following purpoſe: "The Cretans are always liars, ſince they vaunt that they have thy tomb, O great king, who liveſt for ever!" To this paſſage the apoſtle alludes, when he upbraids the ſame people in the words of Callimachus, with the vice of lying.

MINOTAUR, Minotaurus, in *Antiquity*, a fabulous monſter, much talked of by the poets; feigned to be half man and half bull.

The minotaur was brought forth by Paſiphae, wife of Minos II., king of Crete. It was ſhut up in the labyrinth of that iſland; and at laſt was killed by Theſeus.

The fable of the minotaur was invented by the Greeks to make Minos odious. The occaſion was this. Minos, having laid ſiege to Athens, reduced the inhabitants to great diſtreſs; when, conſulting an oracle, they were directed to ſupplicate peace of Minos, the king of Crete. This he granted to them on condition that every ninth year, according to Plutarch and Ovid, or every ſeventh year, according to Diodorus Siculus and Apollodorus, the Athenians ſhould ſend to him ſeven youths, and as many virgins. This article being agreed to, Minos raiſed the ſiege and withdrew to Crete, carrying with him thoſe who were choſen by lot to be the firſt victims to the preſervation of their country. Hence the fable originates. The Greeks ſaid, that the king of Crete condemned the Athenian youths, who were ſent to him, to fight in the labyrinth which Dædalus had built, with the minotaur, that was the offspring of the infamous paſſion of Paſiphae, his queen, for a white bull which Neptune had produced from the ſea; that Dædalus, who was obliged to leave Athens, and remove to Crete, had favoured that monſtrous paſſion of the queen; that from the conjunction ſprung the minotaur. It was, without doubt, the hatred of the Greeks againſt Minos that made them invent this fable; for Plato ſays, that the favourable character which Homer and Heſiod had given of this great prince was of no avail againſt the malice of his enemies; and Plutarch adds, that it is dangerous to provoke a knowing people, who have it always in their power to take revenge. Servius gives us the following explication of this fable. He ſays, that a ſecretary of king Minos, named Taurus, *bull*, had an intrigue with the queen Paſiphae, in the chamber of Dædalus; and that ſhe was at length delivered of twins, one of which reſembled Minos, and the other Taurus. This occaſioned the production to be reputed monſtrous.

In order to account for that part of the fable, that aſcribes the deſtruction of the minotaur to Theſeus, we obſerve, that this young hero, having obtained his father's permiſſion, prepared with the other youths, who had caſt lots, to ſet out for Crete. After the performance of certain rites, Theſeus ſet ſail, and with a favourable wind ſpeedily arrived at Crete. His fine addreſs attracted the notice of Ariadne, Minos's daughter (ſee the article ARIADNE), who gave him a clue, which he happily made uſe of to find his way out of the labyrinth, after vanquiſhing the minotaur: that is, Ariadne taught her lover to vanquiſh Taurus, furniſhing him with arms; and by the clue we may underſtand the draught and plan of the labyrinth which the princeſs gave him, and of which he made uſe to find his way thence after the encounter. Some indeed have ſaid, that Theſeus encountered Taurus, not in the labyrinth, but in a public place; and that this young hero, animated by the preſence of the fair Ariadne, defeated Taurus, an event which gave great joy to all, even to Minos himſelf, who thus got rid of a formidable rival. Our author ſays, that the ſon of Paſiphae and Taurus making great deſolation in the mountains to which Minos had confined him, this prince ſent all the Athenian ſlaves to combat with him; and Theſeus having gone thither in his turn, put him to death with the ſword which his miſtreſs Ariadne had given him.

MINOVERY, formed of the French *main-œuvre, q. d. handy-work*, a treſpaſs committed in the foreſt, by ſomething that is a man's handy-work; as an engine to catch deer, &c.

MINOW, or MINIM, in *Ichthyology*, a name given by the Engliſh to the ſmall fiſh, called by authors the phoxinus. See CYPRINUS *Phoxinus*.

MINROW, in *Geography*, a town of Hindooſtan, in the Dooab; 50 miles W. of Paltiary.

MINSFELDEN, or MUNZFULDEN, a town of Germany, with a citadel; 25 miles E. of Coblentz.

MINSK, a town of Ruſſian Lithuania, and capital of a palatinate of the ſame name, ſituated on the Swiſlocz; 250 miles N.E. of Warſaw. N. lat. 53° 43'. E. long. 27° 40'.

MINSTER, a town of Lower Bavaria; ſeven miles N.E. of Brannau.

MINSTER, Saxon, *Mynſter*, or *Mynſtre*, anciently ſignified the church of a monaſtery or convent.

MINSTREL, an ancient term for a fiddler, or player on any other kind of muſical inſtrument.

Borel derives the word from *manus* and *hiſtrio*, one who diverts with the hand; or from *minor hiſtrio, little buffoon:* Du-Cange from *miniſtellus*, a diminutive of *miniſter*, becauſe the minſtrels were anciently ranked among the lower officers, miniſters, or ſervants.

According to Dr. Percy, in his Eſſay on the Ancient Engliſh Minſtrels, the word is derived from the French *meneſtrier;* and was not in uſe here before the Norman conqueſt: and it is remarkable, that our old monkiſh hiſtorians do not uſe the words *citharoedus, cantator*, or the like, to expreſs a minſtrel in Latin; but either *mimus, hiſtrio, joculator*, or ſome other word that implies geſture. Hence it ſhould ſeem that the minſtrels ſet off their ſinging by mimickry or action; or, according to Dr. Brown's hypotheſis, united the powers of melody, poem, and dance. Theſe minſtrels were probably the genuine ſucceſſors of the ancient bards, who joined the arts of poetry and muſic, and ſung verſes to the harp of their own compoſing. After the converſion of the Saxons to Chriſtianity, the poets and minſtrels became two ſeparate profeſſions; and the latter continued to be a diſtinct order of men, and got their livelihood by ſinging verſes to the harp at the houſes of the great: where they were hoſpitably and reſpectfully received, retaining many of the honours ſhewn to their predeceſſors, the Bards and Scalds. And though ſome of them only recited the compoſitions of others, many of them ſtill compoſed ſongs themſelves, and all of them could probably invent a few ſtanzas on occaſion.

Mr. Ritſon, in his Introduction to "Ancient Engliſh Metrical Romances," blends the Engliſh minſtrels with the jugglers, whoſe tricks of legerdemain formed another branch of the amuſement of our anceſtors. Although it be allowed, that the ſame perſon might occaſionally practiſe both arts, yet we ſee no reaſon for doubting, that they were ſeparate and diſtinct profeſſions; nor can we admit the ſuppoſition of Mr. Ritſon, that the minſtrels, whoſe profeſſion was muſic and the recitation of poetry, were not frequently themſelves poets. Their daily bread depended upon their ſtock of tales and ſongs; and it muſt have been as natural for them to have compoſed the romances which they ſung, as for a modern muſician to compoſe the pieces which he performs. Above all, we cannot ſee why the arts of compoſition, which are admitted to have been exerciſed by the minſtrels of France, ſhould be ſuppoſed unattainable by thoſe of England. Subſequent to the reign of Edward III., moſt of the popular French romances were tranſlated into Engliſh, which then became the language, as well of the nobles as of the vulgar. Why the minſtrels, who were moſt intereſted in theſe tranſlations, ſhould be deemed unequal to the taſk of accompliſhing them, we can ſee no good reaſon for believing. As a wandering and idle race of men, attendant on the barons who went to war in France, they had time to acquire both languages; and the art of rhyming muſt have been eaſy to perſons who almoſt every day of their lives were employed in poetical recitation. Minſtrels and bards are often employed as ſynonimous terms, although the poetic powers of the bards are indiſputable. As late as the reign of queen Elizabeth, this combination occurs in the poem of a Scottiſh ſatiriſt deſcribing London.

"Bot yet the menſtrallis and the bairdis,
Thair trowand to obtain rewardis,
About his ludgene loudlie played."

Legend of the biſchop of St. Androis.

A proof how far the taſk of the poet and of the reciter were required from the minſtrel, occurs in a very ancient poem, of which there is one MS. in the Britiſh Muſeum, and another in the library of Peterborough cathedral. It contains the hiſtory of an intrigue betwixt Thomas of Erceldoune, called the Rhymer, and the queen of fairies, by whom, as every one knows, he was tranſported to the "Lond of Faerie," and gifted with thoſe ſupernatural powers of poetry and propheſy, by which he was afterwards diſtinguiſhed. The following dialogue paſſes betwixt the bard and his faery leman upon this memorable occaſion.

"Fare wel, Thomas, I wend my way,
I may no longer ſtande with the.—
Gif me ſum tokyn, lady gaye,
That I may ſay I ſpake with the.—

To harp and carpe, Thomas, wher ſo ever ze gon,
Thomas, take the theſe with the.—
Harping, he ſaid, ken I non,
For tong is cheſe of mynſtralcie.—

If thu wil ſpelle, or talys telle,
Thomas thu ſhal never make lye;
Wher ſo ever thu goo, to fryth or felle,
I pray thu ſpeke never non ille of me."

From this deciſive declaration, which a poet and minſtrel made on the nature of his own profeſſion, it appears plainly, that, in more ancient times, the minſtrel's principal and moſt honourable occupation referred to poetry, rather than muſic; and the Rhymer might have been juſtly deſcribed as one "who united the arts of poetry and muſic, and ſung verſes to the harp, of his own compoſing," if he had not diſdained the muſical ſkill to which it was Mr. Ritſon's perſuaſion that the talents of the minſtrel were excluſively limited. See Edinb. Rev. No. XIV. p. 394, &c.

Mr. Ellis, in the Introduction to his "Specimens of early Engliſh Metrical Romances;" has given us a plain and comprehenſive view of the riſe and progreſs of the minſtrels and their poetry. Of his account we ſhall avail ourſelves in the compilation of this article.

Normandy appears to have been the cradle of minſtrelſy. The Northmen who wreſted that province from the feeble ſucceſſors of Charlemagne, had, doubtleſs, like all other barbarous people, eſpecially the Scandinavian tribes, their national poets, under the name of ſcalds, or by whatever other term they were diſtinguiſhed. On their ſettling in Neuſtria, their native ſpeech ſpeedily melted down into the more commodious and extended language uſed by the inhabitants of Northern France, which was called *romance*, being, in fact, a corrupted Latin, introduced by the Romans into their Gallic province. In this language, the minſtrels compoſed moſt of their works, until, from that circumſtance, the word romance, from ſignifying the early Norman-French, came at length to mean thoſe chivalrous tales uſually compoſed in that tongue.

"It appears likely," ſays Mr. Ellis, "that they were carried by Rollo into France, where they probably introduced a certain number of their native traditions; thoſe, for inſtance, relating to Ogier le Danois, and other northern heroes, who were afterwards enliſted into the tales of chivalry; but that, being deprived of the mythology of their original religion, and cramped, perhaps, as well by the ſober ſpirit of Chriſtianity, as by the imperfection of a language whoſe tameneſs was utterly inapplicable to the ſublime obſcurity of their native poetry, they were obliged to adopt various modes of amuſing, and to unite the talents of the mimic and the juggler, as a compenſation for the defects of the muſician and poet. Their muſical ſkill, however, if we may judge from the number of their inſtruments, of which very formidable catalogues are to be found in every deſcription of a royal feſtival, may not have been contemptible; and their poetry, even though confined to ſhort compoſitions, was not likely to be void of intereſt to their hearers, while employed on the topics of flattery or ſatire. Their rewards were certainly, in ſome caſes, enormous, and prove the eſteem in which they were held; though this may be partly aſcribed to the general thirſt after amuſement, and the difficulty experienced by the great in diſſipating the tediouſneſs of life; ſo that the gift of three pariſhes of Glouceſterſhire, aſſigned by William the Conqueror for the ſupport of his *joculator*, may, perhaps, be a leſs accurate meaſure of the minſtrel's accompliſhments, than of the monarch's power and of the inſipidity of his court.

"To the talents already enumerated, the minſtrels added, ſoon after the birth of French literature, the important occupation of the *diſeur*, or *declaimer*. Perhaps, the declamation of metrical compoſitions might have required, during their firſt ſtate of imperfection, ſome kind of chant, and even the aſſiſtance of ſome muſical inſtruments, to ſupply the deficiencies of the meaſure; perhaps, the aids of geſture and pantomime may have been neceſſary to relieve the monotony of a long recitation: but at all events it is evident, that an author who wrote for the public at large, during the eleventh, twelfth, and thirteenth centuries, was not leſs dependent for his ſucceſs on the minſtrels, than a modern writer of tragedy or comedy on the players of the preſent day. A copyiſt might multiply manuſcripts for the ſupply of convent-libraries; but while eccleſiaſtics alone were able to read, there was no acceſs to the ears of a military nobility, without the intervention of a body of men who travelled in every direction, and were every where welcomed as the promoters of mirth and conviviality.

"The next ſtep was eaſy. Being compelled to a frequent exerciſe of their talent in extemporaneous compoſitions, the minſtrels were probably, like the *improviſatori* of Italy, at leaſt equal, if not ſuperior, to more learned writers, in the merely mechanical parts of poetry; they were alſo better judges of the public taſte. By the progreſs of tranſlation they became the depoſitaries of nearly all the knowledge of the age, which was committed to their memory: it was natural, therefore, that they ſhould form a variety of new combinations from the numerous materials in their poſſeſſion; and it will be ſhewn hereafter, that many of our moſt popular romances were moſt probably brought by their efforts to the ſtate in which we now ſee them. This was the moſt ſplendid era of their hiſtory, and ſeems to have comprehended the latter part of the twelfth, and perhaps the whole of the thirteenth century. After that time, from the general progreſs of inſtruction, the number of readers began to increaſe; and the metrical romances were inſenſibly ſupplanted by romances in proſe, whoſe monotony neither required nor could derive much aſſiſtance from the art of declamation. The viſits of the minſtrels had been only periodical, and generally confined to the great feſtivals of the year; but the reſources, ſuch as they were, of the ponderous proſe legend were always acceſſible. Thus began the decline of a body of men, whoſe complete degradation ſeems to have been the ſubſequent reſult of their own vices. During the period of their ſucceſs they had moſt impudently abuſed the credulity of the public; but it is a whimſical fact, that the ſame fables which were diſcredited while in verſe, were again, on their transfuſion into proſe, received without ſuſpicion. It ſhould ſeem that falſhood is generally ſafe from detection, when concealed under a ſufficient cloak of dulneſs."

This hiſtory ſolves a difficulty which Mr. Ritſon, already cited, found in reconciling the degraded ſtate of the minſtrels to the high rewards and countenance which they ſometimes received, even in preference to thoſe of the clerical profeſſion. It appears, on one occaſion, that two mendicant friars ſoliciting hoſpitality at the gate of a convent, were received with acclamation under the idea of their being minſtrels, and kicked out again when they announced their real character. It is alſo proved, we believe, that one minſtrel received four ſhillings for his performance, and ſix prieſts only ſixpence, at the ſame feſtival. But ſuch inſtances of extravagant reward to individuals of a claſs which dedicates perſonal exertions to public amuſement, are conſiſtent with the general diſreſpect to which this body in general is condemned.

There are two remarkable facts in hiſtory, which prove that the profeſſion of a minſtrel was held in great reverence among the Saxon tribes, as well as among their Daniſh brethren. In the year 878, when king Alfred wiſhed to learn the true ſituation of the Daniſh army, which had invaded his realm, he aſſumed the dreſs and character of a minſtrel, *fingens ſe joculatorem, aſſumpta cithara*, &c. and under this character, though he could not but be known to be a Saxon, obtained an honourable reception. About ſixty years after, a Daniſh king made uſe of the ſame diſguiſe to explore the camp of our king Athelſtan. The minſtrel was, therefore, a privileged character with both theſe people: and ſo late as the reign of Edward II. the minſtrels were eaſily admitted into the royal preſence; an inſtance of which is mentioned by Stow (Survey of Lond. 1703, p. 469.) In the fourth year of Richard II. John of Gaunt erected at Tutbury, in Staffordſhire, a court of minſtrels, with full power to receive ſuit and ſervice from the men of this profeſſion within five neighbouring counties, to enact laws and determine their controverſies, &c. for which they had a charter. See Plott's Hiſt. Staff. p. 435, &c.

The minſtrels continued down to the reign of Elizabeth; in whoſe time, however, they had loſt much of their dignity, and were ſinking into contempt and neglect; yet ſtill they ſuſtained a character far ſuperior to any thing we can conceive at preſent of old ballads. Towards the end of the ſixteenth century this claſs of men loſt all credit, and were ſunk ſo low in the public opinion, that in the thirty-ninth year of Elizabeth, a ſtatute was paſſed by which minſtrels, wandering abroad, were included among rogues, vagabonds, and ſturdy beggars, and were adjudged to be puniſhed as ſuch. This act ſeems to have put an end to the profeſſion, for after this time they are no longer mentioned. Judge Blackſtone obſerves, that in ſome manors, the copyholders were bound to perform many ſervile offices for the lord, who found them meat and drink, and ſometimes (as is ſtill the uſe in the Highlands of Scotland) a minſtrel or piper for their diverſion. Comm. b. ii.

The firſt compoſitions of the minſtrels, according to Mr. Ellis (ubi ſupra), ſeem to have been unadorned annals or hiſtories, reduced to meaſure for the convenience of the reciter, who was to retain them upon his memory. This field, however, ſoon became too barren and unintereſting. Other ſources of narration were ſought for. Some occurred in the ancient ſongs of the ſcalds, the legitimate productions of the minſtrels. Others of Arabian origin found their way to France through Spain. But a much more numerous claſs was derived from the tales of the Armoricans, the neighbours of the Normans, who derived themſelves from a Welſh colony. From this ſource, the minſtrels probably drew their firſt accounts of

“ ———————— What reſounds
In fable or romance, of Uther's ſon,
Begirt with Britiſh and Armoric knights.”

This theme, however, acquired its chief popularity after the acquiſition of England by William the Conqueror. It is now completely proved, that the earlieſt and beſt French romances were compoſed for the meridian of the Engliſh court, where that language continued to be excluſively uſed, at leaſt till the time of Edward III. When the Norman race of monarchs had once ſecured themſelves on the throne of England, and identified the honour of that country with their own, they began to feel an intereſt in its early hiſtory, and to liſten with applauſe to the feats of its heroes. The legends of the Welſh, on theſe occaſions, were much more acceptable than thoſe of the Saxons. The latter were the people whom the Normans had conquered, and whoſe kings they had diſpoſſeſſed: the praiſe, therefore, of their departed heroes revived ſentiments of diſcord, better forgotten by all parties. But the exploits of the Britiſh were carried back to ſo ancient a period, and ſo intermingled with Celtic fable, that they recalled no ſentiments of ancient independence, and ſuggeſted no ideas dangerous to the Norman race. The exploits of Arthur were therefore unanimouſly adopted as the ſubject of tales and romances without end; and theſe were drawn by the Norman minſtrels from the Britiſh traditions flowing from Wales, and floating in what had lately been the Britiſh kingdom of Cumberland; but eſpecially from the works of Geoffrey of Monmouth.

Mr. Ellis ſhews, that the ſtate of Wales, during the eleventh, twelfth, and thirteenth centuries, was favourable to an exchange of literary materials betwixt the bards of that country and the Norman minſtrels, as well as between the former and their brethren of Armorica.

But as there is reaſon to believe that the Britiſh lays were ſeldom if ever committed to writing, it might be expected that different minſtrels would tell the ſame ſtory with ſome variations; that, unable to retain in their memory the whole of a long narrative, they would carry off, in the firſt inſtance, detached adventures, which they would afterwards connect as well as they were able; and that a ſyſtem of traditional hiſtory, thus imperfectly preſerved through the medium of a very looſe tranſlation, and already involved in much geographical and chronological confuſion, would aſſume the fabulous appearance which we find in the French narratives called romances. See ROMANCE.

MINT, the place in which the king's money is coined. Anciently there were mints in almoſt every county in England; but as it is one of the prerogatives of the king to coin the money of the realm, the buſineſs of coining was carried on principally in the Tower of London, from the time of William the Conqueror to the year 1811. At this latter period a very elegant building was completed on the eaſtern ſide of Tower-hill, in which the coinage is now performed with a ſimplicity, diſpatch, and accuracy that can ſcarcely be conceived by any who have not been witneſſes of the ſeveral operations.

Coining metallic money was originally performed by the hammer, and afterwards by what was called the ſcrew-preſs, or mill and ſcrew. Theſe operations have been amply deſcribed under the word COINAGE, to which we beg to refer our readers. In this place we ſhall endeavour, in very few words, to conduct them through the ſeveral offices of the New Mint, and deſcribe, as well as we can, the buſineſs and proceſſes carried on in each.

Almoſt all the money, now coined in this kingdom, is from bullion received from the Bank of England; from which it is ſent to the “maſter of the mint's aſſay-office:” here it is received into what is called the ſtrong-hold, and there kept till its fineneſs is aſcertained, in order that its true value may be computed.

This being aſcertained, the parties concerned are deſired to attend at the office of receipt and delivery to witneſs its weight, and to be informed of its fineneſs, and, conſequently, of its value; the ſtandard weight of the bullion being determined by the calculation of the reſpective offices.

A mint-bill is now made out and given to the owner of the bullion, by which he knows the exact value of his depoſit. The next thing is to deliver the bullion to the melting-houſe, which is furniſhed with a variety of apparatus, adapted, not only to the melting of the gold and ſilver, but the lifting in and out the pots containing the precious metals, with ſafety, eaſe, and expedition. The ſilver is melted in pots of caſt-iron, but the gold is melted in ſmaller pots manufactured from black-lead, which, according to the modern chemiſtry, is a carburet of iron. The ſilver is run into plates ten inches long, ſeven wide, and about five-eighths of an inch thick: the gold-plates are ten inches in length, four in breadth, and three-eighths of an inch in thickneſs. While the metal is pouring into the moulds, there are three portions taken, from the top, the middle, and bottom of each pot, and carried to the king's aſſay-office, there to be examined by the maſter of that office, and not permitted to paſs into work until the fineneſs of the metal is accurately determined. The furnaces uſed are air-furnaces, and the fuel is coke.

In the proceſs of melting there will neceſſarily be waſte: every thing, therefore, that can poſſibly contain any portion of the precious metals, ſuch as the ſweepings of the melting-houſe, &c. are collected and carried to another apartment, in which are erected two grinding and two triturating mills, where the ſweep is worked up, and the fine metals in part recovered, in the manner practiſed by refiners and gold-ſmiths.

The ſweep, thus brought together, is ground into a powder, and paſſed through a fine ſieve, by which the larger grains of metal are obtained. The ſweep is then put, in ſmall portions, into a wooden bowl, having two iron handles, by which it is carefully waſhed: the lighter particles, being abſorbed by the water, are collected in a large tub; the heavy or metallic ones are found depoſited at the bottom of the bowl. By theſe means the moſt conſiderable of the particles of gold and ſilver are obtained. The powdered ſweepings, however, which have been collected after the waſhing proceſs, ſtill contain portions of metal; to obtain theſe, the ſweep, in certain portions, is put into a mill, containing generally about one hundred weight of mercury, the remainder of the mill being filled with water: this is commonly called the triturating mill, and each charge is agitated about four hours with an iron inſtrument, having four arms placed horizontally, in the ſhape of a croſs, and fixed to the centre of the mill; and for the better agitation of the ſweep and mercury, the motion of this mill can be reverſed at pleaſure.

From the melting-houſe, the plates above deſcribed, provided they are found by the aſſay-maſter to be of the exact degree of fineneſs, are carried to the Rolling-*Mill*, (which ſee.) They are firſt hot-rolled, that is, made red-hot, in a furnace adapted to the purpoſe, and then paſſed through a pair of caſt-iron rollers. In the room in which this operation is performed there are four pair of rollers, which (as they require an immenſe power) are put in motion by a ſteam-engine, of a power equal to that of thirty horſes. The rollers are placed very near the furnaces, and the metal, being brought to what is called a blood-red heat, is taken out by a man with a pair of ſmith's tongs, and immediately returned by another man, and again paſſed through while hot two or three times, by which it is greatly extended: after this, it is annealed. See Nealing.

This proceſs is called the breaking-down rolling, and when finiſhed the plates of ſilver are about $\frac{3}{16}$ths of an inch thick. They are then cut into ſlips by a pair of circular ſhears attached to the ſhafts, by which the rollers are worked, after which they are finiſhed in what are called the adjuſting-rollers, which are alſo made of caſt-iron, and very finely poliſhed. In this proceſs the ſlips are rolled cold, and when a piece cut from the middle of each is found of the proper ſtandard weight, they are carried to another apartment, called the cutting-out room, containing twelve machines worked by a ſteam-engine of the power of ſixteen horſes. With theſe machines the blank pieces are cut out from the ſtrips or laminæ juſt mentioned with great eaſe and velocity. The only manual labour required, is that performed by a boy nine or ten years old at each machine; he quickly learns the art of preſenting the laminæ to the cutters, which inſtantly cut out the blank pieces of metal; theſe ſo ſtruck fall through a hole that conducts to a box placed below to receive them. Each machine will cut 60 pieces in a minute, of courſe the twelve will produce 720 in a minute, or 43,200 in an hour. Formerly theſe machines were worked by hand by a man or boy at each cutter, but no manual labour can operate ſo accurately and well as the power obtained by the ſteam-engine. The inſtruments with which the blanks are cut (called a bed and punch), are made of ſteel, of the exact diameter of the piece of money required.

From this apartment the blanks are carried to the adjuſting-room, where every piece is moſt accurately weighed, the gold twice, at leaſt, and the ſilver once: thoſe pieces that are found too heavy are reduced by the file, called a float, and thoſe that are found too light, which occaſionally occurs, are re-melted.

The blanks, now properly adjuſted, are carried to the milling-room. Into this, the writer of the preſent article was not allowed to enter; the proceſs of milling being a ſecret by the very conſtitution of the mint. This has always been the caſe ſince the time of Peter Blondeau, who introduced the milling in 1662, as appears from an extract from Mr. Folkes, in his "Tables of Engliſh Silver Coins," in which he obſerves, and the obſervation holds good even now, though at the diſtance of ſixty-five years; that "it may be noted that this practice of keeping ſecret the manner of edging the money, is ſtill obſerved in our mint, all thoſe who are entruſted with it being ſworn not to diſcover it: notwithſtanding, the manner in which the ſame operation is performed in ſeveral foreign mints, is there publicly ſhewn."

The blanks, when milled, are annealed, or ſoftened, in order that they may be fitted to receive the impreſſion.

The next operations are pickling and cleaning. The proceſs of pickling is to throw the pieces of gold, thus annealed, into a ſtrong ſolution of ſuper-ſulphat of alumine, thoſe of ſilver into a ſolution of the ſuper-ſulphat of potaſh.

When the pieces are properly blanched, they are taken into another room to be dried and cleaned, which operation is performed by agitation in ſieves, containing ſaw-duſt, over a gentle heat.

They are now taken to what is properly called the coining-room. In this apartment there are eight coining-preſſes worked by a ten horſe-power ſteam-engine; the apartment alſo is, in the winter months, heated with ſteam, ſo as to be kept to an uniform temperature. The machines are worked with the moſt perfect accuracy, and with ſuch rapidity, that each will produce about 60 in a minute; and on the average, allowing for the neceſſary delays in working forty pieces of money, that is 320 guineas, &c. will paſs through the eight machines in a minute, or about 19,200 in an hour. Theſe machines require alſo one boy of ten or twelve years of age to each, who, by ſupplying the machine with the planchets, runs no riſque of injury to his fingers, as the machine contains in itſelf a ſelf-feeder or layer-on; the buſineſs of the boy being only to fill the layer-on, through a tube with the blanks. From this tube, the machine places the blanks upon the dye, and when ſtruck, diſplaces one piece and replaces another, and ſo on as long as the ſteam-engine is kept at work. The coin thus completed is carried to the mint-office, where the king's aſſayer attends, and where the proceſs called PIXING, (which ſee,) takes place, to aſcertain the weight and fineneſs of the monies before delivery.

The two faces of the coin are ſtruck at once, the upper and under dye being both engraved for the purpoſe. The dyes are the workmanſhip of ſome capital engraver; he, of courſe, makes the pattern upon ſoft ſteel: from this, many others are taken at an office in the mint, and hardened, as is deſcribed under the article CASE-HARDENING. The engraver is called upon to verify the accuracy of the dyes made uſe of, with the pattern or mould which he has furniſhed.

In the time of Charles II., when the Engliſh coins were brought to great perfection, John Roetier, a native of Antwerp, and Thomas Simon, were engravers to the mint. They were both called upon to make models or pattern pieces of money, to be exhibited at court; his majeſty is ſaid to have given the preference to thoſe by Roetier, which were ordered to be followed in the puncheons or dyes to be made for the new money. "Which preference," ſays Mr. Folkes, "ſo far exaſperated Simon, who did not value his performances leſs than they deſerved, nor knew how to ſubmit to a foreign rival; that he thereupon immediately quitted the mint, or, for ſome apprehended miſbehaviour upon the occaſion, was ſoon after removed from the office of one of the chief engravers."

It was in the year 1663, that he produced that inimitable crown, with the petition round the edge, that is now valued by the curious as a maſter-piece in this ſort of workmanſhip. It reſembles what were the common milled five ſhilling pieces, but the king's head is larger; the face and the garment are covered with a ſort of froſted work. The letters are expreſſed by outlines froſted in the middle, and under the head is the name of Simon: upon the reverſe there is a centre, inſtead of the uſual ſtar, the figure of St. George on horſeback, encircled with the garter. The date is 1663, and upon the edge is the artiſt's petition, *viz.* "Thomas Simon moſt humbly prays your majeſty, to compare this his trial-piece with the Dutch, and if more truly drawn and emboſſed, more gracefully ordered, and more accurately engraven, to relieve him." It is ſaid, there were not more than twenty of theſe pieces ſtruck off with the petition, and a ſmall number without. We have ſeen one of the twenty in poſſeſſion of the Rev. Dr. Diſney, from the collection of the late Mr. J. Hollis; it is in the higheſt ſtate of preſervation: and in the memoirs of Mr. Hollis is a fine engraving of the medal, a little magnified. It is not aſcertained what relief Simon obtained upon this petition, but it is pretty clear he was never afterwards employed in the mint

MINT, *Officers of the*, are, 1. The warden, who is the chief, and is to receive the bullion, and overſee all the other officers. This officer has under him a deputy and two clerks. 2. The maſter-worker, with three clerks; he receives the bullion from the warden, cauſes it to be melted, and delivered to the moniers; and takes it from them again when coined. 3. Comptroller, with a deputy and clerk, who is to ſee that the money be made to the juſt aſſize, and to overſee the officers. 4. The aſſay-maſter, who weighs the ſilver and gold, and ſees whether it be ſtandard. (See REMEDY.) This officer, called the king's aſſay-maſter, has under him a clerk. 5. The maſter's aſſay-maſter, and the probationer aſſayer. 6. The ſurveyor of the melting, who is to ſee the ſilver caſt out, and that it be not altered after it is delivered to the melter, *i. e.* after the aſſay-maſter has made a trial of it. 7. The clerk of the irons, who is to ſee that the irons be clean, and fit to work with. Theſe two offices are united in one perſon, who has a deputy and clerk. 8. The chief engraver, who engraves the dyes and ſtamps for the coinage of money: there is alſo an aſſiſtant engraver, and a probationer engraver, with a ſmith, aſſiſtant to the engravers. 9. The melters, who melt the bullion before it comes to coining. 10. The blanchers, who anneal, or boil and cleanſe the money. 11. The porter and office-keeper, who keep the gate, &c. of the mint. 12. The provoſt to the company of moniers, acting as engineer, who provides for all the moniers, and overſees them. And, laſtly, the company of moniers; ſome of whom ſhear the money, ſome forge it, ſome ſtamp or coin it, and ſome round and mill it. In this office, there are alſo the weigher and teller; receiver; king's clerk, and clerk of the paper; ſurveyor of the money-preſſes; ſolicitor and aſſiſtant; warden's deputy, maſter's deputy, comptroller's deputy, and ſubordinate clerks. See COINAGE, and the preceding article.

MINT, *Roman*, has been juſtly regarded as one of the moſt eſſential ornaments and ſinews of the ſtate. It derived great importance from the extent of the empire through which its produce was to circulate. The "Quæſtor" ſeems at firſt to have had the direction of the mint, as well as of the treaſury. About the time of the firſt coinage of ſilver in Rome, or 266 years B. C., the "Triumviri Monetales" ſeem to have been created; though Pomponius aſcribes their firſt creation to the year of Rome 463, or 289 B. C. Theſe were at firſt of the ſenatorial rank, until Auguſtus appointed them from the equeſtrian, which alteration ſeems to have continued. The title "Triumviri," however, remained till after Caracalla, as appears from inſcriptions given us by Gruter, and by Bouterouc. Under Aurelian, it is probable there was but one maſter of the Roman mint, called the "Rationalis;" a change ſuſpected by Pinkerton to have taken place under Gallienus. Aurelian, having conquered the revolted provinces, and united the whole empire again, ſeems to have altered the form of the mints in the capital provincial cities, and to have ordered them all to ſtrike money with Latin legends, and of the ſame forms; for with him firſt appear coins on this plan with mint-marks of cities and offices. He ſeems alſo to have permitted the provincial cities to ſtrike gold and ſilver as at Rome: and we know from his coins that the "Aureus," which had diminiſhed by degrees to about 80 grains, was by him reſtored to 100. On this occaſion, the moniers, who loſt half their profits, and three-fourths of whom loſt their work, cauſed commotions, which terminated in a rebellion, the ſuppreſſion of which was attended, on the part of Aurelian, with the loſs of 7000 of his beſt troops. About this time, the "Procurator Monetæ" ſeems to have ſucceeded the "Rationalis." In the Roman colonies, the direction of the mint appears to have been committed to the "Duumviri," or two annual magiſtrates, elected in imitation of the conſuls at Rome. The engraving of the dye was a work of labour and of genius; and at Rome Greek artiſts were uſually employed in it. The engravers of the dye were called "Cœlatores:" other officers employed in the mint were the aſſayers of the metal, "Spectatores," "Expectatores," or "Nummularii." The refiners were denominated "Cenarii;"

narii;'' the melters "Fuſarii,'' "Flatuarii,'' "Flaturarii.'' The "Equatores Monetarum'' adjuſted the weight. The "Suppoſtores'' put the pieces in the dye, and the "Malleatores'' ſtruck it. A "Primicerius'' was at the head of each office; and there was a foreman, called "Optio et Exactor.'' Pinkerton's Eſſ. on Med. vol. i.

Mint was alſo a pretended place of privilege in Southwark, near the king's bench, put down by ſtatute. If any perſons, within the limits of the mint, ſhall obſtruct any officer in the ſerving of any writ or proceſs, &c. or aſſault any perſon therein, ſo as to receive any bodily hurt, the offender ſhall be guilty of felony, and be tranſported to the plantations, &c. Stat. 9 Geo. I.

Mint, in *Botany*, &c. See Mentha.

Mint, *Corymbiferous*, a name given by ſome to a ſpecies of tanzy.

Mint, *Cat's*, the Engliſh name of a genus of plants, called by botanical writers *cataria*. See Catmint.

MINTERS, or Moniers. See Moneyers and Mint.

MINTING is ſometimes uſed for the coining of money.

MINTON, in *Geography*, an iſland in the Indian ſea, near the W. coaſt of the iſland of Sumatra, a little S. of the line. E. long. 97° 8'.

MINTURNÆ, in *Ancient Geography*, a town of Italy, in Latium, upon the Appian way, near Formiæ on the W., and Sueſſa Arunca on the E. ſituated on the Liris, at ſome diſtance from its mouth. Livy ſpeaks of it as a very ancient city. The Romans gained poſſeſſion of it by treaſon, in the year of Rome 439, and planted a colony in it. But the event which rendered it particularly memorable, was the impriſonment of Marius in this town, and his eſcape, in conſequence of ſtriking terror into the mind of the ſoldier who was ſent to aſſaſſinate him. See Marius.

MINUARTIA, in *Botany*, ſo called by Lœfling in commemoration of a Spaniſh botaniſt of the name of Minuart, an apothecary at Madrid, with whom Lœfling was acquainted while in Spain, and from whom he received many botanical obſervations, as appears by various paſſages in his letters publiſhed by Linnæus.—Lœfl. It. 48. Linn. Gen. 42. Schreb. 58. Willd. Sp. Pl. v. 1. 492. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 184. Juſſ. 300. Lamarck Illuſtr. t. 52.—Claſs and order, *Triandria Trigynia.* Nat. Ord. *Caryophyllei*, Linn. and Juſſ.

Gen. Ch. *Cal.* Perianth inferior, erect, long, compreſſed, of five, awl-ſhaped, rather ſtiff, permanent leaves. *Cor.* none. Nectary compoſed of a few depreſſed glands within the calyx. *Stam.* Filaments three, capillary, ſhort, inſerted into the receptacle; anthers roundiſh. *Piſt.* Germen ſuperior, triangular; ſtyles three, ſhort, thread-ſhaped; ſtigmas thickiſh. *Peric.* Capſule oblong, triangular, a little ſhorter than the calyx, of one cell and three valves. *Seeds* not numerous, roundiſh, compreſſed.

Obſ. *Minuartia montana* is ſaid occaſionally to be found with traces of five minute petals, which are poſſibly what Lœfling deſcribed as nectariferous glands.

Eſſ. Ch. Calyx of five leaves. Corolla none. Capſule with one cell and three valves. Seeds few.

1. M. *dichotoma.* Linn. Sp. Pl. 132. Lœfl. It. t. 1. f. 3.—Leaves briſtle-ſhaped. Stem ſimple, erect. Flowers ſeſſile, crowded together in a forked manner.—Very plentiful on the hills about Madrid.—This little annual ſcarcely exceeds an inch in height. The *ſtem* is ſimple, erect, rarely branched, dichotomous at the upper part. *Leaves* oppoſite, awl or briſtle-ſhaped, erect, ſo cloſe as to cover the whole ſtem. *Flowers* ſeſſile, cymoſe, forming a little ſquare head, cloſely forked. *Bracteas* long, awl-ſhaped, rigid, twice or thrice as long as the flower. *Seeds* from five to eight, kidney-ſhaped. The whole plant aſſumes a browniſh-herbaceous colour.

2. M. *montana.* Linn. Sp. Pl. 132. Lœfl. It. t. 1. f. 4.—Flowers crowded, lateral, alternate, ſhorter than the bractea.—Found in wet ſandy ſituations on the ſides of hills about Madrid.—*Root* annual, fibrous, very ſmall. *Stem* ſimple, ſcarcely an inch in height, jointed, ſmooth. *Leaves* oppoſite erect, briſtle-ſhaped, broader at the baſe, ſtriated, acute, rigid. *Flowers* ſeſſile, about three together, rarely ſolitary. *Seeds* from three to ſeven, ſmall.

3. M. *campeſtris.* Linn. Sp. Pl. 132. Lœfl. It. 122.—Flowers crowded, terminal, alternate, ſhorter than the bractea.—Found in ſituations ſimilar to the two laſt ſpecies.—*Root* annual, very ſlender and ſimple, ſomewhat twiſted. *Stem* quite ſimple, and very ſhort, covered with leaves, round. *Leaves* oppoſite, flat, awl-ſhaped, ſtriated, rigid, cloſe to the ſtem, numerous. *Flowers* terminal, forming a compact little head, partially forked, but not univerſally ſo, and in this reſpect the plant chiefly differs from *M. dichotoma.* *Seeds* five or ſix, compreſſed, kidney-ſhaped.—The whole plant has a ſcaly or huſky aſpect.

MINUCCIO d'Arezzo, in *Biography*, according to Boccaccio, an exquiſite ſinger and player on the viol, in great favour with Peter of Roan, king of Sicily.

MINUET, or Menuet, in *Muſic*, a compoſition anſwering to a kind of dance of the ſame name, ſaid to be invented at Poictou; the motion of which is triple, with three crotchets in a bar $\frac{3}{4}$, though it is commonly performed in the time $\frac{3}{8}$. It has commonly two ſtrains, each played twice over; the firſt has four or eight bars, the laſt note of which ſhould be either the dominant or mediant of the mode, never the final; and the ſecond has eight bars, it uſually ends on the final of the mode, with a pointed minim or whole bar.

The word is ſaid to be derived from the French *menu*, *little*, and ſignifying a ſmall pace.

It ſeems as if the air and dance of that name, in ſuch high favour and uſe during the laſt century in all the courts of Europe, as well as that of France, whence it was adopted, was either unknown to Broſſard, or its character muſt have been very much changed ſince his time. In his Dict. de Muſ. he defines *minuetto*, or *menuet*, *Danſe fort gaye*, a very lively dance. But ſo far from lively and gay was this dance, that its characteriſtics were grace and gravity. It has been even ſaid to be the only grave dance ſince the diſuſe of the louvre, fit for perſons of high rank and dignity to dance alone at courts or great balls. But as the country-dance, at the latter end of the laſt century, was ſupplanted by the cotillon, the cotillon by the waltz, the inſtrumental minuet by the jig, the dance itſelf of the ſlow minuet is wholly aboliſhed. For a further account, ſee Menuet.

MINUETTO *per Ballo*, Ital. a dancing minuet.

MINURI, in *Geography*, a town of Naples, in Principato Citra; 9 miles S.W. of Salerno.

MINUS, in *Algebra*. See Characters, in *Arithmetic*.

Minus *Quo*, in *Law*. See Quo *Minus*.

MINUSCULÆ, in *Printing*, denote the ſmall and running letters; as contradiſtinguiſhed from *majuſculæ*, or capitals.

MINUTE, from the Latin *minutus*, *ſmall*, in *Geography* and *Aſtronomy*, is the ſixtieth part of a degree.

In which ſenſe minute is alſo called *prime*, or *prime-minute*.

The diviſions of degrees are fractions, whoſe denominators increaſe in a ſexagecupal ratio; that is, a minute or prime is = $\frac{1}{60}$th; a ſecond, or ſecond minute, = $\frac{1}{3600}$dth, &c.

In aſtronomical tables, &c. minutes are expreſſed by acute accents, thus, ′; the ſeconds by two, ″; the thirds by three, ‴.

Minute, in *Computation of Time*, is uſed for the ſixtieth part of an hour.

Minute, in *Architecture*, uſually denotes the ſixtieth, ſometimes only the thirtieth, part or diviſion, of a module.

Minute is alſo uſed to ſignify a ſhort memoir, or ſketch of any thing haſtily taken in writing.

In this ſenſe we ſay, the minutes of the proceedings of the houſe of lords, &c.

Minutes *of Emerſion*. See Emersion.

Minutes, *Meridional*. See Meridional.

Minute *Tithes*, *Minores Decimæ*, ſmall tithes of wool, lambs, pigs, butter, cheeſe, &c. See Tithe.

MINUTIUS, Felix, Marcus, in *Biography*, an able apologiſt for Chriſtianity in the third century, probably a native of Africa, who flouriſhed towards the cloſe of the reign of the emperor Septimius Severus, or about the year 210. He was educated to the profeſſion of the law, and became an eminent pleader at Rome; where he renounced the heathen religion, and embraced that of Chriſt. He was author of an excellent defence of Chriſtianity, entitled "Octavius," written in the form of a dialogue, between a heathen and a Chriſtian, in which Minutius himſelf ſits as judge and moderator. By this contrivance, he replies to the objections and arguments brought forward by the adverſary, and refutes the calumnies caſt upon Chriſtians by the heathen philoſophers, and at the ſame time expoſes the abſurdities of their creed and worſhip, powerfully demonſtrating the reaſonableneſs and excellence of the Chriſtian religion. This work was, for a conſiderable time, attributed to Arnobius; but in the year 1560, Francis Baldwin, a learned lawyer, publiſhed it at Heidelberg, and made the diſcovery, in a preliminary diſſertation, that Minutius was its true author. It has, ſince that time, gone through many editions, of which the beſt is that printed at Cambridge in 1712, with the diſſertation of Baldwin prefixed, and "Commodiani Inſtructiones adverſus Gentium Deos," added in the way of appendix. Gen. Biog. Lardner.

MINUZIANO, Alessandro, a learned printer in the 15th century, was born at St. Severo, in Puglia. After ſtudying under George Merula at Milan, he ſucceeded him as profeſſor of rhetoric, and held that chair, with the profeſſorſhip of hiſtory, ſeveral years. He intereſted himſelf very much in the editing of the learned works that iſſued from his preſs, and at length eſtabliſhed a printing-preſs of his own. The firſt ſpecimen that he gave was a fine edition of all Cicero's works, in four vols. folio. After this, he publiſhed editions of various authors, ancient and modern, to many of which he prefixed learned prefaces, written in an elegant ſtyle. He was a diligent collator of old manuſcripts, and took vaſt pains to eſtabliſh the moſt authenticated readings. He was not free from the unfair practice, at that period but too common among printers, of pirating each other's works: and when Leo X. cauſed the "Annales" of Tacitus to be printed for the firſt time at Rome, he found means, by bribing ſome of the workmen employed upon it, to obtain the ſheets as they were worked, and brought out a rival edition. On account of this he incurred the pope's diſpleaſure, and involved himſelf in troubles from which he was ſcarcely able to extricate himſelf.

MINX, in *Zoology*, is the name of an animal in North America, very much reſembling the otter. See Mustela *Viſon*.

MINYA, in *Ancient Geography*, a town of Greece, in Theſſaly, called alſo "Almonia."—Alſo, a town of Aſia, in Phrygia.—Alſo, a town of the iſland Amorgos, ſituated in the moſt weſtern part of the iſland.

MINYÆ, Minyans, an ancient people of Greece, who were diſperſed through different countries. The moſt ancient people of this name were ſettled in Bœotia, and the inhabitants of Orchomené are ſaid to have derived it from Minyas, one of their kings. Some of theſe Minyans conducted a colony to Iolcos, and hence the Argonauts have been ſometimes denominated Minyans. Others of them joined themſelves to a colony which the ſons of Codrus conducted to Ionia; and they eſtabliſhed themſelves, under the direction of Athamas, at Theos, a town ſituated to the ſouth of the iſthmus which connects the peninſula with the continent, W. of Smyrna. Others of them, tracing their derivation from the Argonauts, ſettled in the iſle of Lemnos, whence they were driven by the Pelaſgians. Theſe fugitives ſailed to Laconia, and having encamped on mount Taygetus, the Lacedæmonians gave them land, and they intermarried with the Lacedæmonians. Of theſe Minyans, ſome in proceſs of time aſpired to the government, and rebelled againſt the powers that enforced the exiſting laws; and they were arreſted, thrown into priſon, and threatened with death. But their wives, having obtained permiſſion to viſit them in priſon at the time when they were to be executed, changed clothes with them, and thus afforded them the means of reſcue. They then retired to mount Taygetus, where they muſt have periſhed, if Theras, of the race of Cadmus, had not obtained their pardon.

MIOGA, in *Botany*, the Japaneſe name of a plant of the natural order of *Scitamineæ*, called by Kæmpfer *Dsjooka*, vulgarly *Mjoga*, *Mionga*, or *Megga*, Amœn. Exot. 826. (Amomum Mioga; Thunb. Jap. 14. Kæmpf. Ic. t. 1. Willd. Sp. Pl. v. 1. 7. Zingiber Mioga; Roſcoe Tr. of Linn. Soc. v. 8. 348.)—Kæmpfer deſcribes it as "one of the eatable kinds of Ginger, of a mild taſte, with a reedy ſtem and leaves, reſembling thoſe of wild Ginger (*Zingiber Zerumbet* of Roſcoe). Its flowering bulb grows from the root near the ſtem, at the ſurface of the ground. The flowers are produced in ſucceſſion, each proceeding from between ſcales, hooded, two inches long, of a pale colour, reſembling the flowers of Ginger, with a faint ſmell of *Petaſites*, or Butter-bur."

This curious plant was ſent to Kew garden in 1796, by the right hon. ſir Joſeph Banks, but has not yet flowered. By Kæmpfer's plate the flower-ſtalk appears remarkably ſhort for a *Zingiber*, and more reſembling a true *Amomum*, but there is no eſſential difference. The coincidences between the characters of the flowers, and the qualities of the roots, in theſe ſeveral ſpecies, confirm the ſolidity of Mr. Roſcoe's arrangement, which is one of the happieſt efforts that have been made in ſcientific botany. See Scitamineæ.

MIOKECK, in *Geography*, a town of Sweden, in Weſt Gothland; 36 miles S.E. of Gotheborg.

MIOLENS, a town of France, in the department of Mont Blanc, at the conflux of the Arche and Iſere; 10 miles E. of Chambery.—Alſo, a town and fortreſs of France, in the department of the Lower Alps; 9 miles W. of Barcelonetta.

MIOLLON, a ſmall iſland on the W. ſide of the gulf of Bothnia. N. lat. 63° 4′. E. long. 18° 20′.

MIONIKIALLE, a town of Perſia, in the province of Mazanderan; 42 miles S. of Fehrabat.

MIOSS, a lake of Norway, in the government of Aggerhuus, about 50 miles long from N. to S., and from 2 to 16 broad, containing one iſland, 8 miles in circuit: the ſouthern extremity is 30 miles N.E. of Chriſtiania.

MIOUTOLON, a ſmall iſland in the Indian ſea, near the coaſt of Africa.

MIPARTY, *Chamber of*. See CHAMBER.

MIPROVETZ, in *Geography*, a town of Bulgaria, the ſee of a Greek archbiſhop; 52 miles N.W. of Sophia.

MIQUELETS, a kind of foot ſoldiers, inhabiting the Pyrenean mountains: armed with piſtols under their belts, a carbine, and a dagger. The miquelets are dangerous people for travellers to meet.

MIQUELON, in *Geography*, a ſmall iſland in the Atlantic ocean, eight miles S.W. of Cape May, in Newfoundland. It is not more than three-fourths of a league in length, and its ſoil is indifferent. It was ceded to the French by the peace of Paris in 1763. The Engliſh deſtroyed the ſettlement in 1778, and kept the iſland till the year 1783, when it was reſtored by the peace; and in 1793 it was retaken by the Engliſh, and reſtored at the peace of Amiens. N. lat. 46° 56′. W. long. 56° 5′.

MIR, a town of Lithuania, in the palatinate of Novogrodek; 24 miles S.E. of Novogrodek.

MIR *Naſer*, a town of Perſia, in the province of Adirbeitzan; 30 miles W.N.W. of Urmia.

MIRA, a town of Italy; 10 miles E.N.E. of Padua; eight miles W. of Venice.—Alſo, a town of Moldavia; 44 miles S.W. of Birlat.—Alſo, a town of South America, in the province of Chocos; 50 miles N. of Zitara.—Alſo, a town of Portugal, in the province of Beira; 16 miles N.W. of Coimbra.—Alſo, a river of Para, which runs into the Pacific ocean, N. lat. 1° 40′.

MIRABAT, or MIRBAT, a town of Arabia, in the province of Oman; 260 miles S.W. of Maſcat.

MIRABAUD, JOHN BAPTIST, in *Biography*, a man of letters, was deſcended from a family of Provence, and born at Paris in 1675. He was intended, in early life, for the military profeſſion, and was preſent at ſeveral battles. After this he became a member of the congregation of the Oratory, to which ſociety he continued warmly attached through the remainder of his life. Having ſpent many years in literary purſuits he engaged in the ſervice of the houſe of Orleans, and was entruſted with the education of two young princeſſes of that family. As an author he was firſt known by his tranſlation of Taſſo's "Jeruſalem Delivered." This work gave him an entrance into the French academy in the year 1726, though not without ſome murmurs from original writers, who did not ſcruple to ſay that the patronage of the houſe of Orleans had more contributed to procure him this diſtinction, than his merit as an author. He next tranſlated the "Orlando Furioſo," which was alſo favourably received by the public. In 1742 he was elected perpetual ſecretary of the French academy, on the acceptance of which poſt, he inſiſted upon renouncing the right to a double fee of attendance, which his predeceſſors had enjoyed. In return for this diſintereſtedneſs, the academy procured for him an apartment in the Louvre, and a penſion was attached to the ſecretaryſhip. Having occupied the place for ſeveral years, he reſigned it to Duclos, who, however, inſiſted upon Mirabaud's retaining the penſion and apartment in the Louvre, where he died, with perfect tranquillity, in 1760, at the age of 86. He was of a mild and equal temper, and a true philoſopher in his conduct and ſentiments. He had compoſed various works on intereſting topics of literature, hiſtory, and philoſophy; to the "Syſtème de la Nature," publiſhed in 1770, his name is prefixed, but it is now generally believed that he was not the author.

MIRABEAU, VICTOR RIQUETTI, marquis of, a French political writer, and one of the leaders of the ſect of Economiſts, was born of an ancient family of Provence. His firſt literary work, entitled "L'Ami des Hommes," publiſhed in 1755, in three volumes, contains many uſeful ideas on rural and political economy, and diſplays liberal and judicious views of the great intereſts of ſociety. It obtained ſo much public approbation and celebrity, that the name of the work became an epithet of the author, who is diſtinguiſhed as "Mirabeau l'ami des hommes." He afterwards wrote in favour of provincial adminiſtrations, and publiſhed "Théorie de l'Impôt:" all his writings are ſaid to breathe a ſpirit of improvement and reform, which, together with his ſtrictures on the financiers, was ſo little agreeable to the court, that he was for a ſhort time impriſoned in the Baſtile. He is variouſly repreſented, according to the different notions and feelings of the perſons who have ſpoken of him and his works. He died in 1790, at the commencement of the revolution, after he had ſhewn an attachment to the court, while his ſon was a moſt diſtinguiſhed leader among the popular party. All his writings were publiſhed collectively in eight volumes 12mo., with the exception of one, entitled "Hommes à celebrer," in two volumes 8vo., which he ſent in manuſcript to his friend, father Boſcovich, by whom it was printed at Baſſano.

MIRABEAU, HONORE-GABRIEL RIQUETTI, count of, ſon of the preceding, was born in 1749. The impetuoſity of his temper led him to diſdain the ordinary purſuits of youth, though it has been thought that a contempt for theſe purſuits was the principal cauſe of his want of application, for when Locke on the "Human Underſtanding" was put into his hands, he ſat down to the peruſal of it with the cloſeſt attention, and after making ſome progreſs in it, exclaimed "This is the book I wanted." While he was ſtill a ſtripling he exhibited an ungovernable and daring ſpirit, with a propenſity to almoſt every irregularity. Between him and his father there was the moſt irreconcileable difference, ſo that the marquis, who has been charged by La Harpe with tyranny in his family, obtained a lettre de cachet againſt his ſon, then only ſeventeen years old, and had him cloſely confined in the iſle of Rhè for two years. On his liberation he procured a commiſſion in the regiment of dragoons, with which he ſerved a year in Corſica. On his return to France he precipitated himſelf into every extravagance, and became involved in great difficulties. He married a young lady of family and great fortune, but his father contributed, on the occaſion, nothing more than his conſent to this union, and his diſſipations ſoon brought him into new difficulties. His conduct towards his wife was brutal, and his irregularities became ſo exceſſive and notorious that he was ſeveral times impriſoned, and once, on account of his ſeducing a lady, the wife of the marquis de Monnier, he was committed to the caſtle of Vincennes, where he was confined nearly four years. Theſe impriſonments, by checking his career of diſſipation, tended to improve and ſtrengthen his mind, as he found in them no employment ſo intereſting as laying in ſtores of information and reflection, and acquiring the habit of compoſition. At Vincennes he became an author, and publiſhed an abridgment of French grammar, and ſome licentious productions. Theſe were followed by his celebrated "Eſſai ſur les Lettres de Cachet, et les Priſons d'Etat," in which he pleaded for the right of every citizen to perſonal liberty, until he had been deprived of it by a legal trial, with all the energy and eloquence of one who had been a ſufferer under uncontrolled authority. He next commenced an action againſt his father for maintenance and arrears, in which he was ſucceſsful. With the aſſiſtance of Chamfort, a man of letters of ſome celebrity, he compoſed a work entitled "Conſiderations ſur l'Ordre de Cincinnatus," the ſubject of which was a projected ſociety in the United States of North America, which the friends of republicaniſm looked upon with jealouſy. During its compoſition, he frequently conſulted Dr. Franklin, then at Paris. He now became a writer by profeſſion, and with a view to his maintenance went to London, where he publiſhed ſome volumes of a work called "Le Conſervateur," in which an analyſis was given of the moſt valuable current publications. In London he met with very ſmall encouragement, and returned to Paris, where he wrote ſome tracts on public finance. In 1786 he went to Berlin, to obſerve the politics of the court, and was admitted into the preſence of, and had a converſation with, Frederic the Great, who was then attacked with his laſt illneſs. From his obſervations he wrote two very free and important letters of advice, or memorials, to the next king on his acceſſion. He probably had ſome views to employment in the new reign, but his hopes were fruſtrated by his licentious character, and his open profeſſion of atheiſm. He chiefly occupied his time at Berlin, with laying in materials for his ſtatiſtical account of the Pruſſian and Saxon ſtates, and for his ſecret and ſatirical hiſtory of the court of Pruſſia; he became a member of the ſociety of *Illuminati*, and publiſhed an "Eſſay on the ſect of Illuminées," which appearing to diſcloſe its ſecrets, is thought to mix with them ſo many abſurd fictions as to involve the whole in ridicule.

Upon the aſſembling of the Notables he returned to Paris, and by the freedom of ſome of his remarks, in a pamphlet againſt ſtock-jobbing, an order was iſſued for his apprehenſion, which he fortunately evaded by a temporary concealment near Liege. He did not continue long there, but on his return to the metropolis ingratiated himſelf with the miniſter Brienne, by writing againſt Neckar. In 1787 he viſited Berlin, and was employed, in conjunction with his friend Mauvillon, in preparing for the preſs the work entitled "Hiſtoire de la Monarchie Pruſſienne," which was publiſhed in the following year, in four volumes 4to. and in eight of the 8vo. ſize, and obtained for the author a high reputation for political and ſatirical knowledge. In 1789 appeared "Hiſtoire Secrete de la Cour de Berlin," in which the reigning king of Pruſſia, and ſeveral other great perſonages in his court, were treated with ſo much diſreſpect, that the work was ordered, by the parliament of Paris, to be burnt by the common hangman.

The aſſembling of the States-General excited in Mirabeau's mind the higheſt expectations, and he, without doubt, viewed the approaching troubles of the kingdom as pregnant with events, in which his abilities would lead him to take a very conſpicuous part. At the time of the elections he went to Provence, with the hope of being choſen one of the deputies of the nobleſſe for that province, but being rejected as not poſſeſſing any property in it, he opened a grocer's ſhop at Aix, put on an apron, ſold his wares, and rendered himſelf ſo popular, that he was elected, with the greateſt acclamations, a deputy of the tiers état of that city. On the meeting of the ſtates, he ſet up a daily paper, which he entitled "Lettres de Mirabeau à ſes Commettans," which gave ſuch an account of the debates as might ſerve the intereſts of the popular party. Some feeble attempts were made to cruſh it, but without any effect, and its circulation became very extenſive. He ſoon diſtinguiſhed himſelf as the moſt eloquent ſpeaker, and took a leading part in thoſe diſputes between the different orders, which ended in the aſſumption of the character of "National Aſſembly" by the tiers-état. It was on this occaſion that a declaration was iſſued by the aſſembly, which among other ſubjects obſerved, that "the denomination of 'National Aſſembly' is the only one befitting the aſſembly in the actual ſituation of affairs, becauſe the members compoſing it are the only repreſentatives lawfully and publicly acknowledged and verified; becauſe they are ſent by almoſt the whole nation, and becauſe the Repreſentation being one and indiviſible, none of the Deputies choſen, in whatever order or claſs, has a right to exerciſe his functions ſeparately from the preſent Aſſembly." On another occaſion, after a royal ſitting, as it was called, the deputies were ordered by the king to depart, and the order was repeated by M. de Brèze, grand-maſter of the ceremonies. Mirabeau roſe, and addreſſing Brèze in authoritative language, bid him go and acquaint thoſe who ſent him, that they were aſſembled by the will of the people, and that nothing but the bayonet ſhould ſeparate them. This ſpeech confirmed the tiers-état in their reſiſtance to the royal authority, and Mirabeau followed it by propoſing and carrying a decree, declaring the inviolability of the perſons of the members. About this time he attached himſelf to the duke of Orleans, but finding that prince incapable of carrying into effect any great deſigns, he withdrew from his councils. The death of his father in 1790 was of no advantage to his fortune, on account of the embarraſſment in which he left his affairs, yet he found means to pay off large debts, and to live in a ſplendid ſtyle, which was generally attributed to the donations of the duke of Orleans. His motions were ſometimes of a popular kind, ſometimes tending to the ſupport of authority. Though apparently a friend to order, he was thought ſecretly to have been the inſtigator of the worſt outrages committed by the mob, over whom he poſſeſſed a greater influence than any other individual. In the infancy of the Jacobin club he was a conſtant attendant upon its meetings, but when the members ſeemed deſirous of overſetting the whole ſyſtem, he deſerted and oppoſed them. In May 1790 he was the warm advocate for the right of peace and war as inherent in the executive power; from this period it was generally ſaid that he had ſold himſelf to the court, and his popularity was for ſome time much impaired. He had however enough of art and management to recover his influence, though he ſtill treated the Jacobins with great contempt. It is imagined that he was engaged in a plan to procure the diſſolution of the national aſſembly, and the liberty of the king, by means of an appeal to the nation, when he was attacked by a violent diſeaſe which proved fatal. The danger of no individual ever excited ſo univerſal an alarm; all Paris, as it were, crowded round his door, with eager enquiries, and the king himſelf ſent meſſages to learn the ſtate of his health. He died April 2d, 1791, at the age of 42. The honours paid to his memory were almoſt unprecedented. All public ſpectacles were ſuſpended till his funeral, which was attended by all the miniſters and deputies, and a vaſt number of other perſons, to the Pantheon, where his body was depoſited by the ſide of that of Deſcartes. His buſt was placed in the halls of moſt of the municipalities of the kingdom, and funeral ſervices were performed for him in ſeveral of the provincial capitals. Such, however, were the mutations of the public mind, that in the very next year, when republicaniſm was triumphant, his buſts were deſtroyed, and his remains diſſipated. Beſides the works already mentioned, he publiſhed a variety of pamphlets. In his perſon, Mirabeau was groſs and repulſive; in his manners, paſſionate and brutal. He was the moſt ſplendid figure in the earlier ſcenes of the French revolution, but, like a meteor, he dazzled and diſappeared without leaving any laſting traces of his exiſtence. No man of the time was perhaps equally qualified to ſhine in political warfare. Poſſeſſed of great eloquence, he was capable of bearing all before him in popular debate, and of a preſence of mind which no emergency could diſconcert; accuſtomed to lead the opinions of the public, and deriving more popularity from the boldneſs of his writings, than he loſt by the diſſoluteneſs of his morals, he was perfectly fitted to act on the tumultuary theatre of revolutionary politics. His want of principle muſt exclude him from the rank of a real patriot, yet he was probably, on conviction, a friend to thoſe public rights upon which all juſt and enlightened government is founded. Gen. Biog. Rabaut's Hiſt. of the French Revolution.

MIRABEL, in *Geography*, a province of Crete or Candia, lying to the E. of that of Candia, is populous, fertile, and abounding with oil, grain, and fruit. Formerly this province ſupplied ſeveral French veſſels with oil, and thus kept up its price for the benefit of the inhabitants; but they have ſince been obliged to carry it, at a great expence, to Candia, and to ſell it at a low price to the Turkiſh proprietors of the ſoap houſes eſtabliſhed in that town. In conſequence of this reduction of price, the cultivation of olive trees, and the manufacture of oil, have declined. The road of Mirabel faces the eaſt, and affords to veſſels a tolerably ſafe anchorage. It is ſheltered and defended by two ſmall iſlands ſituated in front. The town is greatly diminiſhed ſince commerce has taken another direction. Here are ſtill reckoned 1500 inhabitants, moſt of whom are Greeks and cultivators. South of Mirabel lies the province of "Hiera-Petra," or "Gera-Petra," which produces, like the other province, oil, grain, various fruits, honey, wax, flax, &c. but it ſuffers equally with Mirabel from the prohibition, iſſued by the pacha, of ſelling commodities any where but at Candia. Olivier.

MIRABEL, a town of France, in the department of the Lot; nine miles N. of Montauban.

MIRABELLE, a town of Naples, in the county of Moliſe; 14 miles S.E. of Moliſe.—Alſo, a town of Naples, in Principato Ultra; 10 miles S.E. of Benevento.—Alſo, a town of Sicily, in the valley of Noto; four miles N.E. of Piazza.

MIRABILE, RETE. See RETE.

MIRABILIS, in *Botany*, a name which originated with the Spaniards, who applied to the beautiful plant, which ſtill bears this name, the appellation of *Marabillas del Peru*, the Wonder, or Marvel, of Peru, on account of the great diverſity of colour in its flowers, even on the ſame root. At firſt, as profeſſor Martyn obſerves, every thing that came from the new continent was thought wonderful. The French call the plant of which we are ſpeaking *Belle de nuit*, becauſe the flowers expand, and ſmell ſweet, at night only. Indeed the botaniſts of that nation ſeem to have taken a violent diſlike to the original name, and all that belongs to it. Tournefort called this genus *Jalapa*, which is founded in error; and Juſſieu *Nyctago*, derived from the French idea. The latter is unexceptionable, but ſuperfluous.—Linn. Gen. 96. Schreb. 114. Willd. Sp. Pl. v. 1. 999. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 382. Stokes Mat. Med. v. 1. 311. Lamarck Illuſtr. t. 105. Gærtn. t. 127. (Nyctago; Juſſ. 90. Jalapa; Tourn. Inſt. 129. t. 50.)—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Aggregatæ*, Linn. *Nyctagines*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five erect, rather deep, unequal ſegments, permanent. *Cor.* of one petal, funnel-ſhaped; tube ſlender, long, gradually dilated upwards, its baſe permanent, hardened, inveſting the ſeed; limb ſomewhat ſpreading, plaited, in five ſlight equal ſegments. Nectary ſpherical, fleſhy, ſurrounding the germen, obſcurely five-toothed at the margin. *Stam.* Filaments five, inſerted into the edge of the nectary, attached to the tube of the corolla, thread-ſhaped, inclining, unequal, extending rather beyond the tube; anthers roundiſh, aſcending; pollen glutinous. *Piſt.* Germen turbinate, ſuperior, within the nectary; ſtyle thread-ſhaped, the length and poſition of the ſtamens; ſtigma globoſe, rough, aſcending. *Peric.* none, except the permanent hardened baſe of the corolla. *Seed* ſolitary, ovate, obſcurely five-ſided.

Eſſ. Ch. Calyx inferior, five-cleft. Corolla funnel-ſhaped, its baſe inflated and permanent. Nectary a gland ſurrounding the germen. Seed ſolitary, coated.

1. M. *dichotoma.* Forked Marvel of Peru. Linn. Sp. Pl. 252. (Jalapa officinarum; Mart. Decad. 1. t. 1.)—Flowers nearly ſeſſile, axillary, ſolitary, erect.—Native of Mexico, from whence its ſeeds were brought very early to Europe. The plant is naturally perennial, having a thick oblong fleſhy *root*; but if raiſed on a hot-bed, it will flower and ſeed the ſame ſeaſon, like the uſual race of tender annuals. If kept in a green-houſe, or planted in the open air cloſe to the wall of a hot-houſe, it will endure many years, and flower more abundantly throughout the ſummer. The *ſtem* is herbaceous, ſucculent, very buſhy, forked, knotty at the joints, three feet high, round, ſmooth except a narrow hairy line at the two oppoſite ſides. *Leaves* oppoſite, ſtalked, ovate, ſomewhat heart-ſhaped, pointed, entire, very ſlightly downy or hairy at the margin and ribs. *Flowers* from the forks of the ſtem, on very ſhort ſtalks, ſweet-ſcented, of a ſcarlet red; their tube one and a half inch long. Calyx bell-ſhaped, a quarter of an inch in length.—This plant was by ſome botaniſts miſtaken for the Jalap of the ſhops, which is now known to be a *Convolvulus*, and has bloſſomed this ſeaſon, 1812, in the garden of A. B. Lambert, eſq. at Boyton, Wilts; a rare occurrence in Europe, ſince the plant was ſent over by Houſton, 80 years ago.

2. M. *Jalapa.* Striped Marvel of Peru. Linn. Sp. Pl. 252. Curt. Mag. t. 371. (Admirabilis peruana, rubro flore; Cluſ. Hiſt. v. 2. 89. Mirabilia peruviana, flore luteo; Ger. em. 343.)—Flowers crowded, ſtalked, erect. Leaves nearly ſmooth.—Native of the Eaſt and Weſt Indies. Very cloſely related to the foregoing, except that the *calyx* is longer, and the *flowers* more crowded together, on longer *ſtalks*. The *leaves* are not quite ſmooth at the edges. The *corolla* varies remarkably in colour, on which account, as well as its fragrance in the evening, the plant is highly deſirable. What is ſaid above of the treatment of *M. dichotoma*, is equally applicable to this. Some flowers are of an uniform ſcarlet red, others ſtriped or ſpeckled with red and white, in endleſs variety, on the ſame plant. On ſome they are all of an uniform very delicate yellow; while other individuals bear parti-coloured red and yellow bloſſoms. Moſt botaniſts, and among them Linnæus, have believed this to be the real officinal Jalap; a miſtake to which we have already alluded. See alſo CONVOLVULUS, ſp. 90, *Jalapa*.

3. M. *longiflora.* Long-flowered Marvel of Peru. Linn. Sp. Pl. 252. Stockh. Tranſ. for 1755. 176. t. 6. Sm. Exot. Bot. v. 1. 43. t. 23. (Atzoyatl, Mirabili Mexicana; Hernand. Mex. 170.)—Flowers crowded, terminal, ſeſſile, very long, ſlightly drooping. Leaves downy.—Native of the more cool and mountainous parts of Mexico, flowering in September. The ſeeds of this elegant ſpecies were ſent by the French aſtronomers, about the middle of the laſt century, from South America, to M. le Monnier at Paris, by whoſe liberality they were diſperſed throughout Europe. The plant has ever ſince been preſerved, either as a tender annual, or the roots taken up, and kept from year to year in ſand, they being, like thoſe of the two former, truly perennial, and very large, externally black. The *ſtem* is three or four feet high, round, repeatedly forked, downy. *Leaves* oppoſite, heart-ſhaped, entire, ſoft, downy, and viſcid, fœtid when bruiſed; the lower ones ſtalked; the reſt ſeſſile. *Flowers* ſeſſile, many together at the leafy top of each branch. *Calyx* very clammy and fœtid. *Corolla* four inches

long, with a downy green and purpliſh tube; limb white, with a purple eye. *Anthers* orange. *Stigma* large, hairy, of a rich purple. *Seed* with a curiouſly teſſellated dark brown coat, as big as the kernel of a filbert.

The flowers are highly ſcented. A few of them gathered in an evening, when they expand, without the fœtid calyx, and placed in a glaſs of water, will perfume a large apartment all night. We do not however recommend them for a bed-chamber, or any cloſe room. Each flower laſts only one night, but there is a copious ſucceſſion till the cloſe of autumn.

MIRABILIS, in *Gardening*, furniſhes plants of the flowery perennial kind, of which the ſpecies cultivated are, the common marvel of Peru (M. jalapa); the forked marvel of Peru (M. dichotoma); and the ſweet-ſcented marvel of Peru (M. longiflora).

The firſt ſort has ſeveral varieties in the colour of the flowers, as purple and white, and variegated purple and yellow, but which reſolve themſelves into two principal varieties; as with purple and white flowers, which are variable; ſome being plain purple, others plain white, but moſt of them variegated with the two colours, and all found occaſionally on the ſame plant; and with red and yellow flowers, generally mixed, but ſometimes diſtinct on the ſame plant; ſome plants having only plain flowers, others only variegated: but the plants which are raiſed from ſeeds of the purple and white never produce red and yellow flowers, or the contrary.

All theſe varieties are highly ornamental during the months of July, Auguſt, and September, and, when the ſeaſon continues mild, often laſt till near the end of October. The flowers opening only towards the evening, while the weather continues warm, but in moderate cool weather, when the ſun is obſcured, they continue open almoſt the whole day, and are produced ſo plentifully at the ends of the branches, that when expanded the plant ſeems entirely covered with them, and from ſome being plain, others variegated on the ſame plant, have a fine appearance.

The ſecond ſpecies is common in the Weſt Indies, where it is termed the *Four-o'clock flower*, from the circumſtance of the flowers opening at that time of the day.

Method of Culture.—In all theſe ſorts the propagation is effected by ſowing the ſeed in the ſpring ſeaſon, either on a warm border or on a hot-bed; but the latter method produces the plants conſiderably more early, and in the greateſt perfection. When cultivated on warm ſouth borders, in the places where the plants are to remain, the ſeed ſhould be ſown about the middle of April, either in patches or in ſhallow drills, half an inch deep, and ſix inches aſunder: and when the places can be covered with hand-glaſſes, or a frame and lights, or the ſeed be ſown in pots under thoſe protections, or any other occaſional ſhelter during the night time or in cold weather, it will greatly forward the germination of the ſeed, as well as the growth of the young plants afterwards. In the latter mode about June, the plants will be fit to plant out into the borders or into pots. Moiſt weather ſhould be choſen for this purpoſe, and water and occaſional ſhade be given till well rooted: they then readily grow, and acquire a tolerable ſize; but they do not attain to a large ſize, or flower ſo early by a month or ſix weeks as thoſe forwarded in the hot-bed.

But in the latter method of raiſing them, a hot-bed ſhould be prepared in March, or early in April, under frame and lights, and earthed over about ſix inches deep, then ſowing the ſeed in the earth of the bed in ſhallow drills half an inch deep, as directed above, or in pots of rich earth the ſame depth, plunging them in the earth of the bed. The latter is the better method. The plants ſoon riſe; when they ſhould have freſh air daily, in common with the other plants of the bed, and frequent refreſhings of water; and when nearly two inches high, be planted out into another freſh hot-bed to forward them, placing them either in the earth of the bed, four or five inches aſunder, or ſingly in ſmall pots (thirty-twos), plunging them in the bed; water and ſhade ſhould be immediately given till freſh rooted, continuing the care of admitting freſh air every mild day; and about the middle or latter end of May, when they have acquired a good ſize and ſtrength, they ſhould be inured by degrees to the full air, ſo as that they may be removed into it fully about the beginning of June, chooſing mild cloudy moiſt weather, if poſſible, for the buſineſs; taking up ſuch as grow in the beds with balls of earth about their roots, and planting them in the borders; but thoſe in the pots may be turned out with the whole ball entire, and planted in that way. Some ſhould alſo be removed into large pots for moving into particular ſituations. Water ſhould be directly given, and occaſional ſhade to ſuch as require it, repeating the waterings to the whole, till they have ſtruck freſh root and begun to grow, when they will not require any further culture, except the occaſional ſupport of ſticks, which is moſt neceſſary in the laſt ſort.

As the ſeed ripens well, it will frequently prevent the trouble of preſerving the roots. But when theſe are taken out of the ground in autumn, and laid in dry ſand during the winter, ſecure from froſt, and planted again in the ſpring, they grow much larger and flower earlier than the ſeedling plants: or when the roots are covered in winter with tanners' bark to keep out the froſt, they often remain ſecure in the borders, where the ſoil is dry. When the roots thus taken out of the ground are planted the following ſpring in large pots, and plunged into a hot-bed, under a deep frame, they may be brought forward, and raiſed to the height of four or five feet, and flower much earlier in the ſeaſon.

It ſhould be noticed that in collecting the ſeeds, care ſhould be taken not to ſave any from the plants which have plain flowers; and in order to have variegated flowers, the plain flowers ſhould be pulled off from thoſe plants which are intended to ſtand for ſeed. As the ſecond ſort is leſs hardy than the firſt and third, unleſs the plants are brought forward in the ſpring they ſeldom flower till very late, and their ſeeds do not ripen perfectly.

All the ſorts are proper for the principal borders of pleaſure grounds, being very ornamental in their large branchy growth, as well as in their extenſive flowering.

MIRABILIS *Aqua*. See WATER.

MIRABOLANS, or **MIROBALANS**, in *Pharmacy*. See MYROBALANS.

MIRACHOW, or **MIRCHAU**, in *Geography*, a town of Pruſſian Pomerelia; 12 miles W. of Dantzic.

MIRACLE, in a popular ſenſe, is a *prodigy*, or an extraordinary event, that ſurpriſes us by its novelty.

MIRACLE, in a more accurate and philoſophical ſenſe, is an effect that does not follow from any of the regular laws of nature; or which is inconſiſtent with ſome known law of it; or contrary to the ſettled conſtitution and courſe of things: accordingly all miracles preſuppoſe an eſtabliſhed ſyſtem of nature, within the limits of which they operate, and with the order of which they diſagree.

Spinoza denies that any power can ſuperſede that of nature; or that any thing can diſturb, or interrupt, the order of things; and accordingly defines a miracle to be a rare event, happening in conſequence of ſome laws that are unknown to us.

Divines define a miracle, an extraordinary and wonderful effect above the power of nature, wrought by God, to manifeſt his power or providence; or to give credit to ſome meſſenger ſent from himſelf. Thus Jeſus Chriſt evinced the truth of his miſſion, and his doctrine, by miracles; and thus alſo did Moſes. But there are ſcarcely any theological writers, that preciſely agree in their definition of a miracle. Mr. Locke defines it to be a ſenſible operation, which being above the comprehenſion of the ſpectator, is, in his opinion, contrary to the courſe of nature, and taken by him to be divine. Dr. Clarke's definition of a miracle, in the theological ſenſe of the word, is this: that it is a work effected in a manner unuſual, or different from the common and regular method of Providence, by the interpoſition either of God himſelf, or of ſome intelligent agent ſuperior to man, for the proof or evidence of ſome particular doctrine, or in atteſtation to the authority of ſome particular perſon. According to Dr. Sykes, a miracle is a deſigned effect, ſenſible, unuſual in itſelf, beyond the art and power of man to do. Dr. Chandler ſays, that a miracle is an action done, or an operation viſibly performed by any being, which is really and truly above the reach, natural power, and capacity of that being who does it, of himſelf, and without the aſſiſtance of ſome ſuperior agent to perform. With this Dr. Hutcheſon's definition nearly coincides, *viz*. that it is a work far exceeding human power, yet performed by the command, or upon the volition of a man. And the ſame writer further obſerves, that though miracles may prove the ſuperintendency of a voluntary agent, and that the univerſe is not guided by neceſſity or fate; yet that mind muſt be weak and inadvertent, who needs them to confirm the belief of a wiſe and good Deity; ſince the deviation from general laws, unleſs upon very extraordinary occaſions, muſt be a preſumption of inconſtancy and weakneſs rather than of a ſteady wiſdom and power; and muſt weaken the beſt arguments we have for the ſagacity and power of the univerſal mind. Inquiry into the Original of the Ideas of Beauty, &c.

Mr. Farmer, a late ingenious and learned writer, objects to all thoſe definitions of miracles, which repreſent them as effects unuſual, above human power, and manifeſting the interpoſition of ſuperior power: becauſe, he ſays, the term unuſual does not diſtinguiſh real miracles from many things which are not miraculous, ſuch as the rare and uncommon appearances of nature: nor does the calling a miracle an effect above human power, diſtinguiſh it from all other effects equally above human power, produced by ſuperior beings, when acting within their uſual ſphere, which, for that reaſon, cannot be miraculous. Beſides, as this definition comprehends many things, which are not miraculous, and to which no perſons apply the term; ſo it excludes many things which are allowed by all to be proper miracles. For there ſeems to be a difference between effects above human power, or which argue a higher degree of power, and effects which argue a power barely different from human, and in no manner ſuperior to it. According to this definition, beaſts and birds may work miracles; for they do many things that are above the power of man. Moreover, this definition, inſtead of deſcribing miracles by the nature of the works themſelves, deſcribe them by their author, and the degree of power neceſſary to their performance. To which it may be added, that works which argue only a power more than human, can be no abſolute proofs of a divine interpoſition: and farther, the laſt part of the definition, manifeſting the interpoſition of ſuperior power, is ſuperfluous; becauſe it is only ſaying effects above human power muſt be produced by a power above it.

This writer conſiders the contrariety or conformity of the event itſelf to thoſe laws by which the world is governed in the courſe of God's general providence, as the only circumſtance which denominates and conſtitutes it a proper miracle or not: and, therefore, before we can pronounce with certainty any effect to be a true miracle, it is neceſſary (and nothing more is neceſſary than) that the common courſe of nature be in ſome degree firſt underſtood. Miracles, in this view, are not impoſſible to the power of God, nor neceſſarily repugnant to our ideas of his wiſdom and immutability. Neither do they imply any inconſiſtency in the divine conduct, or a defect or diſturbance of the laws of nature: ſo that in the general idea of miracles, conſidered as variations from the common courſe of nature, there is nothing that can furniſh a certain univerſal proof againſt their exiſtence; and there is a power ſuperior to nature, which is ever able, and which in certain circumſtances may reaſonably over-rule what was at firſt eſtabliſhed. The writer, now cited, farther maintains, that miracles are neither the effects of natural cauſes, nor of ſuperior created intelligences, acting from themſelves alone; but that they are always to be aſcribed to a divine interpoſition; *i. e.* that they are never wrought, but either immediately by God himſelf, or by ſuch other beings as he commiſſions and empowers to perform them. In proof of this propoſition, he alleges, that the ſame arguments which prove the exiſtence of ſuperior created intelligences, do much more ſtrongly conclude againſt their acting out of their proper ſphere. Farther, the ſuppoſition of the power of any created agents to work miracles of themſelves, in this lower world, is contradicted by the obſervation and experience of all ages; there being, in fact, no proper evidence of the truth of any miracles, but ſuch as may be fitly aſcribed to the Deity. Moreover, the laws of nature being ordained by God and eſſential to the order and happineſs of the world, it is impoſſible God ſhould delegate to any of his creatures a power of working miracles, by which thoſe divine eſtabliſhments may be ſuperſeded and controlled. Beſides, the aſcribing to any ſuperior beings, God excepted, and thoſe immediately commiſſioned by him, the power of working miracles, ſubverts the foundation of natural piety, and is a fruitful ſource of idolatry and ſuperſtition. It is further urged, that if miracles were performed in favour of falſe doctrines, mankind would be expoſed to frequent and unavoidable deluſion: and, if they may be performed without a divine permiſſion, and in ſupport of falſhood, they cannot be credentials of a divine miſſion, and criterions of truth. So that, upon the whole, if ſuperior beings really poſſeſs the miraculous powers which ſome writers have aſcribed to them, the exerciſe of thoſe powers, by good and evil agents, would either expoſe mankind to neceſſary and invincible error, or entirely deſtroy the credit and uſe of miracles, under the idea of criterions of truth and authentic credentials of a divine miſſion. If we appeal to the evidence of revelation, on this ſubject, we ſhall find, that the view which the ſcripture gives us of good angels, of the devil and his angels, as alſo of the ſouls of departed men, is inconſiſtent with their liberty of working miracles: and the view which the ſacred writers give us of the gods of paganiſm is alſo abſolutely inconſiſtent with their poſſeſſing a power of working miracles. Nevertheleſs, it has been much diſputed, how far it may be in the power of the devil to work miracles? or wherein the ſpecific difference lies between the miracles of Moſes, and thoſe of Pharoah's magicians? thoſe of Jeſus Chriſt and the apoſtles, and thoſe of Simon Magus and Apollonius Tyaneus? Whether the latter were any more than mere deluſions of the ſenſes; or whether any ſuper-natural and diabolical power concurred with them. See MAGICIAN; under which article it is ſhewn, that the magicians, diviners, and ſorcerers of antiquity, who pretended by the aſſiſtance of the heathen deities, &c. to foretel future events, or to work miracles, are branded in ſcripture as mere impoſtors, incapable of ſupporting their pretenſions by any works or predictions beyond human power or ſkill. The ſcripture likewiſe reproaches the pretences to inſpiration and miracles, made by falſe prophets, in ſupport of error and idolatry, as the ſole effects of human craft and impoſture. And, therefore, ſince angels, whether good or evil, the ſpirits of departed men, the heathen deities, magicians, and falſe prophets, are the only agents, who have ever been conceived as capable of working miracles, either in oppoſition to God, or without an immediate commiſſion from him; and the ſcripture denies to all theſe the power of performing any miracles; it does in effect deny, that any ſingle miracle has ever been performed without the immediate interpoſition of God. It is likewiſe alleged, that the ſcriptures repreſent the one true God, as the ſole creator and ſovereign of the world, which he governs by fixed and invariable laws; that to him they appropriate all miracles, and that they urge them as demonſtrations of his divinity and ſole dominion over nature, in oppoſition to the claims of all other ſuperior beings. The ſcriptures alſo uniformly repreſent all miracles, as being, in themſelves, an abſolute demonſtration of the miſſion and doctrine of the prophets, at whoſe inſtance they are performed; and never direct us to regard their doctrines as a teſt of the miracles being the effect of divine interpoſition. Accordingly, the miracles of Chriſt, in particular, were a demonſtration (not a partial and conditional, but a complete and abſolute demonſtration) of his miſſion from God: and they were farther deſigned to evince his peculiar character as the Meſſiah or anointed; *i. e.* his regal commiſſion and power, or his right by divine deſignation to dominion and judicature over mankind. And it may be obſerved, with reſpect to all the miracles of the New Teſtament, that their divinity, conſidered in themſelves, is always either expreſsly aſſerted, or manifeſtly implied; and they are accordingly urged as a deciſive and abſolute proof of the divinity of the doctrine and teſtimony of their performers, without ever taking into conſideration the nature of the doctrine, or of the teſtimony to be confirmed. It is alſo ſhewn, that the ſcriptures have not recorded any inſtances of real miracles performed by the devil; in anſwer to the objections drawn from the caſe of the magicians in Egypt, from the appearance of Samuel, after his deceaſe, to Saul, which was either the work of human impoſture or a divine miracle, and from our Saviours's temptation in the wilderneſs, which the writer, to whom we now refer, conſiders as a divine viſion. Miracles, conſidered as the peculiar works of God, afford a divine teſtimony to the perſon on whoſe account they are wrought, and to that doctrine or meſſage, which he delivers in the name of God. And this proof from miracles of the divine commiſſion, and doctrine of a prophet, is in itſelf deciſive and abſolute. It is alſo the moſt natural and agreeable to the common ſenſe of mankind in all ages. It is the moſt eaſy and compendious proof of a new revelation. Miracles are farther a very powerful method of conviction, making a ſtrong impreſſion upon the heart, at the ſame time that they carry light to the underſtanding. Nor is the neceſſity of miracles leſs evident than their propriety and advantage, in atteſting a divine commiſſion and propagating a new revelation. They alſo ſerve to revive and confirm the principles of natural religion, and to recover men from thoſe two oppoſite extremes of atheiſm and idolatry. Finally, the evidence of miracles, whether of power or knowledge, is the fitteſt to accompany a ſtanding revelation; becauſe it is not confined to one age or nation, but may be extended over the whole globe, and conveyed to the moſt diſtant generations. On the nature and deſign of miracles, already illuſtrated in this article, ſee Farmer's Diſſertation on Miracles, &c. 8vo. 1771, paſſim.

On the other hand, Dr. Clarke, who allows that miracles may be wrought by other agents beſides the Deity, obſerves that it cannot certainly be diſtinguiſhed, by the miracle itſelf, whether any extraordinary interpoſition of ſome power ſuperior to men be the immediate interpoſition of God himſelf, or of ſome good angel, or of ſome evil angel. The only poſſible ways, ſays this learned writer, by which a ſpectator may certainly and infallibly diſtinguiſh whether miracles be indeed the works either immediately of God himſelf, or of ſome good angel employed by him; and conſequently the doctrine witneſſed by the miracles be infallibly true and divinely atteſted: or whether, on the contrary, the miracles be the works of evil ſpirits, and conſequently the doctrine a fraud and impoſition upon men, are theſe: if the doctrine atteſted by miracles be in itſelf impious, or manifeſtly tending to promote vice; then, without all queſtion, the miracles, how great ſoever they may appear to us, are neither wrought by God himſelf nor by his commiſſion. If the doctrine, atteſted by miracles, be in itſelf indifferent, or ſuch as cannot, by the light of nature and right reaſon alone, be certainly known whether it be true or falſe; and at the ſame time, in oppoſition to it, and in proof of the direct contrary doctrine, there be wrought other miracles, more and greater than the former, or at leaſt attended with ſuch circumſtances as evidently ſhew the power, by which the latter are wrought, to be ſuperior to the power that produced the former: then that doctrine, which is atteſted by the ſuperior power, muſt neceſſarily be believed to be divine. This, he apprehends, was the caſe of Moſes and the Egyptian magicians. (See MAGICIAN.) If, in the laſt place, the doctrine atteſted by miracles be ſuch as, in its own nature and conſequences, tends to promote the honour and glory of God, and the practice of univerſal righteouſneſs among men; and yet nevertheleſs be not in itſelf demonſtrable, nor could, without revelation, have been diſcovered to be actually true; and there is no pretence of more or greater miracles, on the oppoſite ſide, to contradict it: which is the caſe of the doctrine and miracles of Chriſt; then the miracles are unqueſtionably divine, and the doctrine muſt, without all controverſy, be acknowledged as an immediate and infallible revelation from God. In order to obviate the objection, that we prove in a circle the doctrine by the miracles, and the miracles by the doctrine; he adds, that the miracles, in this way of reaſoning, are not at all proved by the doctrine; but only the poſſibility and the good tendency, or at leaſt the indifferency of the doctrine, are a neceſſary condition or circumſtance, without which, the doctrine is not capable of being proved by any miracles. The doctrine muſt be in itſelf poſſible and capable of being proved, and then miracles will prove it to be actually and certainly true. Boyle's Lecture, Sermons, &c. p. 226, &c.

The ſufficiency of the argument in atteſtation to the truth of Chriſtianity, deduced from miracles, has been controverted by ſeveral ſceptical writers; and particularly by Mr. Hume. It has been alleged, that experience is the ground of the credit we give to human teſtimony. Having found in paſt inſtances that men have informed us right, we are diſpoſed to believe them in future inſtances; but this experience is by no means conſtant; for we often find that men prevaricate and deceive. On the other hand, what aſſures us of thoſe laws of nature, in the violation of which the notion of a miracle conſiſts, is, in like manner, experience. But this is an experience that has never been interrupted. A miracle, it has been ſaid, is an event which, from its nature, is inconſiſtent with all the experience we ever had, and in the higheſt degree incredible and extraordinary. In the falſhood of teſtimony, on the contrary, there is no ſuch inconſiſtency, nor any ſuch incredibility, ſcarcely any thing being more common. No regard, therefore, can be due to the latter, when it is applied as a proof of the former. According to this reaſoning, applied to the caſe of miracles, we are to conſider which is moſt likely, that ſuch events ſhould happen, or that men ſhould either deceive or be deceived. And as there is nothing more unlikely than the former, or much more common than the latter, particularly where religion is concerned, it will be right to form a "general reſolution, never to lend any attention to accounts of miracles, with whatever ſpecious pretexts they may be covered." "It is," ſays Mr. Hume in his "Eſſay on Miracles," "a maxim worthy of our attention, that no teſtimony is ſufficient to eſtabliſh a miracle, unleſs the teſtimony be of ſuch a kind, that its falſhood would be more miraculous than the fact which it endeavours to eſtabliſh. And even in that caſe, there is a marked diſtinction of arguments, and the ſuperior only gives us an aſſurance ſuitable to that degree of force, which remains after deducting the inferior. When any one tells me that he ſaw a dead man reſtored to life, I immediately conſider with myſelf, whether it be more probable that the perſon ſhould either deceive or be deceived, or that the fact he relates ſhould really have happened.' I weigh the one miracle againſt the other, and according to the ſuperiority which I diſcover, I pronounce my deciſion, and always reject the greater miracle. If the falſhood of his teſtimony would be more miraculous than the event which he relates, then, and not till then, can he pretend to command my belief or opinion." For ſuch reaſons as theſe Mr. Hume aſſerts, "that the evidence of teſtimony, when applied to a miracle, carries falſhood on the very face of it, and is more properly a ſubject of deriſion than of argument;" and that whoever believes the truth of the Chriſtian religion "is conſcious of a continued miracle in his own perſon, which ſubverts all the principles of his underſtanding, and gives him a determination to believe what is moſt contrary to cuſtom and experience." The principles on which this objection is founded, ſays an excellent writer, Dr. Price, are chiefly, "that the credit we give to teſtimony is derived *ſolely* from experience:" "that a miracle is a fact *contrary* to experience:" "that the previous improbability of a fact is a proof againſt it, diminiſhing, in proportion to the degree of it, the proof from teſtimony for it;" and "that no teſtimony ſhould ever gain credit to an event, unleſs it is more extraordinary that it ſhould be falſe, than that the event ſhould have happened." Our author, in his examination of theſe opinions, begins with conſidering the nature and foundation of that aſſurance which experience gives us of the laws of nature. After a variety of ingenious obſervations on the nature and degree of the aſſurance with regard to future events, which we derive from paſt experience of the courſe of nature, this writer ſtates the reſult of the whole in the following manner. "Upon obſerving, that any natural event has happened often or invariably, we have only reaſon to expect that it will happen again, with an aſſurance proportioned to the frequency of our obſervations. But we have no *abſolute proof* that it will happen again in any future trial; nor the leaſt reaſon to believe that it will always happen. For aught we know, there may be occaſions on which it will fail, and ſecret cauſes in the frame of things which *ſometimes* may counteract thoſe by which it is produced." In examining the ground of the regard we pay to human teſtimony, our author concludes, that it is not experience only, or that kind of experience to which we owe our expectation of natural events, the cauſes of which are unknown to us. We feel in ourſelves, that a regard to truth is one principle in human nature; and we know, that there muſt be ſuch a principle in every reaſonable being; and to this chiefly is owing the credit we give to human teſtimony. It is plain and capable of the moſt ſatisfactory proof, that there is a great difference between the conviction produced by teſtimony, and the conviction produced by experience, and the one is capable of being carried much higher than the other. Beſides, the greateſt part of what is commonly called experience is merely the report of teſtimony. "Our own experience," ſays Dr. Adams, "reaches around, and goes back but a little way; but the experience of others, on which we chiefly depend, is derived to us wholly from teſtimony." In proportion, therefore, as we weaken the evidence of teſtimony, we weaken alſo that of experience; and in comparing them we ought in reaſon to oppoſe to the former, only what remains of the latter after that part of it which is derived from the former, that is, after much the greateſt part of it, is deducted. From this reaſoning it follows, that there is no abſurdity in uſing *teſtimony* for proving a *miracle.* This is not uſing a *feebler* experience to overthrow another of the ſame kind, which is *ſtronger;* but uſing an argument to eſtabliſh an event, which yields a direct and poſitive proof, and is capable of producing the ſtrongeſt conviction, to overthrow another founded on different principles, and which, at beſt, can prove no more than that, previouſly to the event, there would have appeared to us a preſumption againſt its happening.

Moreover, a miracle cannot, with propriety, be ſtyled an event *contrary* to experience; as Mr. Hume aſſerts. A miracle, ſays our author, is more properly an event *different* from experience than *contrary* to it; nor can it be proper to aſſert, as Mr. Hume does, that in every caſe of a miracle ſupported by teſtimony, there is a conteſt of two oppoſite experiences, the ſtrongeſt of which ought always to determine our judgments. In Mr. Hume's argument there is, as Dr. Price intimates, a fundamental error: it is where he declares, that, "if, previouſly to an event, there was a greater probability *againſt* its happening, than there is *for* the truth of the teſtimony endeavouring to eſtabliſh it, the former deſtroys the latter, and renders the event unlikely to have happened in proportion to its ſuperiority." This is evidently a fundamental point in Mr. Hume's objection; or, in other words, in the principle, that no teſtimony ſhould engage our belief, except the improbability in the falſhood of it is greater, than that in the event which it atteſts. In order to evince the erroneouſneſs of this principle, what our author wiſhes to be conſidered is, the degree of improbability which lies againſt almoſt all the common facts, independently of the evidence of teſtimony for them. In many caſes of particular hiſtories, which are immediately believed on the ſlighteſt teſtimony, there would have appeared to us, previouſly to this teſtimony, an improbability of almoſt infinity to one againſt their reality, as any one muſt perceive, who will think how ſure he is of the falſhood of all facts, that have *no* evidence to ſupport them, or which he has only *imagined* to himſelf. It is then very common for the ſlighteſt teſtimony to overcome an almoſt infinite improbability. That this is the caſe our author has rendered evident by a train of ſatisfactory reaſoning, which we have not room to introduce. For further particulars we muſt refer to the author himſelf, *ubi infra.*

Archdeacon Paley has, with his uſual perſpicuity, examined the objection of Mr. Hume againſt the credibility of miracles, which we have above ſtated. Having premiſed that there is no antecedent improbability of a revelation from God, but that the contrary is the caſe; and that there is no way in which ſuch a revelation can be made but by miracle, it is not improbable that miracles ſhould be wrought. The improbability which ariſes from the miraculous nature of the things related is not greater than the original improbability that ſuch a revelation ſhould be imparted by God. Admitting then, that a revelation is not improbable, and that if there be a revelation, there muſt be miracles, the objection that no human teſtimony can render miracles credible muſt appear to be unfounded. Mr. Hume's principle, conciſely ſtated, is this; that the truth of a miracle is contrary to experience, but it is not contrary to experience that teſtimony ſhould be falſe. Our author obſerves that the term "experience," and the phraſes "contrary to experience," or "contradicting experience," are ambiguous, and require explanation. Strictly ſpeaking, the narrative of a fact is *then* only contrary to experience, when the fact is related to have exiſted at a time and place, at which time and place, we, being preſent, did not perceive it to exiſt. In this caſe the aſſertion is contrary to experience, properly ſo called; nor is it of any conſequence, whether the fact be of a miraculous nature or not. This is a contrariety which no evidence can ſurmount. But this is not the experience, nor contrariety, which Mr. Hume meant to expreſs in his objection; ſhort of this, no intelligible ſignification can be affixed to the term "contrary to experience," but one, *viz.* that of not having experienced any thing ſimilar to the thing related, or ſuch things not being generally experienced by others. Now the improbability which ariſes from the want of experience, not contradiction to it, is only equal to the probability there is, that if the thing were true, we ſhould experience things ſimilar to it, or that ſuch things would be generally experienced. Suppoſing then that miracles were wrought upon the firſt promulgation of Chriſtianity, when nothing but miracles could decide its authority, is it certain that ſuch miracles would be repeated ſo often, and in ſo many places, as to become objects of general experience? Is it a probability approaching to certainty? Is it a probability of any great ſtrength or force? Is it ſuch as no evidence can encounter? And yet this probability is the exact *converſe*, and therefore the exact meaſure of the improbability which ariſes from the want of experience, and which Mr. Hume repreſents as invincible by human teſtimony. The force of experience, continues our author, is founded in the preſumption, either that the courſe of nature is invariable, or that, if it be ever varied, variations will be frequent and general. Has the neceſſity of this alternative been demonſtrated? Calling the courſe of nature the agency of an intelligent Being, is there any good reaſon for judging this ſtate of the caſe to be probable? Ought we not rather to expect, that ſuch a Being, upon occaſions of peculiar importance, may interrupt the order which he had appointed, yet that ſuch occaſions ſhould return ſeldom; that theſe interruptions conſequently ſhould be confined to the experience of a few; that the want of it, therefore, in many, ſhould be matter neither of ſurpriſe nor objection? But it is ſaid, that in our account of miracles, we aſſign effects without cauſes, or we attribute effects to cauſes inadequate to the purpoſe, or to cauſes of the operation of which we have no experience. Of what cauſes, we may aſk, and of what effects, does the objection ſpeak? If it be anſwered that, when we aſcribe the cure of the palſy to a touch, of blindneſs to the anointing of the eyes with clay, or the raiſing of the dead to a word, we lay ourſelves open to this imputation; we reply, that we aſcribe no ſuch effects to ſuch cauſes. We perceive no virtue or energy in theſe things more than in other things of the ſame kind. They are merely ſigns to connect the miracle with its end. The effect we aſcribe ſimply to the volition of the Deity; of whoſe exiſtence and power, not to ſay of whoſe preſence and agency, we have previous and independent proof. We have therefore all we ſeek for in the works of rational agents, a ſufficient power and an adequate motive. In a word, once believe that there is a God, and miracles are not incredible. Mr. Hume, as our author proceeds, ſtates the caſe of miracles to be a conteſt of oppoſite improbabilities, that is to ſay, a queſtion whether it be more improbable that the miracle ſhould be true, or the teſtimony falſe. In this ſtatement, however, there is a want of argumentative juſtice; becauſe, in deſcribing the improbability of miracles, he ſuppreſſes all thoſe circumſtances of extenuation, which reſult from our knowledge of the exiſtence, power, and diſpoſition of the Deity, his concern in the creation, the end anſwered by the miracle, the importance of that end, and its ſubſerviency to the plan purſued in the works of nature. As Mr. Hume has repreſented the queſtion, miracles are alike incredible to him who is previouſly aſſured of the conſtant agency of a divine Being, and to him who believes that no ſuch being exiſts in the univerſe. They are equally incredible, whether related to have been wrought upon occaſions the moſt deſerving, and for purpoſes the moſt beneficial, or for no aſſignable end whatever, or for an end confeſſedly trifling or pernicious. This ſurely cannot be a correct ſtatement. In adjuſting alſo the other ſide of the balance, the ſtrength and weight of teſtimony, the author has provided an anſwer to every poſſible accumulation of hiſtorical proof, by telling us, that we are not obliged to explain how the ſtory or the evidence aroſe. The archdeacon thinks that we are obliged to do this. The exiſtence of the teſtimony is a phenomenon: the truth of the fact ſolves the phenomenon. If we reject this ſolution, we ought to be able to recur to ſome other; and none even by our adverſaries can be admitted, which is not conſiſtent with the principles that regulate human affairs and human conduct at preſent, or which makes men *then* to have been a different kind of beings from what they are now. Our author adds; the ſhort conſideration, which, independently of every other, convinces me, that there is no ſolid foundation in Mr. Hume's concluſion, is the following: when a theorem is propoſed to a mathematician, the firſt thing he does with it is to try it upon a ſimple caſe; and if it produce a falſe reſult, he is ſure that there muſt be ſome miſtake in the demonſtration. Let us proceed in this way with what may be called Mr. Hume's theorem. "If 12 men, whoſe probity and good ſenſe I had long known, ſhould ſeriouſly and circumſtantially relate to me an account of a miracle wrought before their eyes, and in which it was impoſſible that they ſhould be deceived; if the governor of the country, hearing a rumour of this account, ſhould call theſe men into his preſence, and offer them a ſhort propoſal, either to confeſs the impoſture, or ſubmit to be tied up to a gibbet; if they ſhould refuſe with one voice to acknowledge that there exiſted any falſhood or impoſture in the caſe; if this threat were communicated to them ſeparately, yet with no different effect; if it was at laſt executed; if I myſelf ſaw them, one after another, conſenting to be racked, burnt, or ſtrangled, rather than give up the truth of this account; ſtill, if Mr. Hume's rule be my guide, I am not to believe them. Now I undertake to ſay, that there exiſts not a ſceptic in the world who would not believe them; or who would defend ſuch incredulity."

Having explained the nature and evinced the credibility of miracles in general, we might take occaſion to illuſtrate the evidence which the miracles, that are recorded by the founders and advocates of Chriſtianity, afford in atteſtation of its truth and divine origin. Admitting the credibility of miracles in general, and of the Chriſtian miracles in particular, we might allege many direct, collateral, and preſumptive arguments in proof of their reality. The miracles which the New Teſtament records, are in their own nature and deſign worthy of the wiſdom, power, and benevolence to which they are aſcribed. If we conſider theſe miracles in themſelves, in their number and variety as well as their nature, in the ſtate and circumſtances of thoſe who were the objects of them, in the unoſtentatious and yet public manner of their being wrought, in the multitude and alſo the diſpoſition and character of thoſe who witneſſed them, in the extent and permanence of their effects, and in their connection with the reception and prevalence of the religion which they were intended to introduce and eſtabliſh, we cannot queſtion their reality: we cannot diſcover any traces of colluſion and deceit: we cannot heſitate in allowing them to be ſuch as the evangelical hiſtorians have deſcribed and recorded. As for the hiſtorians themſelves, their character and conduct, their labours and ſufferings undergone and endured in atteſtation to the truth of the facts which they relate, and the death which they preferred to the infamy of renouncing their belief of them, evince, in the moſt ſatisfactory manner, their integrity, and preclude every ſuſpicion of fraud and impoſture. This teſtimony, tranſmitted to us with every attendant circumſtance of credibility, claims our confidence, and whilſt we believe the reality of the miracles which they record, we cannot demur in tracing the religion which, by their writings and teaching, they have communicated to the world, to a divine origin. But we muſt deſiſt from enlarging, and refer our readers to Price's Four Diſſertations, Diſſ. 4. Paley's View of the Evidences of Chriſtianity, vol. i. Adams's Eſſ. on Miracles. Biſhop Douglas's Criterion. Campbell's Diſſertation on Miracles. See CHRISTIAN *Religion*, REVELATION, *New* TESTAMENT, and other ſimilar articles in the Cyclopædia.

The Romans attribute miracles to their emperors Adrian and Veſpaſian. The church of Rome abounds in miracles: if we believe their writers, ſome of their monks have wrought more miracles than all the apoſtles; and this without any viſible neceſſity for them.

Mr. Hume has confronted the miracle of Veſpaſian related by Tacitus, that performed in a Spaniſh church, and related by cardinal de Retz, and the cures ſaid to be performed at the tomb of the abbé Paris, in the early part of the laſt century, with thoſe of the New Teſtament. With reſpect to the latter miracles, we obſerve, that the patients who frequented the abbé's tomb were ſo affected with their devotion, their expectation of relief, the place, the ſolemnity, and above all, by the ſympathy of the ſurrounding multitude, that many of them were thrown into violent convulſions, which convulſions, in certain inſtances, produced a removal of diſorders, depending upon obſtruction. The above account may now be admitted with leſs difficulty, becauſe the ſame or ſimilar effects have been experienced in the operations of *animal magnetiſm*. See on the ſubject of theſe miracles, Douglas's Criterion.

As full as the Romiſh church has pretended to be of ſaints, it has been a rule with them, that none ſhould be ever canonized till there be a good proof of their having wrought miracles. So that were all thoſe allowed to be good miracles, and to have happened out of the common order of nature, they are ſo numerous, that one would be tempted to think there was no order or law of nature at all.

Some Proteſtant writers have maintained, that the power of working miracles was exerciſed in the Chriſtian church during the three or four firſt centuries; in proof of which they allege that of the thundering legion, &c. But Dr. Middleton, in his Free Inquiry into the miraculous Powers, which are ſaid to have ſubſiſted in the Chriſtian church, &c. has maintained a very different opinion. And it muſt be acknowledged, that the evidence of the facts is, to ſay the leaſt of it, very doubtful.

The many and ſtupendous miracles which are ſaid to have been wrought by the Chriſtian miſſionaries, who were ſent to convert the barbarous nations, in the eighth century, have loſt, in our times, the credit they obtained in former ages.

St. Auguſtine is a ſtrong advocate for miracles. He mentions ſeveral, of which he was an eye-witneſs; and others, of which he was informed by thoſe that were. In the ſingle city of Hippo, he tells us there were ſeventy miracles wrought in the ſpace of two years, on the building of a chapel in honour of St. Stephen. There are thoſe, however, who ſet aſide the authority of all miracles; thinking it unbecoming the wiſdom of God to eſtabliſh ſuch laws, as that he ſhould find it frequently neceſſary to ſuperſede. And as the former, from the avowed authority of ſome miracles, fetch an argument for the truth of all, pleading thoſe which are allowed as well as thoſe which are queſtioned; ſo theſe allege the falſe ones very unfairly, as concluſions againſt all.

MIRADOUX, in *Geography*, a town of France, in the department of the Gers, and chief place of a canton, in the diſtrict of Lectoure; 7 miles N.E. of Lectoure. The place contains 1655, and the canton 6343 inhabitants, on a territory of 157½ kiliometres, in 12 communes. N. lat. 44°. E. long. 0° 50′.

MIRAFLORES, a town of South America, in the province of Tucuman, on the Salado; 80 miles N.N.E. of St. Miguel de Tucuman.—Alſo, a town of Peru, in the audience of Lima; 8 miles S. of Lima.

MIRAGE, the name given by the French ſailors to an optical phenomenon, on which M. Monge read a memoir to the inſtitute at Cairo, during the French invaſion of Egypt. It often happens at ſea, that a ſhip ſeen at a diſtance appears as if painted in the ſky, and not to be ſupported by the water. A ſimilar effect was obſerved by the French in the courſe of their march through the deſert: the villages ſeen at a diſtance ſeemed to be built on an iſland in the middle of a lake. In proportion as they approached, the apparent ſurface of the water became narrower; when they were only at a ſmall diſtance, it diſappeared, and the ſame illuſion began, in regard to the next village. M. Monge aſcribes this effect to a diminution of the denſity of the lower ſtratum of the atmoſphere. This diminution in the deſert is produced by the increaſe of heat, ariſing from that communicated by the rays of the ſun to the ſand, with which this ſtratum is in immediate contact. At ſea it takes place when, by particular circumſtances, ſuch as the action of the wind, the lower ſtratum of the atmoſphere holds in ſolution a greater quantity of water than the other ſtrata. In this ſtate of things the rays of light, which come from the lower parts of the heavens, having arrived at the ſurface that ſeparates the leſs denſe ſtratum from thoſe above it, do not paſs through that ſtratum, but are reflected, and paint in the eye of the obſerver an image of the heavens, which appearing to him to be below the horizon, he takes it for water, when the phenomenon occurs at land. If he is at ſea, he thinks he ſees in the heavens all the objects which float on that part of the ſurface occupied by the image of the heavens. This phenomenon has been conſidered and explained by ſeveral Engliſh philoſophers. See *Horizontal* REFRACTION.

MIRAGOANE, in *Geography*, a town on the north ſide of the ſouth peninſula of the iſland of St. Domingo, and ſouth ſide of the bight of Leogane, at the head of a bay of its name; 15 miles W. of Petit Goave.

MIRALETUS, in *Ichthyology*, a name given to the ſpecies of ray, commonly called by others *raja oculata*. See Raja *Miraletus*.—Alſo, a name given by Bellonius and others to the Raja *Oxyrinchus*; which ſee.

MIRAMACHI, or Mirachi, in *Geography*, a port, bay, and river, on the north coaſt of New Brunſwick. The port is at the entrance of the bay. In the river there is a ſalmon fiſhery.

MIRAMBEAU, a town of France, in the department of the Lower Charente, and chief place of the diſtrict of Jonſac; 12 miles S. of Pons. The place contains 2170, and the canton 15,117 inhabitants, on a territory of 242½ kiliometres, in 19 communes.

MIRANA, a ſmall iſland in the North Pacific ocean. N. lat. 62° 35′. E. long. 190° 34′.

MIRANDA, a town of Spain, in Navarre; 13 miles S.E. of Eſtalla.—Alſo, a town of Naples, in the country of Moliſe; 11 miles W. of Moliſe.

Miranda *de Corvo*, a town of Portugal, in the province of Beira, containining about 2700 inhabitants; 15 miles S.E. of Coimbra.

Miranda *de Duero*, a town of Portugal, in the province of Tras-los-Montes, ſituated in a barren mountainous country on the Duero, on the frontiers of Spain; the ſee of a biſhop. It is but a poor mean town; 28 miles S.E. of Braganza. N. lat. 41° 24′. W. long. 5° 56′.

Miranda *d'Ebro*, a ſmall town of Spain, in Old Caſtile, beautifully ſituated on the Ebro, over which is a noble bridge of eight arches. It contains a large ſquare, embelliſhed with fountains. It is environed by mountaine, on whoſe brow are the remains of a caſtle, and the ruins of ſeveral towers, which formerly guarded acceſs to it. A copious ſtream flows from the mountain, which ſerves to work ſeveral mills in its vicinity. The town was erected into an earldom, in the 14th century, by Henry IV., in favour of Don Diego de Zuniga, and is now governed by its alcade; 32 miles N.E. of Burgos.

MIRANDE, a town of France, and principal place of a diſtrict, in the department of the Gers. The place contains 1558, and the canton 10,316 inhabitants, on a territory of 292½ kiliometres, in 49 communes. N. lat. 43° 31′. E. long. 0° 28′.

MIRANDELA, a town of Portugal, in the province of Tras-los-Montes; 30 miles S.W. of Braganza. N. lat. 41° 25′. W. long. 6° 58′.

MIRANDOLA, *Duchy of*, a ſmall principality of Italy, almoſt ſurrounded by the duchy of Mantua. This principality ſhared the fate of Modena, and became a part of the Ciſalpine republic, now the kingdom of Italy.—Alſo, a city of Italy, in the department of Panaro; lately capital of a duchy united with Modena, ſtrong, and defended by a citadel; the ſee of a biſhop. It contains, beſides the cathedral, 15 churches; 14 miles N.N.E. of Modena. N. lat. 44° 50′. E. long. 11° 5′.

MIRANO, a town of Italy, in the Paduan, on the river Muſan, containing about 3120 inhabitants; 12 miles N.E. of Padua.

MIRAPORVOS, a rocky iſlet among the Bahamas, near the ſouth-weſt coaſt of Crooked iſland. N. lat. 21° 55′. W. long. 74° 46′.

MIRAPOUR, a town of Bengal; 30 miles E. of Burdwan.—Alſo, a town of Hindooſtan, in the circar of Schaurunpour; 15 miles N. of Merat.

MIRASOLE, a town of Italy, in the department of the Mincio; 9 miles S.S.E. of Mantua.

MIRAVALLES, a town of Spain, in the province of Biſcay; 9 miles S. of Bilboa.

MIRAVEL, a town of Spain, in New Caſtile, on the ſide of a hill, defended by a ſtrongly fortified caſtle; 12 miles S.S.W. of Piacencia.

MIRAW, or Merow, a town of Moravia, in the circle of Olmutz; 22 miles N.W. of Olmutz.

MIRAY Bay, a bay on the coaſt of the iſland of Cape Breton. Large veſſels may go up ſix leagues, have good anchorage, and lie ſecure from all winds. N. lat. 46° 5′. W. long. 59° 49′.

MIRBELIA, in *Botany*, named by the writer of this article, in honour of Monſ. Mirbel, Superintendant of the botanic garden at Malmaiſon, member of various learned academies, and author of ſeveral excellent works on the anatomy and phyſiology of vegetables. His elucidations of their reticulated ſtructure having excited much attention, the preſent plant, remarkable for the reticulated aſpect of its leaves, was judged more particularly ſuited to perpetuate his name. Smith in Sims and Konig's Annals of Botany, v. 1. 511. Brown in Ait. Hort. Kew. ed. 2. v. 3. 21.—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, ſect. 4. Juſſ.

Gen. Ch. *Cal.* Perianth inferior, bell-ſhaped, two-lipped, without appendages; ſomewhat angular at the baſe: upper lip of two abrupt, oblique, parallel ſegments; lower of three lanceolate, acute, equal ones, dilated at the baſe, rather ſhorter than the upper: permanent. *Cor.* papilionaceous, of five petals, about twice the length of the calyx; ſtandard inverſely heart-ſhaped, recurved, with a ſhort, broad, linear claw; wings lanceolate-oblong, rather ſhorter than the ſtandard, with a tooth at the upper edge; keel ſhorter than the wings, of two cohering, half-ovate petals, with linear claws. *Stam.* Filaments ten, awl-ſhaped, equal, contained within the keel, inſerted into the receptacle; anthers roundiſh, incumbent. *Piſt.* Germen ſuperior, ovate-oblong; ſtyle thick and ſhort, bent upwards; ſtigma capitate. *Peric.* Legume heart-ſhaped, pointed, tumid, with a groove at each ſide, of two cells, at length ſeparating from each other; the partition double, from both the inflexed margins of each valve. *Seeds* ſolitary, attached to the lower edge of each valve, oval, compreſſed, with a circular bordered ſcar.

Eſſ. Ch. Calyx five-cleft, two-lipped. Corolla papilionaceous. Style reflexed. Stigma capitate. Legume of two cells, tumid, with two ſeeds; the partition double.

1. M. *reticulata*. Reticulated Mirbelia. Sm. as above. Tr. of Linn. Soc. v. 9. 265. Venten. Malmaiſ. t. 119. (Pultenæa rubiæfolia; Andr. Repoſ. t. 351.)—Leaves linear-lanceolate, veiny.—Native of the neighbourhood of Port Jackſon, New South Wales. *Dr. White*. It was very early raiſed from ſeeds in this country, and is kept in the green-houſe, in light ſandy peat earth, with little water in winter, but as much air as poſſible; flowering from May to Auguſt, the ſecond year after being ſown. The *ſtem* is ſhrubby, much branched, and very buſhy, ſmoothiſh, leafy, angular; the branches moſtly ternate, ſtraight, and ſpreading. *Leaves* almoſt always three in a whorl, rarely oppoſite only, on very ſhort broad footſtalks, ſpreading, an inch long, linear-lanceolate, ſometimes elliptical and ſhortened, ſmooth, revolute, ſlightly crenate or wavy, tipped with a ſpine, furniſhed with one rib and many tranſverſe veins; paler and moſt opaque beneath. *Flowers* in little axillary and terminal tufts, on ſhort *ſtalks*; with a pair of linear *bracteas* in the middle of each ſtalk. *Corolla* light purple, with a radiating reddiſh ſtain at the baſe of the ſtandard. *Legume* a quarter of an inch long, grey, ſmooth, tranſverſely veined. It is curious that this ſhrub ſhould ever have been

miſtaken for a *Rubia*, which was actually the caſe before it flowered.

2. M. *dilatata*. Lobed-leaved Mirbelia. Brown in Ait. Hort. Kew. n. 2.—Leaves wedge-ſhaped, dilated and three-cleft at the extremity.—Found by Mr. Brown on the ſouth-weſt coaſt of New Holland. This ſpecies was ſent to Kew, in 1803, by Mr. Peter Good, and flowers in the green-houſe in May and June. The *ſtem* is ſhrubby. We have ſeen no ſpecimen, nor is any account given of the colour of the *flowers*.

MIRCHOUR, in *Geography*, a town of Hindooſtan, in Golconda; 20 miles S S.E. of Canoul.

MIREBALAIS, an interior town in the French part of the iſland of St. Domingo; 30 miles N. of Port au Prince.

MIREBEAU, a town of France, in the department of the Coté d'Or, and chief place of a canton, in the diſtrict of Dijon; 13 miles N.E. of Dijon. The place contains 1100, and the canton 8578 inhabitants, on a territory of 257½ kiliometres, in 22 communes.—Alſo, a town of France, in the department of the Vienne, and chief place of a canton, in the diſtrict of Poitiers; 12 miles N.N.E. of Poitiers. The place contains 2021, and the canton 7096 inhabitants, on a territory of 192½ kiliometres, in 14 communes. N. lat. 46° 47′. E. long. 0° 16′.

MIRECOURT, a town of France, and principal place of a diſtrict, in the department of the Voſges; 13 miles N.W. of Epinal. The place contains 5084, and the canton 11,757 inhabitants, on a territory of 175 kiliometres, in 28 communes. N. lat. 43° 18′. E. long. 6° 13′.

MIREMONT, a town of France, in the department of the Dordogne; 10 miles S.W. of Montignac.—Alſo, a town of France, in the department of the Upper Garonne; 7 miles S.E. of Muret.

MIRENI, a town of Walachia, on the Ardgis, near its confluence with the Danube; 30 miles S. of Buchareſt.

MIREPOIX, a town of France, and principal place of a diſtrict, in the department of the Arriege; 18 miles N.E. of Taraſcon. The place contains 2819, and the canton 13,589 inhabitants, on a territory of 335 kiliometres, in 37 communes. N. lat. 43° 5′. E. long. 1° 56′.

MIREVELT, Michael Janson, in *Biography*, a portrait painter, born at Delft in 1568. The extreme reſemblance of his pictures, the freſhneſs of their colour, and the neatneſs of their execution, procured Mirevelt a moſt extraordinary influx of profeſſional occupation; ſo much, that he is reported by Houbraken to have painted 5000 portraits: for the ſmalleſt of which, merely a head, he was paid about 15*l.* ſterling; and thoſe of larger ſizes in proportion.

He certainly was a very ingenious artiſt, and, where the talents of Rubens were unknown, muſt have appeared a luminary of his day; but the ſuperior taſte and freedom exhibited in the works of the latter, and afterwards in thoſe of his extraordinary pupil Vandyke, render the works of Mirevelt tame and inſipid. He died in 1641.

Mirevelt, Peter, ſon of the former, and a painter of the ſame taſte, ſtyle, and ſtudy. By many he is thought fully equal to his father.

MIRGONDA, in *Geography*, a town of Hindooſtan, in Dowlatabad; 25 miles S.W. of Beder.

MIRGOROD, a town of Ruſſia, in the government of Kiev; 100 miles E.S.E. of Kiev. N. lat. 50°. E. long. 32° 54′.

MIRIAM, in *Sacred Hiſtory*, the ſiſter of Aaron, and a propheteſs. When Moſes had finiſhed his pious effuſions in the firſt hymn on record, after the ſafe paſſage of the Red-ſea, at the head of the whole people of Iſrael, juſt eſcaped from bondage, he was ſeconded on this occaſion by Miriam, "who took a timbrel in her hand, and all the women went out after her with timbrels and with dances, and Miriam anſwered them, Sing ye to the Lord," &c.

Here is an early inſtance of women being permitted to bear a part in the performance of religious rites, as well as of vocal muſic being accompanied by inſtrumental, and by what was called *dancing*, which was probably nothing more than moving or marching in regulated ſteps and geſture.

MIRJANAGORE, in *Geography*, a town of Bengal; 15 miles S. of Moorley.

MIRICK, Cape, a cape on the weſt coaſt of Africa. N. lat. 19°. W. long. 6° 5′.

MIRIOSITO, a town of European Turkey, in Romania; 24 miles N.E. of Gallipoli.

MIROBRIGA, in *Ancient Geography*, a town of Spain, the ſcite of which is now occupied by Cividad *Rodrigo*; which ſee. This town of Leon was built in the reign of Ferdinand II., about the 13th century, and was made a rampart againſt Portugal. It is ſituated in a flat and tolerably beautiful country, producing abundance of the neceſſaries of ſubſiſtence. Its plains extend five leagues to the north, and are terminated by a chain of mountains, which are branches of thoſe of Bejar, Pena de Francia, and Geta. The town is fortified, and is the ſee of a biſhop. It has ſeven gates, and its ſtreets are tolerably regular. Its population amounts to about 10,000 inhabitants. It has a cathedral, a collegiate church, ſix pariſh churches, five convents of monks, four of nuns, one ſeminary, and two hoſpitals. The river Ague paſſes cloſe to the town. The ancient Roman aqueduct is deſtroyed; but the inhabitants have conſtructed another, which conveys the water requiſite for the town and watering of the trees, through the ſpace of three leagues. There are alſo ſome fountains out of the walls; and in the extent of the dioceſe are ſome medicinal waters, copper, lead, iron, and even gold mines.

MIROPEL, in *Geography*, a town of the duchy of Warſaw; 40 miles W.N.W. of Berdiczow.

MIROPOLBE, a town of Ruſſia, in the government of Cherkov; 88 miles N.N.W. of Charkov. N. lat. 51° 22′. E. long. 34° 34′.

MIROUETTE, in the *Manege*, is uſed for a dapple-bay.

MIROW, in *Geography*, a town of the duchy of Mecklenburg; 44 miles N. of Spandau.

MIROWITZ, a town of Bohemia, in the circle of Prachatitz; 18 miles N.N.E. of Strakonitz.

MIRROR, a *ſpeculum*, or body, which exhibits the images of objects preſented to it by reflection.

The uſe of mirrors is very ancient. Mention is made of brazen mirrors, or looking-glaſſes, in Exodus, xxxviii. 8. where Moſes is ſaid to have made a "brazen laver, or *baſon*, of the looking-glaſſes of the women continually aſſembled at the door of the tabernacle." It is true ſome modern commentators will not allow the mirrors themſelves to have been braſs; but of glaſs, only ſet or framed in braſs. But the moſt learned among the rabbins do all allow, that in thoſe times the mirrors made uſe of by the Hebrew women in dreſſing their heads were of metal; and that the devout women, mentioned in this paſſage, made preſents to Moſes of all their mirrors, to make the brazen laver. See the Jeſuit Bonfrerius's comment on this text. See Glass.

It might likewiſe be proved, that the ancient Greeks made uſe of brazen mirrors, from divers paſſages among the ancient poets.

Mirror, in the more confined ſenſe of the word, is peculiarly uſed to ſignify a ſmooth ſurface of glaſs, tinned and quickſilvered on the back-ſide; which exhibits the images of objects oppoſed to it. See Looking-Glass.

Mirror, in *Catoptrics*, denotes any poliſhed body impervious to the rays of light, and which of conſequence reflects them equally.

Thus water in a deep well or river, and ſmooth poliſhed metals, are ranked among the number of mirrors.

In this ſenſe, the doctrine of mirrors makes the ſubject of catoptrics.

Mirrors are made either of glaſs, coated with an amalgam of mercury and tin, or of metal, as of platina, of ſilver, or of an alloy of copper and tin, to which a little arſenic and ſilver are ſometimes added. Mirrors of metal are more perfect than thoſe of glaſs, becauſe they are free from the inconvenience of a double reflection; but they are more expenſive, and are liable to tarniſh. Where a large mirror is required, with only a weak reflection, we may employ a ſingle ſurface of glaſs, the back of the piece being covered with a black coating of ſome ſubſtance differing little from glaſs in its refractive denſity, by means of which the ſecond reflection is avoided. See Speculum.

The doctrine of mirrors is founded on the following general principles.—1. Light reflected from any mirror, or ſpeculum, makes the angle of incidence equal to that of reflection; which ſee demonſtrated under the word Reflection.

Hence, a ray of light, as H B, (*Plate* XIII., *Optics*, *fig.* 1.) falling perpendicularly on the ſurface of a ſpeculum D E, will be reflected back upon itſelf: as we find by experience it actually is.

From the ſame point of a mirror, therefore, B, there cannot be ſeveral rays reflected on the ſame point; ſince, in that caſe, all the angles of incidence muſt be equal to the ſame angle of reflection C B G, and therefore to each other; which is abſurd. Nor can the ray A B be reflected to two or more points; ſince, in that caſe, all the angles of reflection would be equal to the ſame angle of incidence A B F; which is likewiſe abſurd.

2. From every point of a mirror, are reflected rays thrown on it from every point of a radiant object. Since then rays coming from different parts of the ſame object, and ſtriking on the ſame point of the mirror, cannot be reflected back to the ſame point; the rays which flow from different points of the ſame radiating object are again ſeparated after reflection: ſo that each point ſhews whence it came.

Hence it is, that the rays reflected from mirrors exhibit the objects to view. Hence alſo, it appears, that rough uneven bodies muſt reflect the light in ſuch a manner as that rays coming from different points will be blended or thrown confuſedly together.

Mirrors may be divided into *plane*, *concave*, *convex*, *cylindrical*, *conical*, *parabolical*, and *elliptical*.

Mirrors, *Plane*, are thoſe which have a plane or flat ſurface.

Theſe, by a popular name, we call *looking-glaſſes*.

For the manner of making plane mirrors, or ſpecula, ſee Looking-Glass.

Mirrors, *Laws and Phenomena of Plane*. 1. In a plane mirror, every point of an object, as A, (*Plate* XIII. *Optics*, *fig.* 2.) is ſeen in the interſection B, of the cathetus of incidence A B, with the reflected ray C B.

Let C D and F E be two reflected rays, correſponding to the incident rays A D, A E: then, ſince the vertical angle C D G = E D B; and the angle of reflection C D H = A D G the angle of incidence, A D H will be = C D G = E D B. And H E F = D E B, and H E F = A E G, therefore D E B = A E G. But A E G + A D E, as well as B E D + B D E, are leſs than two right angles; conſequently the reflected rays F E and C D meet in B, and in the equiangular triangles A D E and D E B, having D E common, D B = D A. Wherefore, ſince the angle B D G = C D H = A D G, the angles at G will be equal, and conſequently A B perpendicular to H G: *i. e.* A B is the cathetus of incidence: and, therefore, the reflected rays F E and C D meet with the cathetus of incidence A B in the ſame point B: and the radiant point A is ſeen in B.

Hence, 1. As all the reflected rays meet with the cathetus of incidence in B; by whatever reflected ray the radiant point A be ſeen, it will ſtill appear in the ſame place. Conſequently, any number of perſons, viewing the ſame object in the ſame mirror, will all ſee it in the ſame place behind the mirror. And hence it is, that the ſame object has only one image, and that we do not ſee it double with both eyes.

Hence, alſo, the diſtance of the image B, from the eye C, is compounded of the ray of incidence A D, and the reflected ray C D: and the object A radiates reflectedly in the ſame manner as it would do directly, were it removed into the place of the image.

2. The image of a radiant point, B, appears juſt ſo far behind a plane mirror, as the radiant point is before it: becauſe A G = B G.

Hence, if the mirror H G be placed horizontally, the point A will ſeem ſo much below the horizon, as it is really elevated above it; conſequently, erect objects will appear as if inverted; and therefore men ſtanding on their feet, as if on their heads. Or, if the mirror be faſtened to the ceiling of a room, parallel to the horizon, objects on the floor will appear above the ceiling as much as they really are below it; and inverted.

3. In a plane mirror the images are perfectly ſimilar, and equal to the objects; for every point of the object is ſeen in the cathetus of incidence, and the mirror biſects that part of it which is intercepted between the radiant point and its image. And hence the uſe of mirrors as looking-glaſſes.

4. In a plane mirror, things on the right hand appear as on the left; and *vice verſâ*.

Hence, alſo, we have a method of meaſuring any inacceſſible altitude, by means of a plane mirror. Thus, the mirror being placed horizontally in C (*fig.* 3.), retire from it till ſuch time as the top of the tree be ſeen in it. Meaſure the height of the eye D E, the diſtance of the ſtation from the point of reflection E C, and the diſtance of the foot of the tree from the ſame: then to E C, C B, and E D, find a fourth proportional A B. This is the altitude ſought.

5. If a plane mirror A E (*fig.* 4.) be inclined to the horizon E H, in an angle of 45 degrees, an object C B perpendicular to it will appear parallel, I K, and the horizontal object L B perpendicular in M K.

For produce B C till it meets the mirror in A; then as H is a right angle, and E = 45°, A will be = 45°: therefore, if from B be drawn B G perpendicular to the mirror A E, A B G will be = 45°; and A G = G B. Let G K be = G B, and the image of B will be in K; draw K A, and becauſe K G = G A and G a right angle, K will be = 45°, and therefore K A parallel to E H. In the ſame manner it may be ſhewn, that the point C would appear in I, and conſequently the image I K will be parallel to the horizon E H; and *vice verſâ*. Hence, the eye being placed beneath the mirror, the earth will appear perpendicularly over it: or if placed over the earth will appear perpendicularly under it. Hence, alſo, a globe deſcending down a plane a little inclined, may, by means of a mirror, be exhibited as mounting up a vertical plane, to the great ſurprize of ſuch as are unacquainted with catoptrics. And hence we have a method of repreſenting ourſelves as if flying: for a mirror inclined to the horizon under an angle of 45°, we have obſerved, will repreſent vertical objects as if horizontal; conſequently, a large mirror being ſo diſpoſed, as you advance towards it, you will ſeem to move horizontally; and nothing will be wanting to the appearance of flying, but to ſtrike out the arms and legs. It muſt be added, however, that as the floor is elevated along with you, your feet will ſtill be ſeen to walk as along a vertical plane. To deceive the eye entirely, therefore, it muſt be kept from the feet.

6. If the object A B (*fig.* 5.) be parallel to the ſpeculum C D, and equally diſtant from it, with the eye; the reflecting line C D will be half the length of the object A B.

Let the eye O be in the object A B, or let the ſpectator view himſelf in a glaſs. Since A B is parallel to C D, the image G H will be parallel to it likewiſe. From O let fall O L perpendicular to C D, which, continued to I, will be alſo perpendicular to G H; therefore, O L and O I will be the reſpective altitudes of the triangles O C D and O G H, which triangles, having the angles $x = o$ and $u = y$, are ſimilar: conſequently C D : G H :: O L : O I; and as O L = $\frac{1}{2}$ O I, by art. 2. above, C D will be = $\frac{1}{2}$ G H = $\frac{1}{2}$ A B.

And hence, to be able to ſee the whole body in a plane mirror, its height and breadth muſt be half your height and breadth. Conſequently the height and breadth of any object to be ſeen in a mirror being given, we have alſo the height and breadth of the mirror in which the whole object will appear, at the ſame diſtance with the eye.

Hence, alſo, as the length and breadth of the reflecting part of the ſpeculum are ſubduple of thoſe of the object to be reflected; the reflecting part of the mirror is to the ſurface reflected in a ſubquadruple ratio. Conſequently, the reflecting portion being a conſtant quantity, if in any place you ſee the whole body in a mirror, you will ſee it in every other place, whether you approach nearer or recede farther from it.

7. If an object A B (*fig.* 6.) be parallel to the mirror I F; the length of the reflected line A B is to the reflecting part of the ſpeculum C D as the ſum of the incident and reflected rays B D + D O to the reflected ray O D; or as the ſum of the diſtances of the eye and of the object from the ſpeculum, *viz.* O I + B F to the diſtance of the eye O I. For G E : C D :: O E : O D; *i. e.* becauſe G E = A B, and D E = D B, A B : C D :: O D + D B : O D. Moreover, O E : O D :: O K : O I, therefore G E : C D :: O K : O I; conſequently, ſince I K = F E = B F, and G E = A B, we ſhall have A B : C D :: O I + B F : O I.

8. A ſpectator will ſee his own image as far beyond the ſpeculum as he is before it; and as he moves to or from the ſpeculum, his image will, at the ſame time, move towards or from him on the other ſide, but apparently with a double velocity, becauſe the two motions are equal and contrary. In like manner, if while the ſpectator is at reſt, an object be in motion, its image behind the ſpeculum will be ſeen to move at the ſame rate. And if the ſpectator moves, the images of objects that are at reſt will appear to approach or recede from him, after the ſame manner as when he moves towards real objects.

9. If ſeveral mirrors, or ſeveral fragments or pieces of a mirror, be all diſpoſed in the ſame place, they will only exhibit an object once.

10. If two plane mirrors, or ſpecula, meet in any angle, the eye, placed within that angle, will ſee the image of an object placed within the ſame, as often repeated as there may be catheti drawn determining the places of the images, and terminated without the angle.

Hence, as the more catheti, terminated without the angle, may be drawn as the angle is more acute; the acuter the angle, the more numerous the images. Thus Z. Traber found, at an angle of one-third of a circle, the image was repreſented twice, at $\frac{1}{4}$ thrice, at $\frac{1}{5}$ five times, and at $\frac{1}{12}$ eleven times.

Farther, if the mirrors be placed upright, and ſo contracted; or if you retire from them, or approach to them, till the images reflected by them coaleſce, or run into one, they will appear monſtrouſly diſtorted: thus, if they be at an angle ſomewhat greater than a right one, the image of your face will appear with only one eye; if the angle be leſs than a right one, you will ſee three eyes, two noſes, two mouths, &c. At an angle ſtill leſs, the body will have two heads. At an angle ſomewhat greater than a right one, at the diſtance of four feet, the body will be headleſs, &c. Again, if the mirrors be placed, the one parallel to the horizon, the other inclined to it, or declined from it, it is eaſy to perceive that the images will be ſtill more romantic. Thus, one being declined from the horizon to an angle of 144 degrees, and the other inclined to it, a man ſees himſelf ſtanding with his head to another's feet.

Hence it appears, how mirrors may be managed in gardens, &c. ſo as to convert the images of thoſe near them into monſters of various kinds; and ſince glaſs mirrors will reflect the image of a lucid object twice or thrice, if a candle, &c. be placed in the angle between two mirrors, it will be multiplied an infinite number of times. On theſe principles are founded various catoptric machines, ſome of which repreſent objects infinitely multiplied and diſtorted; others infinitely magnified, and ſet at vaſt diſtances.

MIRRORS, *Burning.* See BURNING-*Glaſs.*

MIRRORS, *Convex,* are thoſe whoſe ſurface is convex.

Note, by *convex* ſurfaces, authors generally mean ſuch as are *ſpherically convex.*

Manner of preparing or making convex Specula, or *Mirrors.*—There are various methods uſed by divers artiſts; particularly as to the matter or compoſition for the ſilvering. One of the beſt that is known is given us by Wolfius, thus:

Melt one part of tin, another of biſmuth, together; and to the melted maſs add two parts of mercury: as ſoon as the mercury begins to evaporate into ſmoke (which it preſently does), the whole compoſt is to be thrown into cold water, and when well cooled the water decanted off. The mixture is then to be ſtrained through a linen cloth two or threefold; and what is thus ſeparated, poured into the cavity of a glaſs ſphere: this ſphere is to be turned gently round its axis till the whole ſurface is covered, the reſt being reſerved for future uſe.

If the ſphere were of coloured glaſs, the mirror will be ſo too. And in the ſame manner may conic, elliptic, cylindric, and other mirrors, be made.

How they may be made of metal, ſee under *Concave* MIRROR. See alſo SPECULUM.

MIRRORS, *Laws or Phenomena of Convex.* 1. In a ſpherical convex mirror H C I (*fig.* 7.), the reflected ray E M concurs with the cathetus of incidence D L, and the incident ray D N with the cathetus of reflection E L, between the tangent A B, and the centre L. For the perpendiculars, or catheti of incidence, obliquation, and reflection, are in the plane of reflection, and, therefore, in the plane which touches the ſpeculum in the point of incidence C; the tangent A C makes a right angle with the cathetus of obliquation F C; but the reflected ray E C, or C M, makes with it an acute angle *u*, and, therefore, falls between the tangent A C, and the cathetus of obliquation C L. Wherefore, ſince C L and D L meet in the centre L, the reflected ray E M ought to interſect the cathetus of incidence D L between the tangent and the centre. In the ſame manner it is ſhewn, that the incident ray D N ought to meet with the cathetus of reflection between the tangent and the centre. Hence, the image of a radiant point appears between the centre and the tangent, becauſe it appears in the concourſe of the reflected ray and cathetus of incidence.

2. In a ſpherical convex mirror, the cathetus of incidence D L (*fig.* 7.) is to D B, the diſtance of the object from the tangent at the point of reflection C, as L M, the diſtance of the image from the centre, is to M P, the diſtance of the image from the tangent. Since $o = x$, and $x = m$, o will be equal to m, and, therefore, the right line C P biſecting the angle D C M, cuts the baſe D M into two parts, which are in the ſame proportion with the ſides; conſequently, D P : P M :: D C : C M; and if D F be drawn parallel to C M, u will be $= p$, and, as $u = y$, $p = y$, and D F = D C. Therefore, ſince D F (D C) : M C :: D L : M L, D L will be to M L :: D P : P M; and, therefore, D L : D P :: M L : P M. Hence, becauſe D L > D P, and M L > P M; and, therefore, M L much greater than R M, the diſtance of the image from the centre is greater, but from the tangent leſs than half the ſemidiameter; and the image is nearer to the tangent than the centre.

Hence, alſo, the diſtance of the object from the tangent is greater than that of the image, and, conſequently, the object is farther diſtant from the ſpeculum than the image.

3. If the arc B D (*fig.* 8.) intercepted between the point of incidence D, and the cathetus A B; or the angle C, formed in the centre of the mirror by the cathetus of incidence A C, and that of obliquation F C, be double the angle of incidence, the image B will appear on the ſurface of the ſpeculum.

4. If the arc intercepted between the point of incidence and the cathetus; or the angle C, formed in the centre of the mirror by the cathetus of incidence, and the cathetus of obliquation, be more than double the angle of incidence, the image will be without the mirror.

5. If the arc intercepted between the point of incidence, and the cathetus; or the angle, formed in the centre of the mirror by the cathetus of incidence, and that of obliquation, be leſs than double the angle of incidence, the image will appear within the ſpeculum.

6. In a convex mirror, a remoter point A (*fig.* 9.) is reflected from a point F, nearer the eye O, than any nearer point B in the ſame cathetus of incidence.

Hence, if the point of the object A be reflected from the point of the mirror F, and the point of the object B from the point of the mirror E; all the intermediate points between A and B will be reflected from the intermediate points of the ſpeculum between F and E; and, conſequently, F E will be the line that reflects A B.

Hence, alſo, a point of the cathetus B ſeems at a greater diſtance C *b* from the centre C, than a more remote one, A.

7. A nearer point B (*fig.* 10.) not in the ſame cathetus with a remoter H, is reflected to the eye O, from a nearer point of the ſpeculum, than the remoter H.

Hence, if the point of an object A be reflected from the point of a mirror C, and the point of the object B from the point of the ſpeculum D, all upon the ſame point O; all the intermediate points between A and B will be reflected from all the intermediate points between C and D. Conſequently, the image F G of the object B A is contained between the cathetus B E and A E.

8. In a ſpherical convex mirror the image is leſs than the object.

And hence the uſe of ſuch mirrors in the art of painting, where objects are to be repreſented leſs than the life.

9. In a convex mirror, the more remote the object the leſs its image; and, again, the ſmaller the mirror the leſs the image.

10. In a convex mirror, the right hand is turned to the left, and the left to the right; and magnitudes perpendicular to the mirror appear inverted.

11. The image of a right line, perpendicular to the mirror, is a right line; but that of a right line either oblique to the mirror, or parallel to it, is convex.

12. Rays reflected from a convex mirror diverge more than if reflected from a plane mirror.

Hence light, by being reflected from a ſpherical mirror, is weakened; and, conſequently, the effects of reflected light are weaker than thoſe of direct. Hence, alſo, myopes ſee remote objects more diſtinctly in a convex mirror, than they do directly.

Rays reflected from a convex mirror of a ſmaller ſphere diverge more than thoſe reflected from a larger. Conſequently, the ſight is more weakened, and its effects are leſs conſiderable in the former caſe than in the latter.

Mirrors, *Concave*, are thoſe whoſe ſurface is concave. Theſe are generally made of a mixed metal.

Note, by *concave*, authors commonly mean *ſpherically concave*.

Mirrors, *Manner of preparing or making Concave.* Firſt, a mould is to be provided for caſting them. In order to this, take clay well dried, pulverize and ſift it; mix it up with water, and then ſtrain or filter it; with this work up horſe-dung, and hair ſhred ſmall, till the maſs be ſufficiently tough; to which, on occaſion, may be added charcoal-duſt, or brick-duſt, well ſifted.

Two coarſe moulds are then prepared of a gritty ſtone, the one concave the other convex; which are to be ground by one another with wet ſand between, till ſuch time as the one perfectly fits the other. By this means, a perfect ſpherical figure is acquired.

The maſs, prepared before, is now to be extended on a table, by means of a wooden roller, till it be of a thickneſs proper for the mirror; and then being ſtrewed with brick-duſt to prevent its ſticking, it is laid over the convex mould, and ſo gets the figure of the mirror. When this is dry, it is covered with another lay of the ſame maſs; which once dried, both the covers, or ſegments of the clay, are taken off. The innermoſt of the two being laid aſide, the ſtone mould is anointed with a pigment prepared of chalk and milk, and the outer cover again put over it.

Laſtly, the joining being covered over with the ſame clay of which the cover is formed, the whole mould is bound together with an iron wire, and two holes are cut through the cover, the one for the melted matter of the mirror to be poured through, the other for the air to eſcape at, to prevent the mirror's being ſpoiled with bubbles.

The mould being thus prepared, eight parts of copper, one of Engliſh tin, and five of biſmuth, are melted together; a little of the mixture is taken out with a ladle, and if it be too red, when cold, more tin is put in; if too white, more copper; the maſs is then poured into the mould before prepared, and ſo aſſumes the figure of a mirror.

Some with ten parts of copper mix four of Engliſh tin, and a little antimony and ſal ammoniac, ſtirring the maſs about as long as any fumes ariſe in it: others have other compoſitions, many of which are deſcribed by Schottus and Zahnius.

The mirror, being thus caſt, is cemented to a wooden frame, and thus worked to and fro over the convex ſtone mould, firſt with water and ſand, and, laſtly, without ſand till it be fit for poliſhing; the ſtone mould is then covered with paper, and that is ſmeared over with tripoli duſt, and calx of tin, over which the mirror is worked to and fro till it has got a perfect poliſh. And in the ſame manner are glaſs mirrors poliſhed, excepting that the convex ſurface is there worked in the concave mould When the mirrors are very large, they are fixed on a table, and firſt ground with a gritty ſtone, then with pumice, then with fine ſand, by means of a glaſs cemented to a wooden frame; and, laſtly, they are rubbed with calx of tin, and tripoli duſt, on a wet leather.

For concave mirrors of glaſs, the mould is uſually made of alabaſter; the reſt is as in metal mirrors. See SPECULUM, GRINDING, and POLISHING.

MIRRORS, *Laws and Phenomena of Concave.* 1. If a ray, as K I (*fig.* 11.), fall on a concave mirror E I, under an inclination of 60 degrees, and parallel to the axis A B, the reflected ray I B will concur with the axis A B, in the pole of the glaſs B. Since $m = 60°$, n alſo will be $= 60°$, and becauſe K I is parallel to the axis A B, $i = 60°$, and $x = 60°$; therefore C B = C I, the radius. Conſequently the point B, in which the reflected ray I B concurs with the axis, is in the ſurface of the ſpeculum. If the inclination of the incident ray be leſs than 60 degrees, as that of E H, the reflected ray E F will concur with the axis at the diſtance B F, which is leſs than a fourth part of the diameter. Since $o = x$, and, on account of the parallels H E and A B, $o = y$, we ſhall have $x = y$, and, therefore, E F = F C; but C F + E F > E C, and C E = C B; therefore C F + E F > C B; conſequently C F > F B; *i. e.* F B is leſs than half the radius C B, or a fourth part of the diameter. And, univerſally, the diſtance of the point F, in which the ray H E concurs with the axis, from the centre C, is to half the radius C D in the ratio of the whole ſine, to the coſine of inclination. For by the laſt demonſtration it appears, that F E is = F C; therefore if from F a perpendicular F D be let fall on E C, L C will be = $\frac{1}{2}$ C E; but if C F be taken for the whole ſine, C D will be the ſine of the angle D F C, or the coſine of the angle D C F; *i. e.* of the inclination D E H; and, therefore, C F is to C D as the whole ſine is to the coſine of the inclination.

Hence it is inferred, by calculation, that in a concave ſpherical mirror, whoſe breadth ſubtends an angle of ſix degrees, parallel rays meet, after reflection, in a part of the axis leſs than the one thouſand four hundred fifty-ſeventh part of the radius; if the breadth of the concave mirror be 12, 18, 24, 30, 36 degrees; the part of the axis in which the parallel rays meet, after reflection, is leſs than $\frac{1}{363}$, $\frac{1}{169}$, $\frac{1}{89}$, $\frac{1}{56}$, $\frac{1}{36}$, the radius.

And on this principle it is, that burning glaſſes are formed.

For ſince the rays diffuſed through the whole ſurface of the concave mirror, after reflection, are contracted into a very ſmall compaſs, the light and heat of the parallel rays muſt be prodigiouſly increaſed thereby; *viz.* in a duplicate ratio of the breadth of the mirror, and the diameter of the circle in which all the rays are collected; and ſince the ſun's rays are, as to any purpoſes on earth, parallel, it is no wonder that concave mirrors ſhould burn with ſo much violence.

From this ſame principle is likewiſe deduced a method of repreſenting the images of objects in a dark room; which ſee under CAMERA *obſcura.*

2. A lucid body being placed in the focus F, of a concave mirror E I (*fig.* 12.), the rays, after reflection, become parallel. For parallel rays are by reflection united in a focus; but if the luminous body be in the focus F, that which was before the reflected ray E F will be now the incident ray, and *vice verſâ;* therefore the reflected ray E H will now become parallel to the axis A B, and all the reflected rays parallel to one another.

Hence an intenſe light may be projected to a vaſt diſtance, by a lighted candle, &c. placed in the focus of a concave mirror.

Hence alſo, if the parallel rays be received by another concave mirror, they will again concur in its focus, and burn.

Zahnius mentions an experiment of this kind made at Vienna, where two concave mirrors, the one ſix, the other three feet diameter, being placed about twenty-four feet apart, with a live coal in the focus of the one, and a match and tinder in the other, the rays of the coal lighted the tinder.

3. If a lucid body be placed between the focus F (*fig.* 13.) and the mirror H B C, the rays, after reflection, will diverge from the axis B A. If the lucid body were in F, the reflected ray C E would be parallel to the axis A B, and, therefore, it would conſtantly preſerve the ſame diſtance from the axis. But ſince D C G > F C G, K C G will be > E C G; and, therefore, C K will fall beyond C E, and cannot be parallel to the axis, but muſt continually diverge from the axis, the diſtance from it increaſing: whence it follows, that light is weakened by reflection.

4. If a lucid body be placed between the focus F, and the centre G, as in I, the rays, after reflection, will meet in the axis beyond the centre. In this caſe I H G < F H G, and, therefore, G H A < G H L; conſequently, the reflected ray H A recedes from the parallel towards the axis, and its diſtance from the axis will be continually diminiſhed, till at length it concurs with the axis. But if the lucid body be placed in A, that which was before the reflected ray A H will now become the incident ray, and *vice verſâ.* If, therefore, the lucid body be placed beyond the centre G, the rays after reflection will concur with the axis between the focus F and centre G.

Hence, if a candle be placed in I, the image will appear in A; if it be placed in A, its image will be in I: in the intermediate points between I and A, the ſection of light will be a circle; and that ſo much the greater, as it is nearer the point of concourſe.

5. If a luminous body be placed in the centre of the mirror, all the rays will be reflected back upon themſelves; for as they fall perpendicularly on the ſpeculum, they will be reflected into themſelves.

Hence, if the eye be placed in the centre of a concave mirror, it will ſee nothing but itſelf, and that confuſedly through the whole mirror.

6. If a ray falling from the point of the cathetus *b* (*fig.* 14.) on the convex mirror *b* F, be, together with its reflex I F, continued within the concavity of the mirror, F H will be the incident ray from the point of the cathetus H, and F O its reflex. For *b* F E = I F M; but *b* F E

=M

= M F O, and I F M = E F H; therefore M F O = E F H; and, conſequently, if H F be taken for the incident ray from the point H, F O will be the reflected ray.

Hence, ſince the point of the cathetus H is the image of the point *h* in the convex mirror, but the point *h* the image of H in the concave; if the image of an object, reflected by a convex ſpeculum, be ſeen by a reflection made in its concavity, it will appear like the object itſelf.

And ſince the image of an infinite cathetus is leſs in a convex glaſs than one-fourth of its diameter; a portion of the cathetus, leſs than a fourth part of the diameter, may appear of any magnitude required in a concave one. A point, therefore, diſtant from a concave ſpeculum leſs than one-fourth of the diameter, muſt appear behind the mirror at any diſtance, how great ſoever.

Since the image of any object, how broad ſoever, is contained in a convex ſpeculum, between the two lines of incidence of its extreme points; if an object be placed between the two lines, at a diſtance leſs than one-fourth of its diameter, the breadth of the image, how great ſoever, may all appear.

Since then the image of an object included between two lines, at a diſtance leſs than one-fourth of the diameter, may exceed the juſt height and breadth of the object; nay, may be made of any magnitude, how big ſoever; objects placed between the focus and mirror muſt appear of enormous magnitudes in concave mirrors; the image being ſo much the greater in the concave mirror, as it is leſs in the convex.

In a convex mirror, the image of a remote object appears nearer the centre than that of a nearer object: therefore, in a concave mirror, the image of an object remote from the mirror appears at a greater diſtance than that of a nearer object, provided the diſtance of the object from the centre be leſs than a fourth part of the diameter.

In a convex ſpeculum, the image of a remote object is leſs than that of a near one: therefore, in a concave one, the image of an object placed between the focus and the mirror, is nearer the focus than the ſpeculum.

The image, therefore, of an object receding continually from a concave ſpeculum, becomes continually greater, provided it do not recede beyond the focus, where it becomes confuſed; and as it approaches, it grows continually leſs. In a convex ſpeculum, if the ſphere, of which it is a ſegment, be ſmaller, the image is ſmaller than in another of a larger ſphere: therefore in a concave, if the ſphere, of which it is a ſegment, be ſmaller, the image will be larger than in another whoſe ſphere is larger: whence concave mirrors, if they be ſegments of very ſmall ſpheres, will do the office of microſcopes.

7. If an object A B (*fig.* 15.) be placed between a concave mirror and its focus, its image will appear behind the mirror in an inverted ſituation. Let A B be the length of the object: ſince the point A is ſeen in the cathetus C *a*, and the point B in the cathetus C *b*, the higher point is ſeen in the higher place *a*, and the lower in the lower *b*; or the object appears behind the mirror in an erect ſituation. But if A B repreſent the breadth of the object, it appears in the ſame manner that the part to the right correſponds with the right, and the left to the left, both of the object and image. However, in direct viſion the right hand part of an object correſponds to the left of the ſpectator, and the left to the right; and, therefore, in a concave ſpeculum, the parts to the left hand of an object between the focus and ſpeculum appear to the right, and the right to the left.

8. If an object A B (*fig* 16.) be placed between the focus and the centre, its image E F will appear inverted, and in the open air, beyond the centre, the eye being placed beyond the centre. For the rays, by which the point A is reflected, concur in the cathetus G F, beyond the centre C in F, and thoſe by which the point B is reflected, concur in the cathetus D F, beyond the centre C in E; therefore the point B radiates on the eye placed beyond E F as from E, and the point A as from F; conſequently B is ſeen in E, and A in F, and the image of the object is ſeen beyond the centre in an inverted poſition. 9. If an object E F be placed beyond the centre C, and the eye likewiſe beyond the centre, the image will appear inverted in the open air, between the centre and the focus. Hence, the inverted images of objects placed beyond the centre, are reflected by a concave mirror, erect; and may be received on a paper applied between the centre and the focus, eſpecially if the room be dark; if the object E F be farther diſtant from the centre than the focus, the image will be leſs than the object; becauſe A C is leſs than E C, and, therefore, A B < E F.

On this principle, concave mirrors, eſpecially thoſe which are ſegments of large ſpheres, and are capable of reflecting entire objects, exhibit many pleaſing phenomena. Thus, if a man flouriſh his ſword againſt the mirror, another comes out of it, and meets him with the ſame motions; and the image of his head coming out of the mirror, if he ſtrike with his real ſword, the imaginary ſword will ſtrike his real head. If he ſtretch out his hand, another hand will be ſtretched out of the mirror, and meet it at a great diſtance in the open air, &c. And on the ſame principle are conſtructed catoptric ciſtulæ, which, when looked into, exhibit images much bigger than the cheſt. See CATOPTRIC *ciſtula*.

10. The image of a right line, perpendicular to a concave mirror, is a right line; but all oblique or parallel lines are concave. For ſince every point of a line perpendicular to the ſpeculum is in the cathetus of incidence, its image will of courſe be a right line. But if A B (*fig.* 15.) be parallel, or oblique to the ſpeculum, and C F be drawn from the centre C perpendicular to A B, C A will be greater than C D; and, therefore, as C F = C E, F D > A E; conſequently the point D will appear farther behind the ſpeculum than A. Therefore, ſince *c* is farther diſtant from D, than *a* from A, and *b* from B, the image *a c b* will appear concave.

MIRRORS, *Cylindrical, Conical, Parabolical,* and *Elliptical,* or ſpecula, are thoſe terminated by a ſurface reſpectively cylindrical, conical, parabolical, and ſpheroidical.

To prepare, or make, cylindrical, conical, parabolical, elliptical, and hyperbolical Mirrors.—For the *cylindrical* and *conical* ſort, if they are to be of glaſs, the method of preparing them is the ſame as that already laid down for convex mirrors.

If of metal, they are to be made after the manner of concave mirrors, only that the clay moulds there deſcribed require other wooden ones of the figure of the mirror.

For *elliptical*, *parabolical*, and *hyperbolical* mirrors, the mould is to be thus prepared. On a wooden or brazen plane or table, deſcribe the figure of an ellipſis, A B (*fig.* 17.) a parabola, or an hyperbola, C D (*fig.* 18.) after the manner taught under thoſe heads; which done, cut out the figure from the plane with all the accuracy imaginable.

To the elliptic figure fit an axis, as E F, with two fulcra to ſuſtain it, &c. and a handle to move it; lay a quantity of the clay, above deſcribed, under it; and turn about the axis by the handle, till the plane A B hath turned, or impreſſed the elliptical figure exactly upon it.

The axis of the parabolical or hyperbolical figure C D, is to be fixed at the vertex E in ſuch a manner as that it may always remain erect; this is to be turned about as above, till it hath given its own figure to the clay applied about it. The part of the mould, thus formed, is to be dried, and either ſmeared over with fat, or ſprinkled with brickduſt; then a convex mould is to be made, by putting a quantity of the ſame clay into the cavity thus formed. This latter is called the *male*, as the former the *female* mould. The male mould, being well dried, is to be applied within the female, in ſuch a manner, as only to leave the intended thickneſs of the mirror between them. The reſt as for concave mirrors.

Theſe mirrors are not made without the utmoſt difficulty; becauſe, if the moulds be ever ſo juſt, the figure of the mirror is apt to be damaged in the grinding. See Speculum.

Mirrors. *Phenomena, or Properties of Cylindrical.* 1. The dimenſions of objects correſponding lengthwiſe to the mirror are not much changed; but thoſe correſponding breadthwiſe have their figures altered, and their dimenſions leſſened ſo much the more, as they are farther from the mirror; whence ariſes a very great diſtortion.

2. If the plane of reflection cut the cylindric mirror through the axis, the reflection is performed in the ſame manner as in a plane mirror; if it cut it parallel to the baſe, the reflection happens in the ſame manner as in a ſpherical mirror; if, laſtly, it cut it obliquely, or be oblique to its baſe, the reflection is the ſame as in an elliptical mirror. Hence, as the plane of reflection never paſſes through the axis of the mirror, except when the eye and objective line are in the ſame plane; nor parallel to the baſe, except when the radiant point and the eye are at the ſame height, the reflection, in a cylindrical mirror, is uſually the ſame as in an elliptical one.

3. If a hollow cylindrical mirror be oppoſed directly to the ſun, inſtead of a focus of a point, the rays will be reflected into a lucid line, parallel to its axis, at a diſtance ſomewhat leſs than a fourth part of its diameter.

Hence ariſes a method of drawing anamorphoſes, *i. e.* wild, deformed figures, on a plane, which appear beautiful and well proportioned, when viewed in a cylindrical mirror.

Mirrors, *as for Elliptic*, *Parabolic*, *Conic*, and *Pyramidal*, we are not much acquainted with their properties: only that in the firſt, if a ray ſtrike on it from one of its focuſes, it is reflected into the other; ſo that a lighted candle being placed in one, its light will be collected in the other. That the ſecond, inaſmuch as all the rays they reflect meet in one point, make the beſt burning-glaſſes of all others.

And, laſtly, that wild, irregular figures, may be ſo drawn on a plane, as that, the eye being placed over the axis of the two laſt, they ſhall appear beautiful, and well proportioned. (See Anamorphosis.) For further particulars reſpecting the theory, materials, conſtruction, and uſe of mirrors, ſee Glass, Grinding, Lens, Microscope, Speculum, and Telescope.

MIRSERAI, in *Geography*, a town of Perſia, in Khoraſan; 12 miles W. of Sebſvar.

MIRZAGUNGE, a town of Hindooſtan, in Bengal; 27 miles S.S.E. of Mahmudpour.

MIRZAPOUR, a town of Hindooſtan, in Bengal; 75 miles S.S.E. of Mahmudpour.—Alſo, a town of Hindooſtan, in Bengal; 12 miles S.W. of Kiſhenagur.—Alſo, a town of Hindooſtan, in Oude; 33 miles N.E. of Kairabad.—Alſo, a town of Hindooſtan, in Allahabad; 41 miles S.E. of Allahabad. N. lat. 25 10′. E. long. 82° 49′.

MIRZIN, or Wolcin, a town of Moravia, in the circle of Iglau; 12 miles E. of Iglau.

MIS, a particle prefixed to divers words, particularly law-terms; denoting ſome default or defect. As, in *miſpriſion; miſdicere, to ſcandalize one; miſdocere, to teach amiſs*, &c.

MISA, in *Geography*, a river of Naples, which runs into the Adriatic, N. lat. 43° 43′. E. long. 13° 12′.

MISAGNO, a town of Naples, in the province of Otranto; ſeven miles S.W. of Brindiſi.

MISANDRA, in *Botany*, Juſſ. 405, one of Commerſon's fanciful names, the application of which is not very clear to us. It ſeems to imply that he was diſpleaſed at meeting every where with a ſuperabundance of the male plants of this kind, in the ſtraits of Magellan, and only once with the females, ſo that he was long unable to judge of the genus; at leaſt this appears to be the conjecture of Juſſieu. See Gunnera.

MISANI, in *Geography*, a town in the iſland of Corſica; ſix miles W. of Cervione.

MISANTHROPY, μισανθρωπια, formed of μισος, *hatred*, and ανθρωπος, *a man*, a general diſlike or averſion to man, and mankind. In which ſenſe it ſtands oppoſed to *philanthropy*, or the love of mankind.

MISAPA, in *Geography*, a river of Mexico, which runs into the gulf of Mexico, N. lat. 18° 12′.

MISARA, a town of Egypt, on the left bank of the Nile; 12 miles S. of Melaui.

MISAVENTURE, or Misadventure, *Homicide by*, in *Law*. See Homicide.

In the caſe of miſadventure, the law preſumes negligence, or at leaſt a want of ſufficient caution in him who was ſo unfortunate as to commit it; who, therefore, is not altogether faultleſs. The penalty inflicted by our laws is ſaid by ſir Edward Coke to have been anciently no leſs than death; though others affirm, with greater reaſon, that it conſiſted in a forfeiture, as ſome ſay, of all the goods and chattels; according to others, of only part of them, by way of fine or weregild; which was probably diſpoſed of, as in France, for pious uſes, or for the benefit of the ſoul of the deceaſed. However, the delinquent has now, and has had as early as our records will reach, a pardon, and writ of reſtitution of his goods as a matter of courſe and right, only paying for ſuing out the ſame; and, to prevent this expence, in caſes where the death has notoriouſly happened by miſadventure, or in ſelf-defence, the judges will uſually permit, if not direct, a general verdict of acquittal. See Homicide.

Staundford diſtinguiſhes between *aventure* and *miſaventure*. The firſt he makes to be mere chance: as if a man, being upon or near the water, be taken with ſome ſudden ſickneſs, and ſo fall in, and be drowned; or into the fire, and be burnt.

Miſaventure, according to him, is when a man comes to his death by ſome outward violence; as the fall of a tree, the running of a cart-wheel, the ſtroke of a horſe, or the like.

MISCANELLO, in *Geography*, a town of Naples, in Baſilicata; 26 miles S.E. of Potenza.

MISCARRIAGE, in *Midwifery*, the birth, or excluſion of a fœtus from the womb before it has attained its maturity.

By ſome writers, the word miſcarriage is confined to deliveries, or births happening before the end of the ſixth or ſeventh month, or before the child has acquired ſo much ſtrength as to give it a chance of living. Children born in the eighth or early in the ninth month, are only ſaid to have come before their time. (See Abortion, and Conception.) The failure in an attempt to perform any thing is alſo called a miſcarriage.

MISCELLANEÆ, in *Botany*, a name given by Linnæus to the 54th of his Natural Orders, and which well expreſſes the heterogeneous nature of that order, as it ſtands at the end of his *Genera Plantarum*, where ſuch various genera are brought together, that his leading idea in this aſſemblage can hardly be traced. They ſtand under eight heads, as follows.

1. *Reſeda, Datiſca.*
2. *Poterium, Sanguiſorba.*
3. *Piſtia, Lemna.*
4. *Coriaria;* and *Empetrum* with a mark of doubt.
5. *Achyranthes, Celoſia, Amaranthus, Ireſine, Gomphrena, Phytolacca*
6. *Nymphæa, Sarracenia.*
7. *Cedrela, Swietenia.*
8. *Telephium.*

In the *Prælectiones in Ord. Nat. Plantarum*, publiſhed from the notes of Giſeke and Fabricius, p. 594, this catalogue is much diminiſhed, and the 54th order conſiſts of only the firſt four of the above ſections, without any remark or explanation.

The manuſcript notes of Linnæus, to his own *Genera Plantarum*, here afford us ſome aſſiſtance. He has there referred the ſecond ſection of the above liſt, very juſtly, to his 35th order, *Senticoſæ*, before *Agrimonia*.

The third ſection he removes to ord. 15, *Inundatæ*, which is but a ſlight improvement.

The fifth goes with great propriety to his *Holeraceæ*, ord. 12th.

The ſixth to his *Rhoeadeæ*, ord. 27th, with a queſtion whether the genera here mentioned be not more akin to *Aſarum* and his 11th order, *Sarmentaceæ ;* under which laſt however he has expreſſed a ſuſpicion that *Ariſtolochia, Aſarum* and *Cytinus* may rather belong, with *Nymphæa*, to the 27th.

The ſeventh ſection he reduces to his *Trihilatæ*, ord. 23d, and *Telephium*, which alone makes the eighth, is removed to the *Holeraceæ*.

MISCELLANEÆ is alſo the name of an order of the *Cryptogamia*, according to Schreber, in his Gen. Pl. 753. Under it he comprehends *Equiſetum, Lycopodium, Porella, Salvinia, Marſilea, Pilularia*, and *Iſoetes*. Theſe have little affinity, and the order can be conſidered merely as a receptacle for what could not well be placed elſewhere, as its name ſeems to imply.

MISCHARON, in *Geography*, a town of Perſia, in the province of Irak ; 111 miles S.E. of Hamadan.

MISCHIEF, *Malicious*, or *Damage*, in *Law*, is a ſpecies of injury to private property, which the law conſiders as a public crime. This is ſuch as is done, not *animo furandi*, or with an intent of gaining by another's loſs ; but either out of a ſpirit of wanton cruelty, or diabolical revenge. Any damage ariſing from this miſchievous diſpoſition, though only a treſpaſs at common law, is now by a multitude of ſtatutes made penal in the higheſt degree. 22 Hen. VIII. c. 11. 43 Eliz. c. 13. 22 & 23 Car. II. c. 7. 4 & 5 W. & M. c. 23. 1 Ann. ſtat. 2. c. 9. and 4 Geo. I. c. 12. 12 Ann. ſtat. 2. c. 18. 1 Geo. I. c. 48. 6 Geo. I. c. 23. 9 Geo. I. c. 22. (See BLACK *Act*.) 6 Geo. II. c. 37. 10 Geo. II. c. 32. 28 Geo. II. c. 19. 6 Geo. III. c. 36. and 48. and 13 Geo. III. c. 33. 9 Geo. III. c. 29. 13 Geo. III. c. 38. See FELONY.

MISCHKA, in *Geography*, a river of Ruſſia, in the country of the Coſſacks, which runs into the Don, near Verchnei Tchirkovſkaia.

MISCHKIN, a town of Ruſſia, in the government of Jaroſlavl ; 60 miles W. of Jaroſlavl. N. lat. 58° 42'. E. long. 40° 22'.

MISCHNA, or MISHNA, from שנה, *iteravit*, a part of the Jewiſh Talmud.

The Miſchna contains the text ; and the Gemara, which is the ſecond part of the Talmud, contains the commentaries ; ſo that the Gemara is, as it were, a gloſſary on the Miſchna.

The Miſchna conſiſts of various traditions of the Jews, and of explanations of ſeveral paſſages of ſcripture : theſe traditions, ſerving as an explication of the written law, and ſupplement to it, are ſaid to have been delivered to Moſes during the time of his abode on the Mount ; which he afterwards communicated to Aaron, Eleazer, and his ſervant Joſhua. By theſe they were tranſmitted to the ſeventy elders, by them to the prophets, who communicated them to the men of the great ſanhedrim, from whom the wiſe men of Jeruſalem and Babylon received them. According to Prideaux's account, they paſſed from Jeremiah to Baruch, from him to Ezra, and from Ezra to the men of the great ſynagogue, the laſt of whom was Simon the Juſt ; who delivered them to Antigonus of Socho ; and from him they came down in regular ſucceſſion to Simeon, who took our Saviour in his arms ; Gamaliel, at whoſe feet Paul was educated, and laſt of all to Rabbi Judah the Holy, who committed them to writing in the Miſchna. But Dr. Prideaux rejecting this Jewiſh fiction, obſerves, that after the death of Simon the Juſt, about two hundred and ninety-two years before Chriſt, the Miſchnial doctors aroſe, who, by their comments and concluſions, added to the number of thoſe traditions, which had been received and allowed by Ezra, and the men of the great ſynagogue ; ſo that towards the middle of the ſecond century, after Chriſt, under the empire of Antoninus Pius, it was found neceſſary to commit theſe traditions to writing ; more eſpecially as their country had conſiderably ſuffered under Adrian, and many of their ſchools had been diſſolved, and their learned men cut off ; and, therefore, the uſual method of preſerving their traditions had failed. Rabbi Judah, on this occaſion, being rector of the ſchool of Tiberias, and preſident of the ſanhedrim in that place, undertook the work, and compiled it in ſix books, each conſiſting of ſeveral tracts, which altogether make up the number of ſixty-three. (Prid. Connect. vol. ii. p. 468, &c. ed. 9.) This learned author computes that the Miſchna was compoſed about the 150th year of our Lord ; but Dr. Lightfoot ſays, that Rabbi Judah compiled the Miſchna about the year of Chriſt 190, in the latter end of the reign of Commodus ; or, as ſome compute, in the year of Chriſt 220. Dr. Lardner is of opinion that this work could not have been finiſhed before the year 190, or later, and he thinks that it is placed ſoon enough at the year 180. (Collect. of Jewiſh and Heathen Teſtimonies, &c. vol. i. p. 178.) Others, however, apprehend, that the Miſchna was not committed to writing till near the middle of the fifth century, alleging that St. Auſtin, who died in the year 430, ſays expreſsly (Cont. Adverſ. Leg. and Proph. lib. ii. c. 1.) that the Jewiſh traditions were not in writing. And yet that it was written before 500 ſeems evident, becauſe in 548 Juſtinian interdicted the uſe of it in the ſynagogues. Kennicott's State of the Hebrew Text, vol. ii. p. 443.

Thus the book called the Miſchna was formed ; a book which the Jews have generally received with the greateſt veneration. The original has been publiſhed, with a Latin tranſlation, by Surenhuſius, with notes of his own, and others from the learned Maimonides, &c. in 6 vols. folio, Amſterd. A.D. 1698—1703. See TALMUD.

It is written in a much purer ſtyle, and is not near ſo full of dreams and viſions, as the Gemara.

MISCIANO, in *Geography*, a town of Naples, in the province of Otranto; 8 miles W.S.W. of Brindiſi.

MISCO, or Misko. See Mixco.

MISCONTINUANCE, in *Law*, the ſame with diſcontinuance.

MISCOTHINS, in *Geography*, a ſmall tribe of Indians who inhabit between lake Michigan and the Miſſiſippi.

MISDEMEANOUR, or Misdemesnor, in *Law*, an offence, or fault, particularly when in the execution of an office. See Crime.

High crimes and miſdemeanours denote offences of a heinous nature, next to high treaſon.

MISE, a French term, literally denoting expence, or diſburſement: it is uſed in our law-books in divers acceptations. Sometimes for the profits of lands; ſometimes for taxes, or taillages; and ſometimes for expences, or coſts: as *pro miſis & cuſtagiis*, for coſts and charges in the entries of judgments, &c.

Miſe more peculiarly denotes an honorary gift, or cuſtomary preſent, with which the people of Wales uſed to ſalute every new king and prince of Wales, at their entrance upon the principality.

Anciently, the miſe was given in cattle, wine, corn, &c. for the ſupport of the prince's family; but when that dominion was annexed to the Engliſh crown, the gift was changed into money. The county of Flint paid two thouſand marks, &c. for the miſe.

The county of Cheſter alſo paid a miſe or tribute of five thouſand marks at the change of every owner of the ſaid earldom, for enjoying the privilege of that palatinate. At Cheſter they have a miſe-book, in which every town and village in the county is rated what to pay towards the miſe.

Miſe is alſo uſed in ſpeaking of a writ of right. What in other actions is called an *iſſue*, in a writ of right is called a *miſe* or *me*: ſo that *to join the miſe upon the mere*, is as much as to ſay, to join iſſue on the mere right, *i. e.* to join upon this point, whether the tenant or demandant has the more right.

Yet even in a writ of right, if a collateral point be tried, it is there called an *iſſue*, not a *miſe*. See Issue.

Miſe is alſo ſometimes uſed corruptly for *meaſe*, a meſſuage or tenement.

In ſome manors, a *miſe* or *meaſe* place is taken for ſuch a meſſuage or tenement as yields the lord an heriot at the death of the tenant.

MISELAR, in *Geography*, an iſland in the Eaſt Indian ſea, of an irregular form, 18 miles long and five broad, near the W. coaſt of Sumatra. N. lat. 1° 28′. E. long. 97° 56′.

MISEN, Missen, or Mizen, in a *Ship*, denotes either the maſt, or ſail of that name; but at ſea, they always mean the ſail when the word *mizen* is uſed.

This is the hindmoſt of the fixed ſails of a ſhip, extended ſometimes by a gaff, and ſometimes by a yard, which croſſes the maſt obliquely; the fore-end reaching always down to the deck, and the after-end being peeked up as high above the middle of the yard, where it is attached to the maſt. The figure of the miſen is a trapezium, or parallelogram, one of whoſe corners is cut off by a diagonal, extended from one of its ſides to the oppoſite corner, which becomes the peek of the miſen. Some great ſhips require two miſens; in which caſe that next the main-maſt is called the *main-miſen*, and that next the poop the *benaventure miſen*.

The uſe of the miſen is, to keep the ſhip cloſe to a wind; wherefore if a ſhip is apt to gripe too much, they uſe no miſen. But it is often uſed when a ſhip rides at anchor, to back her a-ſtern; ſo that ſhe may not foul her anchor, on the turning of the tide; and ſometimes a ſhip lies a-try with her miſen only.

Misen-*maſt* is the maſt upon which the miſen and its topſail and ſtay-ſails are ſupported, beſides other ſails, which are ſet occaſionally, as the driver, ring-tail, &c. See Mast.

Misen, *Change the*, is an order to bring the miſen-yard over to the other ſide of the maſt. *Peek the miſen, i. e.* put the miſen right up and down the maſt.

Misen, *Set the*, at *Sea*, the word of command to fit the miſen-ſail right as it ſhould ſtand. *Spell the miſen, i. e.* let go the ſheet, and peek it up.

Misen-*Stay*, in a *Ship*. See Stay.

Misen-*Yard*. See Yard.

MISENO, Cape, in *Geography*, a cape on the N. ſide of the gulf of Naples. N. lat. 40° 48′. E. long. 13° 52′.

MISERE, a river of America, which runs into lake Superior, N. lat. 46° 14′. W. long. 89° 3′.

MISERERE, *have mercy*, the name, and firſt word of one of the penitential pſalms; being that commonly given by the ordinary to ſuch condemned malefactors as are allowed the benefit of the clergy: whence it is alſo called the *pſalm of mercy*.

It is alſo the firſt word in the Latin tranſlation of the 51ſt pſalm, and has been elaborately ſet to muſic by all the great compoſers of the Romiſh church, from Paleſtrina to Jomelli and Haydn: but no miſerere has been ſo celebrated as that compoſed by Gregorio Allegri, for the pontifical chapel at Rome, in 1629; which has continued to be ſolemnly and exquiſitely performed there on Wedneſday in Paſſion week, and on Good Friday. See Allegri, Jomelli, and Burney's Preſent State of Muſic in France and Italy.

Miserere *Mei*, denotes a kind of colic, or diſorder of the inteſtines, in which the excrements, inſtead of paſſing off the common way, are often thrown up by the mouth. The *miſerere mei* is the ſame with what we otherwiſe call *volvulus*, and *iliac paſſion*.

MISERICORDE, Cultellum, in *Ancient Armour*, the name of the dagger, which was the conſtant companion of the ſword, at leaſt from the days of Edward I., and is mentioned in the ſtatute of Wincheſter. Its appellation of miſericorde is derived by Fauchet, the French antiquary, either from its being uſed to put perſons out of their pain, who were irrecoverably wounded, or, from the ſight of it cauſing thoſe knights who were overthrown to cry out for quarter or mercy. After the invention of fire-arms, daggers were ſcrewed into the muzzles of the muſkets, to anſwer the preſent purpoſe of the bayonet.

MISERICORDIA, Mercy, in *Law*, an arbitrary amerciament, or puniſhment impoſed on any perſon for an offence.

Where the plaintiff or defendant in any action is amerced, the entry is always *ideo in miſericordia*.

It is thus called, according to Fitzherbert, becauſe it ought to be but ſmall, and leſs than the offence, according to the tenor of Magna Charta.

"Mulcta lenior ſic dicta, quod leniſſima imponitur miſericordia; graviores enim mulctas fines vocant; atrociſſimas, redemptiones." See Fine and Redemption.

Hence, if a man be unreaſonably amerced in a court not of record, as a court baron, &c. there is a writ called *moderata miſericordia*, directed to the lord, or his bailiff, commanding them to take moderate amerciaments.

Misericordia *communis*, is when a fine is ſet on the whole county, or hundred.

Misericordia *in cibis & potu*, in our *Old Writers*, is uſed for any gratuitous portion of meat and drink, given to the religious in convents beyond their ordinary allowance. (Matt. Paris.) And in ſome convents they had a ſtated allowance of theſe over-commons upon extraordinary days, which were called *miſericordiæ regulares*.

MISERREPOUR, in *Geography*, a town of Hindooſtan. in Dooab; 15 miles N.W. of Etayah.

MISERY, an iſle between Salem and Cape Ann, in Maſſachuſetts.

MISFEASANCE, in *Law*, a miſdeed or treſpaſs. Whence alſo *miſfeaſor*, a treſpaſſer.

MISFORTUNE. See Chance.

MISGUM, in *Ichthyology*, the name of a fiſh of the anguilliform kind, but broader and flatter than the eel, and of much the ſame ſize from the head to the tail; it has five black lines, one on the back, two, which are ſomewhat broader, in the middle of the ſides, and two others, which are narrower lower down; theſe are all extended from the head to the tail; the intermediate ſpaces, and the belly, are of a ſomewhat blueiſh-white, dotted with black ſpots; the fins are alſo ſpotted in the ſame manner; the mouth is ſmall and round like that of the lamprey, and is ſurrounded with beards, ſix on the upper jaw, and four on the under; and there are two other very ſlender ones near the noſtrils; the eyes are ſmall; the gills four on a ſide; and beſide the back fin there are four, two near the gills, and two lower on the body. This is a common fiſh about the German ſhores, and is eſteemed a very delicate one at the table; it lays its ſpawn in March, and is in beſt ſeaſon for eating in January and February. It is caught principally in ſtanding and muddy waters; and it is ſaid, that when out of water, it makes a ſort of hiſſing noiſe.

MISHNA. See Miſchna.

MISIANO, in *Geography*, a town of Naples, in Calabria Ultra; 7 miles N. of Reggio.

MISILMARI, a town of Sicily, in the valley of Mazara; 6 miles S.S.E. of Palermo.

MISITRA, the ancient *Sparta*, a town of European Turkey, in the Morea, defended by a caſtle on a rock, which is ſaid to be impregnable. The Chriſtians have ſeveral churches, one of which is reckoned the moſt beautiful in the world. The Jews have three ſynagogues, and the Turks have a ſuperb moſque and hoſpital. This town is the ſee of an archbiſhop, and the reſidence of a bey, an aga, and a waywode; and it contains 12,000 inhabitants. In 1770 it was taken by the Ruſſians; 40 miles S.S.W. of Argos. N. lat. 37° 10′. E. long. 22° 25′.

MISKERING, Miſkerring. See Abiſhering.

MISKOTZ, in *Geography*, a town of Hungary; 30 miles W. of Tokay.

MISLAVA, a town of Hungary; 10 miles E. of Libetau.

MISLETOE. See Miſtletoe.

MISLIWECZEK, Joſeph, in *Biography*, ſon of a miller in Bohemia, not far from Prague, a twin, born in 1737: the brothers reſembled each other ſo much, that their father was frequently uncertain to which of them he was ſpeaking. They were both brought up to the father's trade; but Joſeph in learning muſic at the common reading and writing ſchool, as all Bohemian children do, diſcovered uncommon genius and love for the art. And his father was ſcarcely dead before he quitted the miller's trade, and went to Prague, where he ſtudied muſic under the celebrated organiſt Segert with ſuch ſucceſs, that he ſhortly compoſed ſix ſymphonies, one each month, from January to June. Then, in 1763, he went to Venice, where he had leſſons from Piſcette, and afterwards to Parma, where he compoſed his firſt opera, which ſucceeded ſo much, as to procure him a call to Naples, where the opera of "Belerofonte" ſo eſtabliſhed his reputation in Italy, that in the next ten years he brought nine operas on the ſtage; among which "Olimpiade," in 1778, was particularly admired, eſpecially the air, "Si circa ſi dice." Soon after the performance of Belerofonte, he went to Venice as a maſter, where he had been before only a ſcholar, and now was as well received as elſewhere. Then he removed to Pavia, and thence to Munich in 1779, and returned to Naples a ſecond time. About 1780, Fortune turned her back upon him: the opera of "Armida," which he ſet for Milan, was performed but once, in which almoſt every thing, except a bravura air for Marcheſi, was *fiſchiata* (hiſſed). Thence he went to Rome, where he had been unfortunate before, and where he met with new diſgrace in 1781; in which city, after compoſing for different theatres of Italy 30 operas, beſides oratorios, and inſtrumental muſic of all kinds, he died, in 1782, in mortification and indigent circumſtances.

MISLOWITZ, in *Geography*, a town of Sileſia, in the lordſhip of Pleſz, on the borders of Poland; 32 miles W. of Cracow. N. lat. 50° 13′. E. long. 19° 5′.

MISNIA. See Meiſſen.

MISNOMER, compounded of *mis*, which in compoſition ſignifies *amiſs*, and *nomer*, *to name*, in *Law*, a wrong name, or the uſing of one name for another.

A miſnomer furniſhes one of the principal pleas in abatement.

MISOLOGIO, in *Geography*, a town of the Morea, in the paſhawite of Carnia, containing about 5000 inhabitants. It is ſituated on a ſwampy flat, ſcarcely above the level of the ſea. An extenſive ſhallow reaches along the coaſt for many miles, and is paled in for a meir, and kept in repair by the farmers of the fiſhery. This fiſhery was farmed in 1811 by forty perſons, who pay to the vizier Ali Paſhaw upwards of 3500*l.* ſterling. In Miſologio one of the prieſts teaches Greek, and the children, as in other parts of Greece, are taught writing, &c. by the parochial clergy. The inhabitants wear the Albanian dreſs, and though they grievouſly complain of the taxes, they admit the juſtice and vigour of Ali Paſhaw's government. The town has a ſmall fortification about two miles diſtant from the ſhore. The articles exported from Miſologio are ſimilar to thoſe which are uſually ſent from Patras and Lepanto. It has lately begun to ſend wool to Sicily, which wool is low priced, but not ſo inferior in quality as might be ſuppoſed from the rates at which it is ſold.

MISPACH, a town of Bavaria, in the lordſhip of Upper Waldeck; 27 miles S.S.E. of Munich.

MISPRISION, derived from the old French *meſpris*, a *neglect* or *contempt*, in *Law*, ſignifies a neglect or overſight, and is generally uſed to denote all ſuch high offences as are under the degree of capital, but nearly bordering upon them.

Miſpriſions are generally divided into two ſorts: negative, which conſiſt in the concealment of ſomething which ought to be revealed; and poſitive, which conſiſt in the commiſſion of ſomething which ought not to be done.

Miſpriſion *of Clerks*, is a neglect of clerks, in writing, or keeping records.

By the miſpriſion of clerks, no proceſs ſhall be annulled, or diſcontinued. And juſtices of aſſize ſhall amend the defaults of clerks miſ-ſpelling a ſyllable, or letter, in writing.

Miſpriſion *of Felony*, which is the concealment of a felony which a man knows, but never aſſented to, is puniſhable, in a public officer, by ſtat. Weſtm. 1. 3 Ed. 1. c. 9. with impriſonment for a year and a day; in a common perſon with impriſonment for a leſs diſcretionary time; and in both with fine and ranſom at the king's pleaſure, declared by the judges in his courts of juſtice. Juſtices of the Common Pleas have a power to aſſeſs any amerciaments upon perſons offending by miſpriſions, contempts, or neglects, for not doing, or miſdoing, any thing, in or concerning fines.

MISPRISION *of Treaſon*, is a negligence in not revealing treaſon, where a perſon knows it to be committed.

It is enacted by ſtat. 1 & 2 Ph. & Mar. c. 10. that a bare concealment of treaſon ſhall be only held a miſpriſion; which concealment becomes criminal, if the party appriſed of the treaſon does not, as ſoon as conveniently may be, reveal it to ſome judge of aſſize, or juſtice of the peace. (1 Hal. P. C. 372.) Beſides, the ſtatute 13 Eliz. c. 2. enacts, that thoſe who forge foreign coin, not current in this kingdom, their aiders, abettors, and procurers, ſhall all be guilty of miſpriſion of treaſon. The puniſhment of miſpriſion of treaſon is loſs of the profits of lands during life, forfeiture of goods, and impriſonment during life. 1 Hal. P. C. 374.

The miſpriſions already recited belong to the claſs of thoſe that are denominated negative. Miſpriſions, which are merely poſitive, are generally termed *contempts* or *high miſdemeſnors*. See CONTEMPT.

MISQUE POCONA, in *Geography*, a town of South America, in the viceroyalty of Buenos Ayres, and province of Santa Cruz de la Sierra; 100 miles S.S.W. of Santa Cruz.

MISQUI, a town of Peru; 60 miles N. of La Paz.

MISR *el Attiké*, a town of Egypt, on the Nile, S. of Cairo, to which it is a kind of ſuburb.

MISS, a river of Carinthia, which runs into the Drave; five miles E. of Lavamand.

MISSA. See MASS.

MISSA *Papæ Marcelli*, is the title of a celebrated maſs in *Muſic*, compoſed by Paleſtrina, and ſaid to have prevented muſic from being baniſhed the church. Concerning this production, it has been related by Antimo Liberati, in his famous letter to Ovidio Perſapegi, and after him, by Adami, Bernardi, and other muſical writers, that the pope and conclave having been offended and ſcandalized at the light and injudicious manner in which the maſs had been long ſet and performed, determined to baniſh muſic in parts entirely from the church; but that Paleſtrina, at the age of twenty-ſix, during the ſhort pontificate of Marcellus Cervinus, intreated his holineſs to ſuſpend the execution of his deſign till he had heard a maſs, compoſed in what, according to his ideas, was the true eccleſiaſtical ſtyle. His requeſt being granted, the compoſition, in ſix parts, was performed at Eaſter, 1555, before the pope and college of cardinals; who found it ſo grave, noble, elegant, learned, and pleaſing, that muſic was reſtored to favour, and again eſtabliſhed in the celebration of ſacred rites. This maſs was afterwards printed, and dedicated to the ſucceſſor of Marcellus, pope Paul IV., by whom Paleſtrina was appointed maeſtro di capella to the pontifical chapel.

The friends of choral muſic will doubtleſs be curious to have a faithful and minute account of a compoſition which had ſufficient power to preſerve their favourite art from diſgrace and excommunication; and having before us an accurate ſcore of it, which Signor Santarelli, the pope's maeſtro di capella, himſelf procured out of the archives of the Siſtine chapel, where it is ſtill performed, we can venture to aſſert, that it is the moſt ſimple of all Paleſtrina's works: no canon, inverted fugue, or complicated meaſures, have been attempted throughout the compoſition; the ſtyle is grave, the harmony pure, and by its facility the performer and hearer are equally exempted from trouble.

MISSAL, MISSALE, a maſs-book, containing the ſeveral maſſes to be uſed on the ſeveral days, feaſts, &c.

The Roman miſſal was firſt compiled by pope Gelaſius, and afterwards reduced into better order by pope Gregory the Great; who called it the *book of ſacraments*.

Each dioceſe, and each order of religious, have their particular miſſal, accommodated to the feſtivals of the province, or of the order.

MISSALAND, in *Geography*, a river of Africa, which riſes in Dar Fur, and after a courſe of nearly 500 miles loſes itſelf in the lake of Fittré.

MISSASSAGA ISLAND, an iſland that lies oppoſite to the mouth of the river Trent in Upper Canada, and at the ſame diſtance from the portage at the head of the bay of Quito.

MISSASSAGA *River*, a river of Upper Canada, which runs into lake Huron, between le Serpent and Theſſalon rivers, on the N. ſhore. See MESSASAGUES.

MISSEL BIRD, in *Ornithology*, the common Engliſh name of the larger ſpecies of thruſh, called alſo the *ſhrite*, and by authors the TURDUS *viſcivorus major*; which ſee. It is much larger than any other of the thruſh kind; its legs and feet are yellow; its head of a browniſh lead colour, and its back, tail, and rump of the ſame colour, with an admixture of yellow; but in the ſummer months it a little changes its colour, and becomes more grey, or of the colour of unripe pickled olives; its throat, breaſt, and belly, are all variegated with black ſpots; the middle of its belly whitiſh, and the upper part of its breaſt, and part of its ſides, and the under feathers of its tail, yellowiſh; its bill is ſhorter and thicker than that of other thruſhes, and of a duſky colour, except the baſe of the lower mandible, which is yellow. It uſually is ſeen on the top branches of tall oaks, elms, and other high trees, and ſings very ſweetly, and is the largeſt bird that has any melody in its note. It begins its ſong, ſitting on the ſummit of a high tree, very early in the ſpring; often with the new year, in blowing ſhowery weather, whence it is called in Hampſhire the ſtorm-cock; the note of anger or fear is very harſh, between a chatter and ſhriek. It remains the whole year with us, flies ſingly, except with its female, and drives all the leſſer ſpecies of thruſhes from it. It is the beſt of all the kinds for the table.

MISSELTOE. See MISTLETOE.

MISSEN-MAST, or MIZZEN-*Maſt*. See MISEN.

MISSEN-*Sail*. See MISEN.

MISSIGUINIPPI RIVER, in *Geography*, a river of Canada, which runs into the Saguenay, N. lat. 48° 22′. W. long. 71° 10′.

MISSILIA, among the Romans, a name given to largeſſes, thrown among the people on occaſion of games and ſhows, ſuch as ſmall gold or ſilver coins, ſweetmeats, and ſometimes animals, as ſheep, oxen, deer, &c. which were let looſe to be carried off by the people.

The word comes from *mittere, to throw*, or *let looſe*.

MISSIMA, in *Geography*, a town of Japan, in the iſland of Niphon.

MISSINABE LAKE, a lake of America, in Canada. N. lat. 48° 39′ 42″. W. long. 84° 2′ 42″.

MISSINABE *Houſe*, a ſtation belonging to the Hudſon's bay Company, ſituated on the E. ſide of Mooſe river, and eight miles from Miſſinabe lake.

MISSING WOOD, a phraſe uſed among *Bowlers*. See BOWLING.

MISSION, MISSIO, among the Romans, a term uſed to ſignify the emperor's ſending to reſcue a wounded gladiator from his antagoniſt. The *munerarii*, or perſons who exhibited the games, and likewiſe the people, uſed to reſcue a favourite gladiator. The manner of their ſignifying this favour, was *pollice preſſo*, or with the thumb hid in the palm of the hand. However the gladiator was only ſaved for that time; whereas by the *rudis* he had a free diſcharge.

MISSION. See EMISSION, MANUMISSION, REMISSION, and TRANSMISSION.

MISSION, in *Theology*, denotes a power or commiſſion to preach the goſpel. Jeſus Chriſt gave his diſciples their miſſion in theſe words, "Go, and teach all nations, &c."

The Romaniſts reproach the Proteſtants, that their miniſters have no miſſion; as not being authoriſed in the exerciſe of their miniſtry, either by an uninterrupted ſucceſſion from the apoſtles, or by miracles, or by any extraordinary proof of a vocation.

Many among us deny any other miſſion neceſſary for the miniſtry, than the talents neceſſary to diſcharge it.

MISSION is alſo uſed for an eſtabliſhment of people zealous for the glory of God, and the ſalvation of ſouls; who go and preach the goſpel in remote countries and among infidels.

There are miſſions in the Eaſt as well as in the Weſt Indies. Among the Romaniſts, the religious orders of St. Dominic, St. Francis, St. Auguſtine, and the Jeſuits, have miſſions in the Levant, America, &c.

The Jeſuits have alſo miſſions in China and all other parts of the globe, where they have been able to penetrate. The Mendicants abound in miſſions.

There have been alſo ſeveral Proteſtant miſſions, for diffuſing the light of Chriſtianity through the benighted regions of Aſia and America. Of this kind has been the Daniſh miſſion, planned by Frederic IV., in 1706. And the liberality of private benefactors in our own country has been alſo extended to the ſupport of miſſionaries among the Indians in America, &c.

MISSION is alſo the name of a congregation of prieſts and laymen, inſtituted by Vincent de Paul, and confirmed, in 1632, by pope Urban VIII., under the title of "Prieſts of the Congregation of the Miſſion."

Theſe profeſs to make it their whole buſineſs to aſſiſt the poor people in the country; and to this purpoſe they oblige themſelves never to preach, or adminiſter any of the ſacraments, in any town where there is an archbiſhop, biſhop, or provincial reſiding.

The prieſts of the miſſion were alſo intruſted with the direction and government of a female order, called "Virgins of Love, or Daughters of Charity," whoſe office it was to adminiſter aſſiſtance and relief to indigent perſons, who were confined to their beds by ſickneſs and infirmity. This order was founded by a noble virgin, whoſe name was Louiſa le Gras, and received, in the year 1660, the approbation of pope Clement IX.

They are ſettled in moſt provinces of France, Italy, Germany, and in Poland. At Paris they have a ſeminary, which they call the *Foreign Miſſion*, where youth are bred up, and qualified for miſſions abroad.

MISSIONARY, an eccleſiaſtic who devotes himſelf and his labours to ſome miſſion, either for the inſtruction of the orthodox, the conviction of heretics, or the converſion of infidels.

MISSIQUASH RIVER, in *Geography*, a river which by its various windings, from its confluence with Beau-baſin at the head of Chignut channel, to its main ſource, and from thence by a line due E. to the bay of Verte, in the ſtraits of Northumberland, ſeparates the provinces of Nova Scotia and New Brunſwick.

MISSISIPPI, a large river of America, which, together with its eaſtern branches, waters $\frac{5}{8}$ths of the United States, forms their weſtern boundary, and ſeparates them from Louiſiana. It riſes in White Bear lake, N. lat. 48° 15′. W. long. 98° 30′, and in its courſe receives ſeveral ſtreams both from the E. and W., the largeſt of which are the Miſſouri from the W., and the Illinois, Ohio, and Tenneſſee from the E. The ſoil on both ſides of this river, and in the vicinity of its tributary ſtreams, is not inferior to any in North America. This river is navigable to St. Anthony's Falls, and, as ſome ſay, beyond them. Salt of excellent quality is produced from the ſalt-ſprings or licks that are contiguous to it, and on its upper branches are great quantities of coal. An iſland of conſiderable ſize is formed by its mouths in the gulf of Mexico, between 29° and 30° N. lat. and 89° and 90 W. long.

MISSISIPPI *Territory*, a diſtrict formed of the weſtern part of the ſtate of, and bounded N. by Tenneſſee, W. by the Miſſiſippi river, S. to W. by Florida, E. by the Appalachicola and Flint rivers. The principal part of this country is inhabited by the Creek, Chactaw, Chickaſaw, and Cherokee nations of Indians. It was erected into a territorial government in 1800, and divided into three counties, *viz.* Waſhington, including 1250 inhabitants, Pickering with 2940, and Adams with 4660. The total number is 8850, of which 3489 are ſlaves. Natches is the capital. It is watered by many fine rivers, and contains large tracts of the beſt land in the United States.

MISSISSAGUIS, a tribe of Indians who inhabit the ſhores of lake Ontario, and one of the moſt numerous in this part of the country. The men are in general ſtout, and moſt excellent hunters and fiſhers; but leſs warlike than any of the neighbouring nations. They are of a darker complexion than other Indians; ſome of them being nearly as black as negroes. Both men and women, particularly the latter, are very dirty and ſlovenly in their appearance: the rancid greaſe and fiſh oil, with which the women daub their hair, necks, and faces, render them in a ſummer's day extremely offenſive. Theſe Indians ſupply the inhabitants of Kingſton, of Niagara, and of the different towns on the lake, with fiſh and game, the value of which is eſtimated by bottles of brandy and loaves of bread.

MISSIVE, ſomething ſent to another, from the Latin word *mitto*, *I ſend*.

We ſay miſſive letters, or letters miſſive, meaning letters ſent from one to another.

In propriety letters miſſive are letters of buſineſs, but not buſineſs of great concern; in contradiſtinction from letters of gallantry, letters on points of learning, diſpatches, &c. See LETTERS.

MISSON, MAXIMILIAN, in *Biography*, a well known French writer, was a counſellor of Paris at the time of the revocation of Nantes, which circumſtance obliged him to quit his country and come over to England. In 1687, and the following year, he travelled to Italy with an Engliſh gentleman, in the character of governor, and ſoon after his return he publiſhed the fruits of his obſervations, in a work entitled "Nouveau Voyage d'Italie," in 3 vols. 12mo. Theſe travels were looked upon as a faithful and lively picture of the countries deſcribed, but the Catholics were offended at the repreſentations given of the ceremonies and popular ſuperſtitions prevalent among them, which they charge with unfaithfulneſs and exaggeration. Miſſon wrote likewiſe "Memoires d'un Voyageur en Angleterre;" and "Le Theatre ſacrè des Cevennes, ou Recit des Prodiges arrivès dans cette Partie du Languedoc, et des petits Prophètes." He died, at an advanced age, in London, in the year 1721. Moreri.

MISSOURI, in *Geography*, a river of North America, in Louiſiana, which falls into the Miſſiſippi from the weſtward, 18 miles below the mouth of the Illinois, and about 1160 miles from the Balize, or mouths of the Miſſiſippi, in the gulf of Mexico. Hutchins ſays that it is navigable 1300 miles, and larger than the Miſſiſippi.

MISSOURIS, the Indians who inhabit the banks of the above river, and who are ſaid to have 1500 warriors.

MIST, a meteor, called alſo fog. See Fog and Meteorology.

The blueiſh miſt which we ſometimes ſee on our fields and paſtures in a morning, though often innocent, yet has been in ſome places found to be the actual cauſe of murrain, and other fatal diſeaſes among the horned cattle. Dr. Winklar gives, in the Philoſophical Tranſactions, an account of a murrain affecting the cattle in Italy and other places, which was evidently ſeen to ſpread itſelf over the countries in form of a blue miſt. Wherever this was perceived, the cattle were ſure to come home ſick: they appeared dull and heavy, and refuſed their food; and many of them would die in four-and-twenty hours. Upon diſſection there were found large and corrupted ſpleens, ſphacelous and corroded tongues; and in ſome places thoſe people who were not careful of themſelves in the management of their cattle, were infected and died as faſt themſelves. The principal cauſe of this diſeaſe ſeems to be the exhalation of ſome unwholeſome ſteams from the earth; and it was obſervable, that there had been three earthquakes in Italy the year before it happened.

The method of cure which ſucceeded beſt, was this: as ſoon as any beaſt appeared to be ſick, they examined the tongue, and if aphthæ or little bliſters were found on it, they ſcraped it with a ſilver inſtrument made with ſharp teeth at the ſides, till it bled in all thoſe parts where the aphthæ were; the blood was then wiped away with a cloth, and the whole tongue waſhed ſeveral times with vinegar and ſalt. After this the following medicine was given internally: take of ſoot, brimſtone, gunpowder, and ſalt, of each equal parts: mix theſe in as much water as will make a mixture thin enough to be ſwallowed, and let a ſpoonful be given for a doſe three or four times a day. The cattle which were in health had this medicine given them, as well as the ſick; and the conſequence was, that very few died in Swiſſerland, while almoſt all died in other places.

It was very remarkable that this contagion, on this occaſion, ſeemed to travel ſlowly but regularly on: it came at the rate of about two German miles in twenty-four hours; this it kept regularly to during the whole time of its raging, and never appeared in very diſtant places at the ſame time.

The whole ſurface of the earth emitting theſe effluvia, no cattle eſcaped them in the courſe of their way, but thoſe which were kept within doors at rack and manger, fell ill at the ſame time, and in the ſame manner with thoſe in the open fields.

Dr. Slare was of opinion, that it was owing to certain inſects, which could not fly faſter than at the rate of two German miles a day; and that they travelled regularly, and ſpread the miſchief where they paſſed; but there wanted ſome judicious perſons, verſed in theſe obſervations, to have examined both the ſtate of the air and the beaſts, on this occaſion. Phil. Tranſ. Nº 145.

MISTAKE Bay, in *Geography*, a large bay on the weſt ſide of the entrance of Davis's ſtraits, and N. of Hudſon's ſtraits; from which it is ſeparated by a peninſula of the N. main on the W. and Reſolution iſland on the S.

MISTAKEN Bay, a bay on the N.W. coaſt of Tavai Poenammoo, ſo called by Capt. Cook in 1769; 25 miles S.W. of Caſcade Point.

Mistaken, *Cape*, the S. point of the eaſternmoſt of the Hermit's iſlands, about three leagues E.N.E. from Cape Horn, at the extremity of South America.

MISTEK, a town of Moravia, in the circle of Prerau; 7 miles E.N.E. of Freyburg.

MISTELPACH, a town of Auſtria; 18 miles N. of Vienna.

MISTIC, or Mystic, a ſhort river which falls into the N. ſide of Boſton harbour, by a broad mouth on the E. ſide of the peninſula of Charleſtown. It is navigable for ſloops four miles to the town of Medford, and is croſſed by two bridges, one at its mouth, and another a mile above it. The Middleſex canal connects this river with the Merrimack.

MISTISSINY, a lake of Canada. N. lat. 50° 40'. W. long. 74°.

MISTLETOE, Misletoe, or *Miſſeltoe*, in *Botany*. See Viscum.

MISTRETTA, in *Geography*, a town of Sicily, in the valley of Demona; the ſee of a biſhop; 64 miles W. of Meſſina. N. lat. 38° 55'. E. long. 14° 22'.

MISTY, a town of Aſiatic Turkey, in Caramania; 50 miles S. of Yurcup.

MISUSER, in our *Old Writers*, an abuſe of any liberty or benefit: as he ſhall make fine for his miſuſer. Old. Nat. Br. 149.

By miſuſer, a charter of a corporation may be forfeited; ſo alſo an office, &c.

MISWALDE, in *Geography*, a town of Pruſſia, in the province of Oberland; 18 miles S. of Elbing.

MISY, in *Natural Hiſtory*, the name of a foſſile ſubſtance, uſed very frequently by the ancients in medicine, and ſuppoſed to be one of their now loſt medicines, but erroneouſly; it being ſtill very common in the Turkiſh dominions, and not unfrequently found in the mines of Cremnitz in Hungary. It is a conſiderably firm ſubſtance, though of an irregular and ſeemingly not compact texture, and much reſembles ſome of our gaudy marcaſites; but that it wants their hardneſs and their weight, and is not inflammable.

It is at preſent no where put to any uſe. The ancients eſteemed it of the ſame nature with the chalcitis, but that it poſſeſſed thoſe virtues in a more remiſs degree; they had it from Ægypt and Cyprus, and uſed it externally in hæmorrhages, and ſome cutaneous eruptions.

Misy, in *Botany*, a name given by Theophraſtus, and all the old Greek writers, to a kind of truffle or ſubterranean muſhroom, of a very delicate flavour. The truffles of Numidia, and ſome other parts of Africa, were always eſteemed ſuperior to thoſe of any other part of the world. They are called *terfez*, *camaha*, or *kema*, by ſome later writers, and were brought to Rome, and ſo greatly eſteemed, that no diſh was ranked above them. Theſe were called Lybian truffles by the Romans, and they ſeem to have been the ſame with the Cyrenean miſy of the Greeks. It is to be obſerved, that the Greeks in general, in early times, were very little acquainted with the affairs of Africa; and all that they had from this part of the world, was ſaid to come from Cyrene, ſome old cities of their forefathers being there, and keeping up a friendſhip and traffic with them. The *thyon*, a tree growing plentifully in almoſt all parts of Africa, and which is the ſame with the citrus of the Romans, was in this manner attributed to Cyrene, by the ſame Theophraſtus And thus, when ſpeaking of truffles, he adds, that the Cyrenean miſy ſurpaſſed all the other kinds in flavour; his words ſtand at large in Athenæus; and thence Pliny has taken his account, which he cloſes in this manner: "The thing which they call miſy, in the province of Cyrene, is of this kind; but it is more fleſhy and of a finer taſte and ſmell." This is the ſenſe of Pliny, as the text ſtands in our copies; but it is probable that he tranſlated Theophraſtus better than they, at leaſt as we know that what he ſays is not his own but taken from that author, we have a right to underſtand it in his way, and that is, that the roots of this Cyrenean miſy have a delicate ſmell reſembling that of meat, or fleſh newly cut. Pliny, lib. xix. cap. 3.

It is very certain, that this Cyrenean miſy of the old Greeks is the ſame thing with the delicate African truffle or terfez of Leo Africanus, and the moderns: and Pliny had read ſome of the ancients who were ſenſible of this, and had taken from them an account that the African truffles are the fineſt in the world; and yet did not perceive, that theſe African truffles were the ſame with the Cyrenean miſy, which he immediately after mentions from Theophraſtus.

MITCHEL Dean, in *Geography*. See Dean, *Michel*.

MITCHELLA, in *Botany*, named by Linnæus in honour of his friend and correſpondent Dr. John Mitchell, a phyſician at Virginia, whoſe paper, deſcribing thirty new genera of plants, is publiſhed in the *Ephemerides Naturæ Curioſorum*, v. 8, 187, preceded by a diſſertation on the principles of ſyſtematic botany and zoology. This treatiſe was afterwards publiſhed ſeparately at Nuremberg in 1769, about a year after its author's death. Linn. Gen. 55. Schreb. 73. Willd. Sp. Pl. v. 1. 617. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 246. Michaux Boreali-Amer. v. 1. 86. Juſſ. 208. Lamarck Illuſtr. t. 63. (Chamædaphne; Mitch. n. 27.)—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Aggregatæ*, Linn. *Rubiaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, erect, four-toothed, permanent. *Cor.* of one petal, funnel-ſhaped; tube cylindrical; limb four-cleft, ſpreading, hairy within. *Stam.* Filaments four, thread-ſhaped, erect, between the ſegments of the corolla; anthers oblong, acute. *Piſt.* Germen twin, inferior, orbiculate, common to two flowers; ſtyle thread-ſhaped, the length of the corolla; ſtigmas four, oblong. *Peric.* Berry diviſible into two parts, globoſe, with two diſtinct crowns. *Seeds* four, compreſſed, callous.

Eſſ. Ch. Corolla of one petal, ſuperior; two flowers on each germen. Stigmas four. Berry in two parts, with four ſeeds.

1. M. *repens*. Linn. Sp. Pl. 161. (Syringa baccifera; Pluk. Amalth. 198. t. 444. f. 2.)—Native of North America, and introduced at Kew in 1761, by Mr. John Bartram, where it flowers in June. *Stem* decumbent and creeping, ſlender. *Leaves* in pairs, on ſhort ſtalks, ovate, pointed. *Flowers* terminal, two on each germen, as in ſeveral of the genus *Lonicera*.

MITCHELS, among *Builders*, are Purbeck ſtones, from fifteen inches ſquare to two feet, ſquared and hewed ready for paving.

MITCHELSTOWN, in *Geography*, a poſt-town of the county of Cork, Ireland, ſituated on the river Funcheon. In it is a college, founded by a former earl of Kingſton, for the ſupport of twelve decayed gentlemen and twelve decayed gentlewomen, who have each 40*l. per annum*, and comfortable apartments; and a chaplain with 100*l. per annum*, with a houſe. A fine ſeat of the Kingſton family adjoins the town. Near this town, at the foot of one of the Gattee mountains, is the cave of Skeheenrinky, which is deſcribed by Arthur Young in his Iriſh Tour, and preferred by him to the famous cave in the Peak of Derbyſhire, as it was by lord Kingſborough to the Grot d'Aucel in Burgundy. Mitchelſtown is 102 miles S.W. from Dublin, and about 24 from Cork, on the road from that city to Caſhel. Carliſle. Young.

MITCHIGAMAS, a nation of Indians, who with the Piorias, inhabit near the ſettlements in the Illinois country.

MITE, in *Natural Hiſtory*, the name of a ſmall animal very well known, and found in old cheeſe, and in many other bodies, both recent and periſhing. See Acarus.

To the naked eye the mites in cheeſe appear like moving particles of duſt, but the microſcope diſcovers them to be perfect animals, having as regular a figure, and performing all the functions of life as perfectly as creatures that exceed them many times in bulk.

They are cruſtaceous animals, and are uſually tranſparent; the principal parts of them are the head, the neck, and the body; the head is ſmall in proportion to the body, and has a ſharp ſnout, and a mouth that opens and ſhuts like a mole's; they have two ſmall eyes, and are extremely quick-ſighted; and when you have once touched them with a pin, you will eaſily perceive how cunningly they avoid a ſecond touch.

They are of different ſorts; for ſome of them have ſix legs, and others have eight: each leg has ſix joints ſurrounded with hairs, and two little claws at the extremity, with which it very nicely takes hold of any thing; the hinder part of the body is plump and bulky, and ends in an oval form, from which there iſſue out a few exceeding long hairs; other parts of the body and head are alſo beſet with thin and long hairs.

The males and females are eaſily diſtinguiſhed in theſe little animals. The females are oviparous, as the louſe and ſpider, and from their eggs the young ones are hatched in their proper form, without having any change to undergo afterwards. They are, however, when firſt hatched, extremely minute; and, in their growing to their full ſize, they caſt their ſkins ſeveral times.

Theſe little creatures may be kept alive many months between two concave glaſſes, and applied to the microſcope at pleaſure. They are thus often ſeen *in coitu*, conjoined tail to tail; and this is performed by an incredible ſwift motion.

Their eggs, in warm weather, hatch in twelve or fourteen days; but, in winter, they are much longer; theſe eggs are ſo ſmall, that a regular computation ſhews, that ninety millions of them are not ſo large as a common pigeon's egg. Baker's Microſcope, p. 18.

Mites are very voracious animals; they not only prey upon cheeſe, but upon all ſorts of dry fleſh, fiſh, fruits, and ſeeds; and almoſt on all things which have ſome degree of moiſture, without ever being wet; and they have often been ſeen to eat one another. Their manner of eating is by thruſting alternately one jaw forward and the other backward; and in this manner grinding their food; and after they have done feeding, they ſeem to chew the cud.

There are ſeveral leſſer diſtinctions obſervable in the mites, which are found among different ſubſtances. Thoſe in malt-duſt and oat-meal are much nimbler than the cheeſe-mites, and have more and longer hairs. The mites among figs reſemble beetles, and have two feelers at the ſnout, and two very long horns over them; theſe have only ſix legs, and are more ſluggiſh than thoſe in malt-duſt. Thoſe found among figs have alſo very long hairs, and thoſe beſet at certain diſtances with other ſmaller hairs; whence M. Leeuwenhoek conjectures that theſe longer and larger hairs are jointed at thoſe places where the ſhort ones are found.

There is a ſort of wandering mites found wherever there is any thing that they can feed on; theſe are often found in form of a white duſt, and are not ſuſpected to be living creatures.

The mite is an animal very tenacious of life ; it will live months without food ; and M. Leeuwenhoek had one which lived eleven weeks on the point of a pin, on which he had fixed it for examining it by his microſcope. Leeuwenhoek's Arcan. Nat. tom. iv. p. 368.

Mite, a ſmall coin, formerly current ; equal to about one-third part of a farthing.

Mite alſo denotes a ſmall weight uſed by the moniers. It is equal to the twentieth part of a grain troy, and is divided into twenty-four droits, the droit into twenty periots, and the periot into twenty-four blanks.

MITELLA, in *Botany*, received its name from Tournefort, in alluſion to the ſhape of the ripe ſeed-veſſel, which, with its two pointed lobes, reſembles a little mitre.—Linn. Gen. 223. Schreb. 301. Willd. Sp. Pl. v. 2. 659. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 73. Juſſ. 309. Tourn. t. 126. Michaux Boreali-Amer. v. 1. 270. Lamarck Illuſtr. t. 373. Gærtn. t. 44.—Claſs and order, *Decandria Digynia*. Nat. Ord. *Succulentæ*, Linn. *Saxifragæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, cut half way down into five ſegments, bell-ſhaped, permanent. *Cor.* Petals five, in many capillary ſegments, inſerted into the calyx, twice exceeding it in length. *Stam.* Filaments ten, awl-ſhaped, inſerted into the calyx, ſhorter than the corolla ; anthers roundiſh. *Piſt.* Germen ſuperior, roundiſh, cloven ; ſtyles ſcarcely any ; ſtigmas obtuſe. *Peric.* Capſule ovate, of one cell, divided half way down into two flat, equal valves, recurved at their points. *Seeds* numerous.

Eſſ. Ch. Calyx five-cleft, inferior. Petals five, pinnatifid, inſerted into the calyx. Capſule of one cell, with two equal valves.

1. M. *diphylla*. Two-leaved Mitella. Linn. Sp. Pl. 580. Lamarck, fig. 1. (Cortuſa americana altera, floribus minutis fimbriatis ; Menz. Pugill. t. 10.)—Leaves heart-ſhaped, ſlightly three-lobed, toothed. Stalk with two oppoſite leaves.—Native of North America. Eaſily cultivated in bog earth, in the ſhade, flowering in April and May. A delicate little perennial *herb*, about a ſpan high, pale green, ſomewhat hairy. *Leaves* heart-ſhaped, acute, ſlightly lobed and toothed ; the radical ones ſeveral, on longiſh footſtalks. *Flower-ſtalk* ſolitary, erect, bearing a pair of ſeſſile oppoſite horizontal leaves about the middle, and terminating in a ſlender, upright, downy, rather viſcid cluſter, of minute white *flowers*, remarkable for their elegantly fringed feather-like petals. *Capſule* ſometimes with three valves.

2. M. *cordifolia*. Heart-leaved Mitella. Willd. n. 2. Lamarck, fig. 3.—Leaves heart-ſhaped, with briſtly teeth. Stalk nearly naked.—Suppoſed by Willdenow, we know not on what foundation, to be a native of the north of Aſia. Michaux found it in Canada. This appears to differ from the former in having ſharper briſtle-pointed teeth to the *leaves*, and only one very ſmall leaf, with a few ſcales, on the ſtalk. *Petals* in capillary ſegments. We have ſeen no ſpecimen.

3. M. *nuda*. Naked-ſtalked Mitella. Linn. Sp. Pl. 580. Lamarck, fig. 2. (M. ſcapo nudo, petalis fimbriatis ; Gmel. Sib. v. 4. 175. t. 63.)—Leaves kidney-ſhaped, wavy, fringed. Stalk naked.—Native of Siberia and North America, in woods. Miller is ſaid to have cultivated this ſpecies in 1758, but we have never ſeen it in the gardens of the preſent day. It is ſmaller than the firſt ſpecies, with rounder, ſtrongly briſtly, *leaves*. *Stalk* three or four inches high, quite naked, bearing four or five *flowers*, the ſegments of whoſe petals are quite capillary.

4. M. *proſtrata*. Proſtrate Mitella. Michaux. n. 3.—“ Root creeping. Stems proſtrate. Leaves alternate, roundiſh-heart-ſhaped, ſharpiſh, with ſlight obtuſe lobes.”—Native of the ſouthern limits of Canada. *Michaux*.

MITELLA, in *Surgery*, a ſcarf for ſuſpending the arm.

MITGAING, in *Geography*, a town of Hindooſtan, in the circar of Surgooja ; 40 miles N. of Surgooja.

MITHRA, *Feaſts of*, in *Antiquity*, were feaſts celebrated among the Romans in honour of Mithra, Mithras, or the ſun.

Mithras was an ancient god of the Perſians, whom they worſhipped, as Plutarch ſays, according to the laws of Zoroaſter, invoking him as the mediator between Oromazes and Arimanius. Mithras was the ſun, which was invoked as a divinity ; to him they offered ſacrifices, and addreſſed their prayers, and they had prieſts ſet apart for ſervice ; and they alſo worſhipped fire as an emblem of the ſun ; but they had neither temples, ſtatues, nor altars. This Mithras was not well known in Europe, until his worſhip was brought to Rome, which happened, according to Plutarch, in the time of the Piratic war, A. U. C. 687. It is from this epoch, and more eſpecially from the time of the ſecond and third century of the Chriſtian era, that the worſhip and myſteries of this divinity were celebrated at Rome. That the Romans worſhipped Mithras as the ſun, is evident from an inſcription dated in the third conſulate of Trajan, or about the year of Chriſt 101. This is the dedication of an altar to the ſun, under the name of *Mithra, deo Soli invicto Mithræ*. This epithet, invincible, is frequently given to the ſun upon other monuments, and it denotes that luminary to be the firſt and lord of all the reſt. But the worſhip of Mithras was not known in Egypt and Syria in the time of Origen, who died about the year of Chriſt 263 : though it was common at Rome for more than a century before this time. The myſteries of Mithras were both impious and abominable, ſince human victims were offered on this occaſion. The barbarous cuſtom of ſacrificing men was aboliſhed by Adrian, but reſtored again by Commodus, as Lampridius informs us. This worſhip made great progreſs in ſucceeding ages. It was not only ſpread through Italy and Greece ; but it appears from Socrates and Sozomen, that the Egyptians, and particularly the people of Alexandria, worſhipped the ſame divinity. Mithras was alſo known in the iſland of Crete. He was alſo worſhipped by the Gauls, as appears by a figure of this god found at Lyons. The worſhip of this divinity was not only extenſive, but of long duration ; for it was not deſtroyed when the emperors embraced Chriſtianity. At length, this worſhip was proſcribed at Rome in the year 378, by order of Gracchus, prefect of the prætorium. According to M. Freret, the feaſts of Mithras were derived from Chaldea, where they had been inſtituted for celebrating the entrance of the ſun into the ſign Taurus.

Mithra is alſo a name of the ſun in the mythology of the Hindoos. See Surya.

MITHRAX, in *Natural Hiſtory*, the name given by Pliny and the ancients, to a gem found in Perſia, which, when held up to the ſun, ſhewed many colours. It was probably no other than the opal. Hence the barbarous writers of the middle ages ſeem to have taken their account of the mithridates.

MITHRIDATE, Mithridatium, in *Pharmacy*, an antidote or compoſition, in form of an electuary ; ſerving either as a remedy, or a preſervative againſt poiſons. Mithridate was formerly one of the capital medicines in the apothecaries' ſhops, being compoſed of a vaſt number of drugs ; among which are opium, myrrh, agaric, ſaffron, ginger, cinnamon, ſpikenard, frankincenſe, caſtor, pepper, gentian, &c.

It is accounted a cordial, opiate, ſudorific, and alexipharmic. Matthiolus ſays, it is more effectual againſt poiſons than Venice treacle, and much eaſier to be made.

It takes its name from its inventor, Mithridates, king of Pontus, who is reported to have ſo fortified his body againſt poiſons, with antidotes and preſervatives, that when he had a mind to diſpatch himſelf, he could not find any poiſon that would take effect.

The receipt of it was found in his cabinet, written with his own hand, and was carried to Rome by Pompey. It was tranſlated into verſe by Damocrates, a famous phyſician, and hence called *Confectio Damocratis*; and was afterwards tranſlated by Galen, from whom we have it. It has undergone conſiderable alterations ſince the time of its royal preſcriber.

MITHRIDATE *Muſtard*. See TREACLE *Muſtard*.

MITHRIDATE, *Muſtard Baſtard*, is a ſpecies of *iberis*.

MITHRIDATEA, in *Botany*, received its name from Commerſon, we preſume in memory of Mithridates, who, from the celebrated hodge-podge, which he is reported to have invented, as a counter-poiſon, muſt have been converſant with herbs and their reputed properties at leaſt. We can trace no reaſon for the application of the name to this particular plant.—Schreb 783. Willd. Sp. Pl. v. 1. 27. (Tambouriſſa; Sonnerat Ind. Or. v. 2. 237. Ambora; Juſſ. 401. Lamarck Illuſtr. t. 784.)—Claſs and order, *Monandria Monogynia*. Nat. Ord. *Scabridæ*, Linn. *Urticæ*, Juſſ.

Gen. Ch. *Common Receptacle* of one leaf, fleſhy, bell-ſhaped, in four large, ovate, ſpreading ſegments; the upper ſurface covered with innumerable, minute, imbedded florets. *Perianth* ſcarcely any. *Cor.* none. *Stam.* Filament one, very ſhort, erect; anther erect, channelled, embracing the ſtyle. *Piſt.* Germen oval; ſtyle ſhorter than the ſtamen; ſtigma ſimple. *Peric* none. *Common Receptacle* enlarged, pulpy, turbinate, concave, its ſegments folded inward, lodging the ſeeds in its fleſhy ſubſtance. *Seeds* ſolitary to each floret, oval.

Obſ. Juſſieu thinks the flowers are monoecious, the receptacles of the males being moſt deeply cut, and expanded, thoſe of the females ſlightly perforated, by a cruciform inciſion, at the top. This ſeems to agree with our ſpecimens from Commerſon, but by no means with Sonnerat's deſcription. Poſſibly the flowers may become monoecious occaſionally, by the caſual imperfection of their reſpective organs.

Eſſ. Ch. Common receptacle many-flowered, four-cleft. Calyx none. Corolla none. Seeds ſolitary, imbedded in the fleſhy receptacle.

1. M. *quadrifida*. Ambora, Drum-tree, or Monkey-apple.—Gathered by Sonnerat in Madagaſcar, as well as in the iſles of Bourbon and Mauritius. Commerſon found it in the latter. The *wood* of this tree is light, white and pithy, as in *Ficus*, to which the genus is moſt nearly allied. *Leaves* on the young ſmooth branches, nearly oppoſite, ſtalked, elliptical, obtuſe, entire, evergreen, very ſmooth, with a ſtrong mid-rib, ſending off numerous tranſverſe veins; their ſize on young *trees* is a ſpan in length, and above two inches in breadth; on old ones about one-third as much. *Flowers* in ſmooth cluſters, from the older branches, or the trunk; their partial ſtalks about an inch long. *Receptacles*, before they expand, ovate, about the ſize of a filbert, ſomewhat roughiſh or ſcaly at the outſide; when open the *male* ones, as they ſeem to us, ſpread about an inch and a half, diſplaying abundance of thick-ſet *ſtamens*, among which we can diſcern nothing elſe. The ripe *fruit* is two or three inches wide, of a depreſſed, roundiſh, unequal form, hollow, its pulpy ſubſtance, in which the *ſeeds* are vertically imbedded, as in *Dorſtenia*, being about one-third of an inch thick. The pulpy coat, which envelopes the *ſeeds*, is ſaid to be orange-coloured, and to be uſed for a dye, like the American Arnotto, *Bixa Orellana*. *Ambora* is the Madagaſcar name of this tree. The affinity of the genus to FICUS and DORSTENIA, (ſee thoſe articles,) cannot be overlooked. The *foliage* however is ſmooth; but that is the caſe with ſome others of this natural order, though indeed with but very few. Juſſieu ſays the tree diſcharges a milky fluid, which confirms its relationſhip to *Ficus*; and if monkies eat the fruit, as one of its names implies, it would certainly not prove poiſonous to mankind, though, like many ſpecies of *Ficus*, it may be either taſteleſs or of a diſagreeable flavour.

MITHRIDATES, in *Biography*, king of Pontus, ſurnamed "Eupator," and "The Great," was the ſon of Mithridates VI., the firſt king of that country who entered into an alliance with the Romans. At the death of his father, 123 B. C., he ſucceeded to the crown when he was only about 12 years of age. He was from a very early period of life accuſtomed to martial exerciſes, and the ſports of the chaſe, by which he was enured to fatigues. In his mind were imprinted the characters of turbulence, ferocity, and ſuſpicion, by which, particularly the latter, his life was preſerved from ſeveral attempts made on him by thoſe appointed to be his guardians. His mother had been appointed joint heir of the crown, but he very ſoon deprived her of power, and kept her in cloſe confinement, in which ſhe ended her days. When arrived at the age of manhood he took his own ſiſter, Laodice, for a wife, which was the common practice of the eaſtern monarchs of that period. After the birth of a ſon he made a progreſs through all the neighbouring Aſiatic ſtates, with the view of obſerving their ſtrength and policy. In this journey he ſpent three years, during which his queen attached herſelf to one of the lords of the court, and on his return ſhe made an attempt to poiſon him. He drank the potion, but his conſtitution was proof againſt its baneful contents, and the diſcovery of her infidelity and wicked intentions was the occaſion of her death, with that of all her accomplices.

Mithridates now entered upon his career of ambition: he overran the neighbouring kingdom of Paphlagonia, which he at length divided with his ally Nicomedes, the king of Bithynia, totally regardleſs of the remonſtrances of the Romans, who had declared it a free ſtate. He next reduced Galatia, though under the protection of Rome: after this he anxiouſly wiſhed to make himſelf maſter of Cappadocia, then poſſeſſed by his brother-in-law, and friend Ariarathes, whom he cauſed to be privately aſſaſſinated, upon which the kingdom was ſeized by Nicomedes, who married the widow. Mithridates, however, under the pretence of ſecuring the crown for his nephew, drove out Nicomedes, and ſeated the young prince upon the throne, whom he afterwards ſtabbed by the moſt ſcandalous treachery. The Cappadocian army, who were witneſſes of the abominable deed, threw down their weapons, and ſuffered Mithridates to take poſſeſſion of all the fortreſſes in the kingdom. He now placed on the throne a minor ſon of his own, under the guardianſhip of Gordius, who had been his wicked inſtrument in aſſaſſinating his brother-in-law. The jealouſy of Nicomedes induced him to bring forward a pretended ſon of Ariarathes, who was ſent to Rome to lay his complaints before the ſenate, and implore its aſſiſtance to ſeat him on the throne of his fathers. Mithridates, apprized of the fact, ſent deputies to ſtate to the ſenate the impoſture, and in the concluſion both kings were commanded to relinquiſh their claims, and the crown of Cappadocia was conferred upon Ariobarzanes. This was but the commencement of the diſpute, and the Roman commanders, according to their uſual practice, endeavoured to excite hoſtilities among the Aſiatic kings, that they might have a pretence to interfere in their conteſts. From the year 90 B. C. open war may be conſidered as prevailing between the Roman republic and Mithridates, which was extinguiſhed only by the death of the latter. The early ſucceſſes of Mithridates led him to aſpire to the honour of being the inſtrument of freeing all Aſia from the Roman yoke, and at firſt he ſeemed to overrun, in an uninterrupted career, all the countries in their alliance and poſſeſſion, being every where received by the people as their deliverer. His great object now was to ingratiate himſelf with people of all claſſes and countries by ſeveral popular acts, ſuch as reſtoring, without ranſom, all the Aſiatic priſoners, who had fallen into his hands. The free cities of Aſia, won over by theſe ſpecious acts of generoſity, opened their gates to him, and took pleaſure in demoliſhing all the monuments erected by the Romans. Mithridates, determined upon irreconcileable enmity to that people, and wiſhing to involve the Aſiatics in the ſame principles, ſent to the magiſtrates throughout the cities in which any Roman citizens had eſtabliſhed themſelves, directing, that on a certain day a general maſſacre ſhould be perpetrated on all of Italian birth or origin, not excepting women and the youngeſt children. In this horrid maſſacre it was imagined, that at leaſt 80,000 Roman citizens loſt their lives; ſome accounts have indeed reckoned them at nearly double that number.

By this maſter ſtroke of bloody policy, for which his name muſt for ever be tranſmitted with infamy, Mithridates made himſelf maſter of the whole of Leſſer Aſia, and proceeded, without remorſe or delay, to the conqueſt of the neighbouring iſlands, ſeveral of which he quickly reduced. At Cos he took poſſeſſion of a large ſum of money, which had been depoſited there by the Aſiatic Jews, and intended for the temple of Jeruſalem. He next made an attempt upon Rhodes but was defeated, and incurred ſo much perſonal riſque, that he ever afterwards felt an abhorrence of the ſea. Archelaus, one of his generals, croſſing over to Greece, made himſelf maſter of Athens, while his own ſon Ariarathes conquered Macedonia and Thrace. He was now at the ſummit of power, and is ſaid to have received the homage of twenty-five different nations. His memory and talent for the acquiſition of languages were ſo great that he could converſe with the natives of all of them without the aid of an interpreter.

From this period we may date his decline; Sylla procured of his countrymen the chief command againſt Mithridates, and ſailing to Greece recovered Athens, in the year 86 B. C. He afterwards defeated with great ſlaughter the troops of Archelaus at Chæronea, and by two other deciſive victories he put an end to the war in Greece. Mithridates was purſued from place to place, till at length he was obliged to ſubmit to conditions, at which the greatneſs of his mind revolted: theſe conditions were, that he ſhould reſign all his conqueſts, and confine himſelf within his paternal dominions of Pontus; that he ſhould releaſe all his captives without ranſom; pay down a large ſum of money; deliver up the greateſt part of his fleet; and practiſe no hoſtilities againſt thoſe who had revolted from him and taken part with the Romans. Although the king had acquieſced in theſe terms, yet it was with the ſecret determination to break them as ſoon as he ſhould be ſufficiently powerful for the purpoſe. A new war kindled about the year B. C. 74, in which the ſucceſs of Mithridates was ſo great that he recovered the beſt part of Pontus, which had, in the early part of the conteſt, been wreſted from him, Bithynia, Cappadocia, and Armenia Minor. At length Pompey, inveſted with great powers, was ſent by the Romans to put an end to this long continued war, which he accompliſhed by deſtroying, or diſperſing all the king's troops, except a body of cavalry with which he forced a paſſage. Mithridates fled into Armenia, whence he withdrew to Colchis, and thence to Scythia, between the Euxine and Caſpian ſeas. Here he was ſo completely concealed that it was ſuppoſed he was dead, till he emerged from his retreat at the head of a conſiderable army, and made himſelf maſter of ſeveral important places. His ſucceſs was but ſhort-lived, and thoſe even who were willing to ſubmit to his power, had no confidence in his cauſe, but choſe rather to join what they thought was the ſtrongeſt party. He now adopted the deſign of marching into Europe, and exciting the Gauls in his cauſe, which created ſuch diſcontents in the army, as to lead them to chooſe Pharnaces, the favourite ſon of Mithridates, as their king. Having in vain attempted to recal his ſon to the principles of duty, he attempted to deſtroy himſelf firſt by poiſon, and then by the ſword, but in both he failed, and was at laſt diſpatched, at his own requeſt, by a Gallic mercenary. This was in the year B. C. 64, when the king had attained to the 71ſt year of his age. He was one of the moſt formidable enemies of the Roman republic, and the news of his death was received with the greateſt joy and exultation. His body was delivered to Pompey, who, with the magnanimity of a generous enemy, beſtowed upon it a moſt magnificent funeral. Mithridates was learned, and a patron of learning; he was particularly attached to medicine, and an electuary ſtill bears his name. Plutarch. Univer. Hiſt.

MITHRIDATES, in *Natural Hiſtory*, the name of a ſtone found in ſome parts of Perſia, ſeeming to be the ſame as the mithridax or mithrax.

MITHRIDAX, the name of a gem deſcribed by Solinus, to which he aſcribes qualities the ſame with thoſe given by Pliny to the mithrax; and therefore probably the ſame ſtone with it.

MITIUSCHOV, in *Geography*, an iſland in the Frozen ocean, near the weſtern coaſt of Nova Zembla, at the entrance of the Metochik Schau. N. lat. 75° 20'. E. long. 55° 38'.

MITOC, a lake of Thibet, about 36 miles in circumference. N. lat. 31° 50'. E. long. 93° 24'.

MITOMBA, a kingdom of Africa, in the country of Sierra Leona, ſituated on the banks of the river Sierra Leona, called alſo Mitomba.

MITRA, in *Botany*. See HELVELLA, MITREOLA, and OPHIORRHIZA.

MITRALIS VALVULA, in *Anatomy*, the valve placed at the opening, by which the left auricle and ventricle communicate. See HEART.

MITRARIA, in *Botany*, ſo denominated from a ſlight reſemblance to a mitre, in the form of the outer calyx.—Cavan. Ic. v. 6. 57.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Scrophulariæ*, Juſſ.

Gen. Ch. *Cal.* Perianth double, inferior, permanent, each of one leaf: the outer divided on one ſide nearly to the bottom, on the other but half way down; the ſegments ovate, concave, of equal lengths: inner about the ſame length, in five, deep, lanceolate, nearly equal ſegments. *Cor.* of one petal, ringent; tubes many times longer than the calyx, round, inflated upward, contracted at the mouth, pervious; limb ſhort, ſpreading, in two lips; the upper in two parallel lobes; lower in three very deep ones; all ovate and obtuſe. *Stam.* Filaments four, awl-ſhaped, two rather the longeſt, all longer than the corolla, inſerted into the bottom of its tube, with the rudiment of a fifth; anthers ovate, two-lobed. *Piſt.* Germen ſuperior, ovate; ſtyle awl-ſhaped, rather longer than the ſtamens; ſtigma ſlightly ſwelling, obtuſe. *Peric.* Berry ſucculent, of one cell. *Seeds* numerous, oblong, poliſhed, imbedded in pulp.

Obſ. It is to be preſumed that the germen has two cells, though they are obliterated in the ripe fruit. The double calyx diſtinguiſhes this genus from *Beſleria.*

Eſſ. Ch. Calyx double; the outer in two lobes; the inner in five. Corolla two-lipped; the lower lip in three equal entire ſegments: tube inflated. Berry ſuperior, of one cell, with many ſeeds.

1. M. *coccinea.* Cavan. Ic. t. 579.—The only known ſpecies. Gathered by Lewis Née at St. Carlos, in Chili, flowering in February. *Stem* ſhrubby, climbing; with weak oppoſite, ſquariſh; ſlightly downy, jointed, leafy *branches.* *Leaves* oppoſite, ſometimes three together, (as often happens to the ſhrubs of that country, witneſs *Fuchſia*, *Verbena*, and others,) on ſhort ſtalks, ovate, acute, ſtrongly ſerrated, about an inch long; green and ſlightly hairy above; glaucous beneath. *Flowers* on ſimple axillary ſtalks about the length of the leaves, uſually ſolitary, ſometimes two or three together, drooping, ſwelling and roughiſh towards the top. *Calyx* green; the outer one hairy. *Corolla* an inch and half long, of a rich ſcarlet. *Stamens* and *ſtyle* ſcarlet, with yellow anthers. *Berry* globoſe, the ſize of a currant, tipped with the permanent ſtyle.

MITRASACME, from *μιτρα*, *a biſhop's mitre*, and *ακμη*, *the ſummit;* Labillardiere ſays "*ακμη*, *the flower*," probably by an accidental miſtake, or miſconception. He invented this name for the plants in queſtion, becauſe the acute ſummit of the germen ſeparates, as it advances to maturity, into two points, each crowned with half the divided ſtyle, and reſembles the cloven termination of a mitre. Mr. Brown, though he adopts the name without alteration, obſerves, that *Mitragyne* would have been better. Labillard. Nov. Holl. v. 1. 36. Brown Prodr. Nov. Holl. v. 1. 452.—Claſs and order, *Tetrandria Monogynia.* Nat. Ord. *Rotaceæ*, Linn. *Gentianæ*, Juſſ. Brown. Labillardiere refers it to the *Scrophulariæ* of Juſſieu, but certainly erroneouſly.

Gen. Ch. *Cal.* Perianth inferior, angular, in four, rarely but two, deep, acute, ſlightly ſpreading, permanent ſegments. *Cor.* of one petal, deciduous; tube angular, ſhort; limb ſlightly ſpreading, in four deep, equal ſegments. *Stam.* Filaments four, awl-ſhaped, inſerted into the tube, equal, uſually ſhorter than the corolla; anthers heart-ſhaped, incumbent. *Piſt.* Germen ſuperior, ovate, acute, ſhorter than the calyx, cloven at the point; ſtyle terminal, thread-ſhaped, the length of the corolla, ſoon ſplitting lengthwiſe at the baſe, and finally all the way up; ſtigma capitate, two-lobed, finally divided. *Peric.* Capſule ovate, pointed, of two valves and two cells, the partitions from the inflexed margins of the valves, its apex ſplitting into two parts, each crowned with half the ſtyle, but ſtill cloſed by the reſpective partitions. *Seeds* numerous, ſmall, roundiſh, affixed to the central receptacles.

Eſſ. Ch. Calyx angular, four-cleft. Corolla deciduous, four-cleft, regular; its tube angular. Capſule ſuperior, with two cells and many ſeeds, divided at the top. Style divided at the baſe. Stigma capitate.

This genus is moſt akin to Exacum, (ſee that article,) but ſufficiently diſtinct. Labillardiere deſcribes but one ſpecies, Brown nineteen, of which the firſt ſixteen anſwer moſt perfectly to the generic characters. We ſhall deſcribe Mr. Brown's firſt and fourth ſpecies, as well as M. Labillardiere's.

M. *polymorpha.* Br. n. 1.—Umbel partly compound. Flower-ſtalk elongated, ſmooth like the calyx, whoſe ſegments are naked at the ſummit. Leaves linear, ſomewhat fringed. Stem erect, hairy.—Gathered by Dr. White, as well as Mr. Brown, near Port Jackſon, New South Wales. The *root* ſeems to be annual. *Stems* ſeveral, erect, from three to ſix inches high, ſimple, or ſlightly branched, leafy, round, hairy. *Leaves* oppoſite, in pairs croſſing each other, ſeſſile, three quarters of an inch long, pale, linear, keeled, revolute, entire, obtuſe with a ſmall point; more or leſs fringed towards the baſe; ſmooth above; ſometimes hairy beneath. *Flower-ſtalks* terminal, longer than the ſtem, round, very ſmooth, ſimple or divided, terminating in an *umbel* of two, three, or four flowers, on long ſlender ſmooth ſtalks, one of which ſtalks often bears a lateral flower alſo, ſo that the umbel is then rather a *cyme.* A pair of ſhort leaves accompanies the baſe of the *umbel.* The *calyx* is entirely ſmooth, pale, with green angles. *Corolla* white or purpliſh, bearded within, twice as long as the calyx. The *flowers* and *infloreſcence* are not unlike *Androſace lactea*, Curt. Mag. t. 868, 981, in their general aſpect.

M. *caneſcens.* Br. n. 4.—Umbel about three-flowered, ſeſſile; its ſtalks ſmooth. Segments of the calyx bearded at the tips. Leaves linear, obtuſe, hairy on both ſides. Stem procumbent, hairy all over; with aſcending branches.—Native likewiſe of Port Jackſon. *Root* perennial. *Herb* much like the laſt but very hairy, and of a darker hue. The *umbels*, which have at moſt but three flowers, are accompanied at the baſe by a pair of ſhort ovate hairy *leaves*, and ſtand each at the top of an elongated hairy branch. *Calyx* ſmooth, except a little briſtly tuft at the point of each ſegment. *Corolla* pale blue or purpliſh, with ſomewhat broader rounder ſegments than the foregoing.

M. *piloſa.* Labill. Nov. Holl. v. 1. 36. t. 49. Br. n. 15.—Creeping, hairy. Leaves ſtalked, ovate, fringed. Flower-ſtalks axillary, ſolitary, about the length of the leaves. Calyx hiſpid.—Native of moiſt places in Van Diemen's land. *Labillardiere.* *Root* perennial, branched. *Herb* hairy, procumbent, branched. *Stem* round, hollow. *Leaves* oppoſite, rather fleſhy, ovate, entire, about half an inch long, tapering at the baſe into a ſhort *footſtalk.* *Flower-ſtalks* ſometimes ſhorter, ſometimes longer than the leaves, round, ſimple, ſingle-flowered. *Calyx* hairy all over. *Corolla* finely downy within; its limb ſhort, in four ſhallow lobes.

All the ſpecies are herbaceous, ſome ſmooth, ſome hairy. *Leaves* ſometimes all crowded about the root; always ſimple, undivided and entire.

None of theſe plants have been raiſed in Europe.

MITRAVINDA, in *Hindoo Mythology*, one of the eight wives aſſigned to Kriſhna.

MITRE, Mitra, from Μιτρα, which ſignifies the ſame; a pontifical ornament, worn on the head by biſhops, and certain abbots, on ſolemn occaſions.

The mitre is a round cap pointed, and cleft at top, with pendants hanging down on the ſhoulders, and fringed at both ends. The biſhop's is only ſurrounded with a fillet of gold, ſet with precious ſtones; the archbiſhop's iſſues out of a ducal coronet. Theſe are never uſed otherwiſe than on their coats of arms. Abbots wear the mitre turned in profile, and bear the croſier inwards, to ſhew that they have no ſpiritual juriſdiction without their own cloiſters.

The pope has alſo granted to ſome canons of cathedrals the privilege of wearing the mitre. The counts of Lyons are alſo ſaid to have aſſiſted at church in mitres.

In Germany, ſeveral great families bear the mitre for their creſt; to ſhew that they are advocates, or feudatories, of ancient abbeys, or officers of biſhops, &c.

The pope has four mitres, which are more or leſs rich, according to the ſolemnity of the feaſt-days they are to be worn on. The mitre was originally the women's head-dreſs, as the hat was that of the men. This appears from Remulus in Virgil, who reproaches the Trojans, that they were dreſſed like women, and wore mitres,

> "Et tunicæ manicas & habent redimicula mitræ."

The cardinals anciently wore mitres, before the hat, which was firſt granted them by the council of Lyons, in 1243. Authors make no mention of the mitre as an epiſcopal ornament, before the year 1000.

Mitre, in *Architecture*, is the workmen's term for an angle that is juſt 45 degrees, or half a right one.

If the angle be a quarter of a right angle, they call it a half-mitre.

To deſcribe ſuch angles, they have an inſtrument called the mitre-ſquare; with this they ſtrike mitre-lines on their quarters, or battens; and for diſpatch, they have a mitre-box, as they call it, which is made of two pieces of wood, each about an inch thick, one nailed upright on the edge of the other; the upper piece hath the mitre-lines ſtruck upon it, on both ſides, and a kerf, to direct the ſaw in cutting the mitre-joints readily, by only applying the piece into this box

Mitre is uſed by the writers of the Iriſh hiſtory for a ſort of baſe money, which was very common there about the year 1270, and for thirty years before, and as many after. There were, beſides the mitre, ſeveral other pieces called according to the figures impreſſed upon them, roſaries, lionades, eagles, and by the like names. They were imported from France, and other countries, and were ſo much below the proper currency of the kingdom, that they were not worth ſo much as a halfpenny each. They were at length decryed in the year 1300, and good coins ſtruck in their place. Theſe were the firſt Iriſh coins in which the ſceptre was left out. They were ſtruck in the reign of Edward, the ſon of our Henry III., and are ſtill found among the other antiquities of that country. They have the king's head in a triangle full-faced. The penny, when well preſerved, weighs twenty-two grains; the halfpenny ten grains and a half.

Mitre-*Sils*, in *Canals*, are the angular ſils of lock-gates.

MITRED Abbots. See Abbot.

MITREKE, in *Geography*, a town of Arabia, in the province of Oman; 44 miles W. of Haſſek.

MITREOLA, in *Botany*, a name given by Linnæus, in the firſt edition of his *Genera Plantarum*, to the *Mitra* of Houſtoun, engraved in the nineteenth unpubliſhed plate of that botaniſt, both names alluding to the reſemblance of the minute capſule to a mitre. See Ophiorrhiza.

MITROVATZ, in *Geography*, a town of Sclavonia; 32 miles E.N.E. of Gradiſca.

MITTA, in our *Old Writers*, is an ancient Saxon meaſure. Its quantity is not certainly known; but it is ſaid to be *menſura decem modiorum*, a meaſure of ten buſhels. Doomſday.

Mitta, or *mitcha*, being beſides a meaſure for ſalt and corn, is uſed for the place where the cauldrons were put to boil ſalt. "Chalderias quoque ad ſal conficiendum cum propriis ſedibus mitchæ vocantur."

MITTAMPOUR, in *Geography*, a town of Hindooſtan, in Rohilcund; 20 miles S.W. of Biſſowla.

MITTAW, the capital of the duchy of Courland, the reſidence of the duke and of the regency of the country, ſituated on the river Aa, in that part of the duchy called "Semigallia." The town is extenſive, containing within its circuit many gardens and vacant ſpaces. The walls and moats are decayed, and the houſes are deſtitute of elegance; nevertheleſs it is tolerably well inhabited. It has two Lutheran churches, a beautiful Calviniſtic church, and a Popiſh church. The town ſchool, though the principal in the country, is not flouriſhing. The palace, built by the late duke, is a pile of buildings, in which are ſpacious and handſome apartments almoſt wholly unfurniſhed. The academy, conſtituted at a great expence, contained, in May 1785, almoſt as many profeſſors as ſtudents, the former being eight, and the latter twenty; 56 miles W. of Riga. N. lat. 56° 38′. E. long. 23° 10′.

MITTELWALD, or Miedzibor, a town of Sileſia, in the principality of Oels; 16 miles N.E. of Oels. N. lat. 51° 23′. E. long. 17° 40.—Alſo, a town of Sileſia, in the county of Glatz, on the Neiſſe, near its ſource, and on the borders of Bohemia; 27 miles S. of Glatz. N. lat. 50° 2′. E. long. 16° 29′.

MITTENDARII, among the Romans, commiſſioners ſent into the provinces by order of the *præfectus prætorii*, or captain of the guards, upon ſome public account, as to inſpect the behaviour and management of provincial governors, and obſerve whatever was amiſs; all which they were to lay before the prefect, who had authority to remedy ſuch abuſes.

MITTENDIS *Recordo & Proceſſu*. See Recordo.

MITTENDO *Manuſcriptum Pedis Finis*, in *Law*, a writ judicial, directed to the treaſurer and chamberlains of the exchequer, to ſearch for and tranſmit the foot of a fine, acknowledged before juſtices in eyre, into the common pleas, &c.

MITTENWALD, in *Geography*, a town of Bavaria, in the biſhopric of Freyſing; 10 miles N.N.W. of Inn-ſpruck.

MITTENWALDE, a town of Brandenburg, in the Middle Mark; 22 miles S.E. of Potzdam. N. lat. 52° 15′. E. long. 13° 32′.

MITTER l'Estate, and *Mitter le droit*. See Release.

MITTERBURG, in *Geography*, a town of Iſtria, and capital of a county, containing ſeveral churches and a convent; defended by a caſtle, which is ſituated on a rock; 30 miles S.E. of Trieſte. N. lat. 45° 23′. E. long. 14° 7′.

MITTERSILL, a town of Salzburg, on the Salzbach; 36 miles S.S.W. of Salzburg.

MITTIMUS, in *Law*, a writ by which records are ordered to be transferred from one court to another; ſometimes immediately, as out of the king's bench into the exchequer; and ſometimes by a certiorari into the chancery; and from thence, by a mittimus, into another court.

Mittimus is alſo uſed for a precept in writing, directed by a juſtice of peace to a gaoler, for the receiving and ſafe-keeping a felon, or other offender, by him committed to the gaol.

This is a warrant under the hand and ſeal of the juſtice, containing the cauſe of the commitment of the offender.

MITTWEYDA, in *Geography*, a town of Saxony, in the circle of Leipſic; 30 miles W. of Dreſden. N. lat. 50° 58′. E. long. 12° 52′.

MITU, or Mitu-porangu, in *Ornithology*, the name of a Braſilian bird of the pheaſant kind, according to Margrave, and the generality of thoſe who ſpeak of it; but ſuppoſed by Mr. Ray rather to approach to the nature of the peacock or turkey-cock: and in the Linnæan ſyſtem a ſpecies of the *crax*; the Crax *Alector*, which ſee.

MITYLENE, or Metelin, the ancient *Leſbos*, one of the moſt conſiderable iſlands of the Grecian Archipelago, is ſituated in the vicinity of the coaſt of Natolia, which it ſeems to command, and it is placed at an equal diſtance from the gulf of Smyrna and the channel of Conſtantinople, not far from the principal iſlands of the Archipelago. By this poſition the poſſeſſion of it is extremely important, more eſpecially as its interior reſources render it ſuſceptible of the moſt flouriſhing ſtate. But being in the hands of the Turks, the advantages of its ſituation are loſt, and its population, agriculture, and induſtry are from day to day diminiſhing and falling into decay. In ſome parts of the iſland, ſaid to be 36 miles long and 14 broad, are volcanic mountains and others compoſed of marble, that extend almoſt through the iſland: its mountains are covered with wood, particularly with pines that yield excellent pitch for the uſe of the dock-yard eſtabliſhed near the ſouth harbour, and for the careening of the veſſels and boats whch come to Mitylene for that purpoſe. On theſe mountains are alſo found oaks, the arbutus, the andrachne, the lentiſk, the turpentine tree, the myrtle, the agnus caſtus, a few leguminous ſhrubs, and ſeveral rock-roſes, among which is that which yields the ladanum. The "velana" oak is more common on the riſing grounds and in the plains than on the mountains. The elm grows in the low and watered places, and the plane tree is chiefly found on the brinks of the rivulets and torrents. The mountains alſo afford a variety of ſprings, of which ſome are medicinal. The vallies of the iſland are extremely fertile, well watered, and in ſome degree cultivated, though in this reſpect they admit of much improvement. The principal towns of this iſland are Mitylene and Molivo, which ſee; and its harbours are port Caloni and port Olivier. At the head of port Caloni is a plain two leagues in extent, the principal culture of which conſiſts in corn, cotton, and olive trees; figs, muſk and water melons, pumpkins, and various legumes are alſo gathered here. Here are ſeveral villages; but the population is not proportioned to the fertility and extent of the ſoil adapted to culture. The air in this quarter is inſalubrious, and often fatal; ſo that theſe villages are inhabited only by poor Greek cultivators: the Turks, who are proprietors of lands, preferring a reſidence at Mitylene, Molivo, and the other places that are beſt ſituated in the iſland.

Port Caloni lies in the middle of the ſouthern part of the iſland; it is very extenſive and very ſafe, but little frequented; none but veſſels thwarted by the wind, or buffeted by a ſtorm, anchoring here, and not one entering it to take in a cargo, or to unload. The other port, called port Yero or port Olivier, derives its name from the great number of olive trees which are planted in the adjoining plain, and on the declivity of the mountains and hills that ſurround it. In the eaſtern part of the harbour, there are a few calcareous hills, which have not been attacked by the fire of volcanoes. Here is found near the ſea a copious ſpring of hot mineral water, much valued by the inhabitants of Mitylene. The captain-pacha has built here a baſin capable of containing 10 or 12 perſons; he has alſo repaired the building, which is occupied by the Turk charged to receive all thoſe who wiſh to make uſe of theſe waters; which are nearly two leagues from Mitylene. Port Olivier is one of the ſafeſt and moſt ſpacious harbours of the Archipelago; it lies at the eaſtern and ſouthern extremity of the iſland, and is ſaid to abound with fiſhes and conchylia, among which are excellent oyſters, which are carried to Scio and Smyrna. It is frequented, during the whole year, by boats and veſſels that come hither to load with the oil which is made in the environs. Although this iſland is expoſed in winter to ſudden gales of wind from the N.E. and the E., which come from the mountains of Aſia, as well as to the N. wind, which reigns over the whole Archipelago, the climate is nevertheleſs tolerably fine, and the temperature of the air ſomewhat mild. It ſeldom freezes in that ſeaſon; but in ſummer the heat is rather powerful on the S. coaſt, and the air is, in general, more unwholeſome there than in the other parts of the iſland. This iſland is divided into lordſhips; but as the aga of other countries is obliged to join the land-forces when required at Mitylene, he is ſubject to a maritime duty, from which he contrives to exempt himſelf by ſome pecuniary ſacrifices. In Mitylene are reckoned 8000 Greeks paying the karatch, (capitation tax,) from the age of ſeven to their death; ſo that the population may be eſtimated at near 20,000, including the women and children above that age. It is thought that there are nearly as many Turks as Greeks in the iſland, which contains in all 40,000 inhabitants. The Jews are not ſufficiently numerous to be taken into the calculation. According to an ancient cuſtom in this iſland, the eldeſt daughter alone inherits the property of the father and mother to the excluſion of the ſons and other daughters. This cuſtom has been long reſpected and religiouſly followed; but of late the patriarch of Conſtantinople, the archbiſhop, and all the clergy of Mitylene have ſomewhat modified this law, by admitting all the daughters to a partition in a certain proportion. The quantity of oil which is exported from this iſland in ordinary ſeaſons is eſtimated at upwards of 50,000 quintals; almoſt the whole of which is ſent to Conſtantinople. The oil is, in general, but of an indifferent quality, becauſe the inhabitants, not having a ſufficient number of mills, are obliged to gather their olives ſlowly. Italy draws from Mitylene 8000 quintals of "Velanida," a part of which comes from the coaſt of Aſia. Dried figs are an article of exportation of little importance, as well as wool. Cotton, ſeſamum, ſilk, ivory, wax, and different ſpecies of grain are gathered in a ſmall quantity; but the laſt are not ſufficient for the ſupply of the inhabitants, who draw a great quantity of wheat and barley from the coaſt of Aſia. They alſo import oxen, horſes, and mules for agriculture and draught, as well as part of the ſheep that are killed at the ſlaughter-houſe. Wine is now ſcarce, becauſe a great part of the grapes is employed by the Turks in making confection, and becauſe the Turks are accuſtomed to convert the other into brandy. The wine of ancient Leſbos has loſt its reputation, being ſweet and ill-flavoured, as are, in general, all the wines of the Archipelago. Although there are no rivers in this iſland, a few torrents, ſupplied by rain waters and ſprings, ſerve to furniſh ſufficient water for conſumption and for watering part of the plains, ſo as to procure for the inhabitants legumes, herbage, and fruits.

In the channel formed by the iſland of Mitylene and the coaſt, at the entrance of the Adramyttian gulf, are ſome ſmall iſlands, which the Greeks call "Muſconiſi," and navigators "Myconiſſes," but formerly they bore the name of "Hecatones." They are ſaid to be fertile in wines and oil. For the ancient ſtate of this iſland, ſee LESBOS.

MITYLENE, ſometimes called "Caſtro," or "Metelin," is the chief town of the iſland above deſcribed. It contains 2 or 3000 Greeks, 3 or 4000 Turks, and 30 or 40 Jewiſh families. The citadel is ſpacious, provided with cannon in tolerably good condition, and defended by 5 or 600 janizaries, almoſt all married and ſettled. Within it are two moſques and a great number of houſes occupied by this militia. The modern town extends in a ſemicircle along the north harbours, on a part of the ground occupied by the ancient city; of the former grandeur of which ſome remains are ſtill viſible. Cicero de Leg. Agr. and Vitruvius, lib. i. c. 6. expatiate on its magnificence. Such was the flouriſhing ſtate of the fine arts in the city of Mitylene, called by Strabo η μεγιϛη πολις, when Marcellus, after the battle of Pharſalia, returned to end his days there in literary eaſe, that a modern traveller, after the lapſe of 17 centuries, could behold nothing but proofs of the ſplendour to which they had attained. Tournef. Voy. du Lev. tom. ii. p. 81. See Lesbos.

The two harbours of Mitylene are ſeparated by a tongue of land, on which was conſtructed by the Genoeſe a citadel, which the Turks have preſerved. The upper or north harbour is ſecured from the N.E. wind by a jetty, the origin of which is carried back to ancient Greece. The ſouth harbour is open and faces the S.E.; it is a little leſs extenſive and leſs deep than the other; none but the boats of the country can anchor in it, while the north harbour can admit ſmall merchant veſſels. Men of war and European ſhips, which commerce attracts to Mitylene, anchor in ſummer off the ſouth harbour; but they ſcarcely expoſe themſelves there in winter, becauſe there happen ſometimes in that ſeaſon very impetuous gales from the N.E., which might occaſion their deſtruction, or oblige them to cut their cables, and get under ſail with all expedition. There was formerly a canal of communication between theſe two harbours, which ſeparated the tongue of land juſt mentioned, and formed of it an iſland, on which was built part of the town. Time has choked up the canal, but it has not deſtroyed the jetty, which ran from the little iſland, and ſheltered the north harbour from the worſt weather. N. lat. 39° 20′. E. long. 26° 14′. Olivier's and Sonnini's Travels. Clarke's Travels, vol. ii.

MITZLER, Lorenz Christoph, of Kolof, in *Biography*, born in 1711, a ſingular character and voluminous publiſher on muſical ſubjects. But before he meddled with muſic, his pretenſions were various. He ſet off a doctor of phyſic, then got ordained a miniſter of the Lutheran church, and next aſſumed the character of a counſellor learned in the law. After trying his hand at theſe profeſſions, in muſic he appeared at firſt a theoriſt and critic more than a practical muſician. In 1740, however, he compoſed odes, which were mathematical, dry, and dull. Theſe were ridiculed throughout Germany. Mattheſon is very jocular on his works; but Mitzler took all for ſerious panegyric. Among his numerous productions ſpecified by Gerber, (in his continuation of Walther's Muſical Lexicon,) many of which have, perhaps, never been read, there is no one which ſeems to have merited that honour. He died in 1778. If his life was of little uſe to the world, it muſt be owned that he diligently tried to render the world uſeful to himſelf.

MITZUZ, in *Geography*, a town of Japan, in the iſland of Niphon; 110 miles W.N.W. of Jedo.

MIXCO, a town of Mexico, in the province of Guatimala; 25 miles E. of Guatimala.

MIXEN, in *Agriculture*, a term applied to a compoſt dunghill. See Compost and Manure.

MIXING *of Mortar*. See Mortar.

MIXIS, Μιξις, *Mixture*, in the *Ancient Muſic*, was one of the parts of Greek melopœia, by which the compoſer was inſtructed how to combine intervals properly, and diſtribute them in different genera and modes, according to the character of the melody propoſed. See Melopœia.

MIXO-LYDIAN, the name of one of the modes of ancient muſic, called alſo *Hyper-Dorian;* which ſee. The mixo-lydian mode was the moſt acute of the ſeven modes to which Ptolemy had reduced all the modes of the Greek muſic. (See Mode.) This mode was ſaid to be affecting and paſſionate, exciting great emotions, and therefore applicable to tragedy. Ariſtoxenus aſſures us, that it was invented by Sappho; but Plutarch avers, that ancient fables aſcribe it to Pytoclides. He alſo ſays that the Argians fined muſicians who firſt adopted it, and who had introduced into muſic the uſe of ſeven ſtrings; that is, making the ſeventh ſtring a key-note.

MIXT, or Mixed *Body*, in *Philoſophy*, is that which is compounded of divers elements or principles.

By which *mixt* ſtands contradiſtinguiſhed from *ſimple*, or *elementary*, which is applied to bodies conſiſting of one principle only.

The ſchoolmen define a mixt body to be a whole reſulting from ſeveral ingredients, altered, or new modified, by the mixture. On which principle the ſeveral ingredients do not actually exiſt in the mixt; but they are all changed, ſo as to conſpire to a new body, of a different form from that of any of the ingredients. But the modern philoſophers rarely conceive the term in ſo much ſtrictneſs. The buſineſs of chemiſtry, we ſay, is to reſolve mixt bodies into their principles, or component parts.

The ſchool philoſophers diſtinguiſh mixt bodies into perfect and imperfect.

Mixts, *Perfect*, are the claſs of organized and animated bodies, where the elements, or ingredients of which they are compoſed, are changed, or transformed, by a perfect mixture. Such are plants, beaſts, and men.

Mixts, *Imperfect*, are unorganized and inanimate bodies, the forms of which remain ſtill the ſame as of the ingredients that conſtitute them. Such are meteors, minerals, metals, &c.

Mixt, in *Chemiſtry*. See Aggregate.

Mixt, or *Mixed Action*, in *Law*. See Action.

Mixt *Angle*, *Fable*. See Angle, and Fable.

Mixt *Figure*, in *Geometry*, is that which conſiſts partly of right lines, and partly of curve lines.

Mixt *Force*, *Hiſtory*, *Mathematics*. See Force, History, and Mathematics.

Mixt, or *Mixed Larceny*. See Larceny.

Mixt *Mode*. See Mode.

Mixt *Number*, in *Arithmetic*, that which is partly an integer, and partly a fraction: as $4\frac{1}{2}$.

Mixt *Obligation*. See Obligation.

Mixt *Ratio*, or *Proportion*, is when the ſum of the antecedent and conſequent is compared with the difference between the antecedent and conſequent: as if $\begin{matrix} 3:4::12:16 \\ a:b::c:d \end{matrix}$

then $\begin{matrix} 7:1::28:4 \\ a+b:a-b::c+d:e-d. \end{matrix}$

Mixt *Salts*, *Stairs*, *Service*. See Salts, Stairs, and Service.

Mixt *Tithes*, are thoſe of cheeſe, milk, &c. and of the young of beaſts. See Tithe.

MIXTILINEAR Angle. See Angle.

MIXTION, Mixtio, or *Miſtio*, the act of mixing; or the union and coalition of divers corſpucles into one body. The Peripatetics, who hold an alteration eſſential to mixtion, define it the union of ſeveral altered ingredients, or miſcibles.

Mixtion makes a conſiderable operation in the chemical and Galenical pharmacy; where divers powders, ſpecies, and other ſimples, are ſaid to be *mixed*, *miſceri*, though without any communication, or tranſition of the virtues of one into thoſe of another. See Combination and Composition.

MIXTURE, Mescolanza, a connection in the modes of canto-fermo, in chants which go higher or lower than the octave, and modulate into another mode, participating both of authentic and plagal. The mixture is only practicable in modes that go in pairs, as the firſt mode or tone, and the ſecond, the third with the fourth, the plagal with the authentic, and reciprocally.

Mixture, the name of a ſtop in the full organ, repeating the ſame intervals of the octave in the key of C throughout the ſcale. See Furniture.

Mixture, *Mixtura*, or *Miſtura*, in a philoſophical ſenſe, is an aſſemblage, or union, of ſeveral bodies of different properties, in the ſame maſs.

To determine the ratio of the ingredients of a mixture, is that celebrated problem propoſed by Hiero, king of Syracuſe, to Archimedes, on occaſion of a crown of gold, in which the workman had fraudulently mixed ſilver; the ſolution of which was matter of ſo much tranſport to that divine mechanic. See Hiero's *Crown.*

Mixture, in *Matters of Drapery*, denotes the union or blending of ſeveral wools of different colours, not yet ſpun. Hence a mixture, or mixed ſtuff, is that whoſe wool and warp are of wools of different colours, dyed and mixed before they were ſpun. See Cloth.

Mixture, in *Pharmacy*, differs from a julep in this reſpect, that it receives into its compoſition not only ſalts, extracts, and other ſubſtances diſſoluble in water, but alſo earths, powders, and ſuch ſubſtances as cannot be diſſolved.

Mixtures depend upon diffuſion and ſuſpenſion in any liquid of inſoluble ſubſtances minutely divided; and for this purpoſe, it is often neceſſary that the liquid itſelf ſhould be rendered more denſe by the addition of ſome viſcid matter, as mucilage or ſyrup. Mixtures are ſometimes denominated from their medical properties and effects; ſuch as aſtringent, diuretic, laxative, &c. but moſt commonly from the name of the principal ingredient uſed in their compoſition. The London college includes under the general head of mixtures thoſe medicines which have uſually been denominated *emulſions*. See Emulsion.

The principal mixtures are the following:

Miſtura ammoniaci, Mixture of gum ammoniac, P. L. is formed by rubbing two drachms of gum ammoniac with half a pint of water gradually poured upon it, until they are perfectly mixed. A ſimilar preparation, under the name of *lac ammoniæ*, milk of ammoniac, is ordered by the Dublin college to be made by triturating a drachm of gum ammoniac in eight fluid-ounces of penny-royal water, gradually adding the water until the mixture acquires the appearance of milk, and then ſtraining it through linen. This preparation is beneficially employed as an expectorant in doſes of from f. ℥ſs to f. ℥j, combined with an equal quantity of almond mixture.

Miſtura amygdalæ, Almond mixture, P. L. 1809, Lac amygdalæ, P. L. 1787, Emulſio communis, P. L. 1745, is prepared by gradually adding a pint of diſtilled water to two ounces of almond confection, and rubbing them together. A ſimilar mixture, called *emulſio amygdalæ communis*, almond emulſion, in the Edin. diſp. is prepared by well beating an ounce of blanched ſweet almonds in a ſtone mortar, gradually adding 2½ lbs. of water, and then ſtraining. The *lac amygdalæ*, almond milk of the Dub. coll. is formed by rubbing 1½ oz. of ſweet almonds blanched with ½ oz. of purified ſugar, adding gradually 2½ pints of water, and then ſtraining. The *emulſio mimoſæ niloticæ*, emulſio arabica, Edin. or emulſion of gum arabic, is made in the ſame manner as the almond emulſion, 2 oz. of gum arabic being added during the trituration of the almonds. The *Arabic emulſion*, Dub. is prepared by diſſolving two drachms of gum arabic in powder in a pint of warm decoction of barley, and when it is almoſt cold, pouring it gradually upon half an ounce of blanched ſweet almonds beaten to a paſte, with the ſame quantity of purified ſugar, triturating at the ſame time ſo as to form a milky mixture; and then ſtraining.

The mixtures above deſcribed are uſed as diluents and demulcents in inflammatory fevers, ſtrangury, dyſury, and other affections of the urinary organs; but they are principally employed as vehicles for the exhibition of more active remedies. The doſe is from f. ℥ij to oſs frequently repeated,

Miſtura aſſafœtidæ, Mixture of aſſafœtida, P. L. 1809, Lac aſſafœtidæ, P. L. 1787, is prepared by rubbing two drachms of aſſafœtida with half a pint of water, gradually poured upon it, until they are perfectly mixed. The *lac aſſafœtidæ*, milk of aſſafœtida, Dub. is obtained by triturating a drachm of aſſafœtida with eight fluid-ounces of penny-royal water gradually added until an emulſion is formed. This mixture is chiefly uſed as an enema in flatulent colic, worms, and convulſions of infants occaſioned by irritation of the bowels during dentition. When given by the mouth, the doſe may be from f. ℥ſs to f. ℥jſs often repeated.

Miſtura camphoræ, Camphor mixture, P. L. 1809, Miſtura camphorata, P. L. 1787, Julepum é camphora, P. L. 1745, is formed by rubbing half a drachm of camphor with 10 minims of rectified ſpirit, then adding gradually a pint of water, and ſtraining the liquor. The *miſtura camphorata*, Dub., camphorated mixture, is prepared by rubbing a ſcruple of camphor with 10 drops of rectified ſpirit of wine, and then with half an ounce of refined ſugar, adding a pint of water during the trituration, and ſtraining the mixture through linen. This is an elegant vehicle for more active remedies in low fevers and nervous affections. The doſe is from f. ℥j to f. ℥ij, given every three or four hours. The *emulſio camphorata*, Edin., camphorated emulſion, is made of a ſcruple of camphor, two drachms of ſweet almonds blanched, a drachm of refined ſugar, and 6 oz. of water, in the ſame manner as the common almond emulſion. This is given with advantage in typhus and nervous caſes in doſes of f. ℥ij, every three or four hours. See Camphor.

Miſtura cornu uſti, Mixture of burnt hartſhorn, P. L. 1809, Decoctum cornu cervi, P. L. 1787, Decoctum album, P. L. 1745, is prepared in the manner deſcribed under *Hart's* Horn.

Miſtura cretæ, Chalk mixture, P. L. 1809, Miſtura cretacea, P. L. 1787, Julepum é creta, P. L. 1745, is formed by mixing half an ounce of prepared chalk, three drachms of refined ſugar, half an ounce (an ounce Dub.) of acacia gum powdered in a pint of water. The *potio carbonatis calcis*, olim, *potio cretacea*, Edin., chalk potion, is made by rubbing together 1 oz. of prepared carbonate of lime (chalk), ½ oz. of refined ſugar, 2 oz. of mucilage of gum arabic, then gradually adding 2½ lbs. of water and 2 oz. of ſpirit of cinnamon, and mixing them.

Theſe preparations of chalk are given in acidity of the primæ viæ, and combined with opium or catechu in diarrhœa. The doſe is from f. ℥j to f. ℥ij, given every three or four hours; or after every liquid evacuation.

Miſtura ferri compoſita, Compound mixture of iron, P. L. 1809, is prepared by rubbing together a drachm of powdered myrrh, 25 grains of ſubcarbonate of potaſs, and a drachm of refined ſugar, and during the trituration adding gradually, firſt, 7½ oz. of roſe-water and half a fluid-ounce of ſpirit of nutmeg, and laſtly, a ſcruple of ſulphate of iron powdered. The mixture ſhould be immediately poured into a proper glaſs bottle and ſtopped cloſe. The myrrh requires to be well dried before it can be reduced to powder. This mixture, which is very ſimilar to the celebrated antihectic mixture of Dr. Griffiths, is a compound very commonly directed as an uſeful tonic, particularly in hyſteria and chloroſis, and in phthiſis, when no active inflammatory diatheſis ſubſiſts. The doſe is from f. ℥j to f. ℥ij, given two or three times a day.

Miſtura guaiaci, Mixture of guaiacum, P. L. 1809, Lac guaiaci, P. L. 1787, is made by rubbing 1½ drachm of guaiacum gum-reſin with two drachms of refined ſugar; then with two fluid-drachms of mucilage of acacia gum, and when they are mixed, pouring on gradually eight fluid-ounces of cinnamon water. This is adminiſtered in doſes of from f. ℥ſs to f. ℥ij, two or three times a day; diluting freely with tepid barley water or gruel for aiding its operation.

Miſtura moſchi, Muſk mixture, P. L. 1809, Miſtura moſchata, P. L. 1787, Julepum é moſcha, P. L. 1745, is prepared by rubbing a drachm of muſk with the ſame quantity of refined ſugar, then with the ſame quantity of acacia gum powdered, and adding by degrees ſix fluid-ounces of roſe-water. This may be given to the quantity of f. ℥ij every three or four hours in ſpaſmodic affections and the ſinking ſtate of typhus. The late Mr. White of Mancheſter found this mixture combined with ammonia ʒſ, ſpirit of lavender f. ʒi, and ſpirit of juniper f. ℥j, very uſeful in ſloughing phagedenic ulcers of a ſyphilitic and ſtrumous nature.

MIZAEL, in *Geography*, a town of Norway, in the dioceſe of Drontheim; 44 miles N.E. of Romſdal.

MIZELL, a town of Bohemia, in the circle of Boleſlaw; nine miles S.E. of Jung Buntzel.

MIZEN. See Misen.

MIZEN-HEAD, in *Geography*, ſuppoſed to be the Notium of Ptolemy, a cape of the county of Cork, Ireland, being the ſouth-weſtern extremity of the iſland as well as of the county of Cork. N. lat. 51° 23′. W. long. 9° 43′.

Mizen-head, a cape of Ireland, in the county of Wicklow, on the E. coaſt between Wicklow-head and Arklow. N. lat. 52° 52′. W. long. 6° 4′.

MIZNEPHETH, in the *Jewiſh Antiquities*, a kind of mitre worn by the high-prieſt. See Cidaris.

MIZQUITL, in *Botany*, a name uſed by ſome authors for that ſpecies of the acacia, or Egyptian thorn, whoſe unripe fruit affords the inſpiſſated juice, which is the true ſuccus acaciæ of the ſhops, and whoſe gum naturally flowing from the trunk and branches is the true gum arabic.

MIZZY, in *Agriculture*, a term ſometimes applied to a bog, or a quagmire.

MLIOWNOWY, in *Geography*, a town of Poland, in the palatinate of Kiev; 40 miles S.W. of Czyrkaſy.

MLLAVA, a town of the duchy of Warſaw; 40 miles N.N.E. of Plozk.

MLODE, a town of Poland, in the palatinate of Kiev; eight miles S E. of Bialacerkiew.

MNAKEH, a town of Arabia, in the province of Yemen; 12 miles W. of Sana.

MNASIUM, in *Botany*, is moſt probably named by Schreber from ſome reſemblance to the μνασιον of Theophraſtus, an Egyptian plant, eatable like *papyrus*, and of a very ſweet taſte. Mart. Schreb. 214. Willd. Sp. Pl. v. 2. 22. Mart. Mill. Dict. v. 3. (Rapatea; Aubl. Guian. v. 1. 305. Juſſ. 44. Lamarck Illuſtr. t. 226.)—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Enſatæ*, Linn. *Junci*, Juſſ.

Gen. Ch. *Cal.* Spatha of two, ovate valves, terminated by a linear, ſpreading leaf. Perianth inferior, of one leaf, divided into three, lanceolate, concave, acute, bordered ſegments. *Cor.* of one petal; tube very ſhort; limb cloven into three, deep, lanceolate, concave, acute ſegments. *Stam.* Filaments ſix, very ſhort, inſerted into the tube; anthers long, ſquare, terminated by an ovate, excavated, acute leaflet. *Piſt.* Germen ſuperior, three-lobed, roundiſh, marked with three ſtreaks; ſtyle very long, ſtriated; ſtigmas three, ſpirally twiſted together. *Peric.* and *Seeds* unknown.

Eſſ. Ch. Spatha of two valves, many-flowered. Calyx three-cleft. Corolla of one petal, three-cleft, with a very ſhort tube. Anthers terminated by a leaflet. Stigmas three, ſpirally twiſted.

1. M. *paludoſum*. Willd. and Martyn. (Rapatea paludoſa; Aubl. Guian. t. 118)—Native of woods, marſhes, and the banks of rivers in Guiana, flowering in June.—*Root* perennial, woody, fibrous. *Stalks* numerous, naked, two feet high, ſtriated, compreſſed, bordered, gradually broader towards the top, and ſpringing from the boſoms of the radical leaves. *Leaves* very long, narrow, acute, ſmooth, ſtriated, entire; ſheathing at the baſe, and mutually embracing each other; narrower above the ſheath. *Flower-ſtalks* ſcaly beneath the baſe of the calyx. *Corolla* yellow.

Willdenow obſerves, that *Mnaſium* has greatly the habit of a *Pontederia*, but that it differs materially from that genus in the ſtructure of its flowers.

MNEME-CEPHALICUM Balsamum, the name of a famous compound balſam, ſaid to have been purchaſed from a certain Engliſh phyſician by Charles duke of Burgundy, at the price of 10,000 florins. Some who have been very laviſh in its praiſes have affirmed, that it has a power of preſerving in the mind the remembrance of all things that are paſt; but this kind of praiſe ſeems to be extravagant and unfounded; inſomuch, that we think it needleſs to enumerate the ingredients of which this famous balſam (which we regard as fabulous in the effects aſcribed to it) conſiſts. We ſhall therefore content ourſelves with referring to Sennertus' account of it in his Pract. lib. i. cap. 5.

MNEMONIC Tables. Among the artifices to aſſiſt the memory, this is one of great uſe.

Mnemonic tables exhibit in a regular manner, what is to be remembered of the ſame ſubject. And although the ſciences ought to be taught in a ſcientifical manner, as much as poſſible, and that every thing ſhould be ſo placed as to be intelligible and demonſtrable from what has preceded it; yet tables ought not to be rejected, as they are helps to retain the doctrines of which the mind has had ſufficient evidence. In ſuch tables the properties of things are to be expreſſed conciſely; illuſtrations and demonſtrations ſhould be left out, as the propoſition ought to have been made ſufficiently clear and certain, before it is regiſtered in the table. Hence, the contents of ſuch tables ought only to be the definitions, and the propoſitions relative to the ſubject. If a ſubject require a long table, this may be ſubdivided into ſmaller; by making firſt a table of the moſt general heads, and referring from each of theſe heads to a ſeparate table; by this means the order and connection of the whole will be preſerved. Such tables would produce a local and artificial memory, of great uſe to the retention and recollection of things. They would greatly facilitate a diſtinct view of the properties of their ſubjects, and facilitate recapitulation. Beſides, as the expreſſions uſed in ſuch tables ought to be very conciſe, ſo as juſt to be ſufficient to excite the idea of the object to be remembered, ſoon after that idea has been acquired; after ſome time a certain obſcurity will be found in peruſing the tables, which will give us timely warning that our ideas begin to fade, and that they ought to be renewed. And this may be done without much trouble, if not too long delayed.

MNEMONICA, formed of μνημονευω, I retain in memory, denotes the art of memory. Under the article MEMORY we have illuſtrated the nature and operation of this faculty, and mentioned ſome of the principal methods, both ancient and modern, which have been invented for aiding the exerciſe of it. Since that article was printed, we have had an opportunity of peruſing a publication, entitled "The Art of Memory, founded upon the principles taught by M. Gregor Von Feinaigle," &c. The author has, with great induſtry of reſearch, detailed the principal ſyſtems of artificial memory, both before and after that of Mr. Grey was announced to the public in his "Memoria Technica," of which we have given a conciſe account under the article above cited. It ſufficiently appears, without any laboured proof, that the principal expedient for aſſiſting the memory is derived from aſſociation; and of this expedient Simonides, Cicero, and Quintilian availed themſelves in the contrivances which they ſuggeſted for this purpoſe. Having fixed upon certain ſymbols of the ſubjects which they wiſhed to recollect, they would transfer theſe ſymbols to the different compartments of a houſe, or public building, or to the different parts of the walls of a city, a public road, or a picture, and when theſe compartments, &c. preſented themſelves to view, or occurred in recollection, they would ſuggeſt the ſymbols attached to them, and theſe ſymbols would revive the remembrance of the ſentences or ſubjects, or parts of thoſe ſentences, to which they appertained: and thus, by means of ſuch compartments and ſymbols, a whole diſcourſe might be committed to memory, and recollected when occaſion required. Upon theſe principles, as we have reaſon to believe, was founded the topical memory of the ancients; and from this ſource, without doubt, are derived all the various ſyſtems of local and ſymbolical memory, that have been practiſed in more modern times.

Bradwardine ſeems to have been the firſt, who in this country made an attempt to form a ſyſtem of topical memory on the plan of the ancients. (See BRADWARDINE.) The "Ars Memorativa" of Publicius, probably printed before the year 1482, treats of the arrangement of places, and the combination of images, and has been the fountain whence many ſubſequent writers have derived conſiderable information. Grataroli, in his "Caſtel of Memorie," a tranſlation of which by W. Fulwood was publiſhed at London in 1562, and Thomas Watſon of Oxford, in his MS. entitled "Artificioſæ Memoriæ Libellus," dated 1583, preſerved in the Britiſh Muſeum, have referred to the ancient plan of dividing houſes and walls for the aſſiſtance of the memory. J. Baptiſta Porta, in his "Ars Reminiſcendi," printed at Naples in 1602, treats, like the authors already mentioned, of places and images; exchanges figures for ſymbols; repreſents letters by ſymbols, and gives two alphabets, one conſiſting of letters formed from various objects, and another, in which they are deduced from the different poſitions of the human body. Schenckel, a native of Bois-le-Duc, in 1547, and the author of "Gazophylacium Artis Memoriæ," publiſhed in 1610, propagated his diſcoveries in the mnemonic art through the Netherlands, Germany, and France, and they were received with great applauſe. The performances of this author excited aſtoniſhment; he repeated 40 ſentences of ſome length, without any connection, and after merely writing them down and reading them twice, backwards and forwards, and in any order that was deſired. Some of his pupils alſo diſtinguiſhed themſelves in a ſtill more ſurpriſing manner. A German tranſlation of Schenckel's work was publiſhed by Dr. Klüber, in 1804, under the title of "Compendium der Mnemonik, &c." The treatiſe of John Willis, entitled "Mnemonica &c." Lond. 1618, and a tranſlation of which by Sowerſby was publiſhed at London in 1661, contains many curious particulars. His plan is that of a topical memory, or of a memory to be aſſiſted by ſome ſuitable edifice, and its appropriate diviſions. The "Ars Memoriæ localis," publiſhed at Leipſic in 1620, and written by one of the profeſſors of the univerſity, merits preference, according to Morhof in his "Polyhiſtor," to all the treatiſes on mnemonics for perſpicuity and arrangement. Morhof, in his diſſertation "De Arte Lulliana" (ſee Polyhiſtor, T. t. l. 2. c. 5.) has preſerved an elaborate account of Raymund Lully's ſyſtem of artificial memory, to which he directed his attention at a very early period, and he is ſuppoſed to have been the firſt among the moderns who practiſed this art. (See the article LULLY.) D'Aſſigny's "Art of Memory," a third edition of which was publiſhed in London in 1706, contains many uſeful obſervations on the importance of a retentive memory, and on the mode of aiding the exerciſe of it; but it cloſes with ſome fanciful receipts for "comforting the memory," principally taken from early writers on this ſubject, and hardly deſerving to be reſcued from oblivion. Buffier's "Pratique de la Memoire Artificielle, &c." 8vo. Paris, 3 tom. 1719—1723, is intended to facilitate the acquiſition of chronology and univerſal hiſtory, and his ſyſtem is ſaid to be ingenious and ſimple. Of Grey's "Memoria Technica" we have given a conciſe account under the article *Artificial* MEMORY; more need not here be ſaid, as this uſeful manual is in almoſt every one's poſſeſſion. Lowe's "Mnemonics delineated in a ſmall Compaſs and eaſy Method, &c." 8vo Lond. 1737, is conſidered by Dr. Watts as a material improvement of Grey's treatiſe, and accordingly it has been annexed to the eighth and laſt edition of that work. In Feyjoo's "Cartas Eruditas y Curioſas," 4to. 5 tom. Madrid 1781, there is a diſſertation on remedies for the memory, and one on the art of memory. In another eſſay, the principles of the art are ſtated to conſiſt in particular places and images, and a ſphere or globe is divided into various compartments. In a ſection of this eſſay, Feyjoo ſpeaks of remembering certain words by the means of images, and in another ſection he illuſtrates the application of the art to poetry. Since the poſthumous publication of theſe eſſays, the author having died in 1765, after having been with difficulty ſaved from the horrors of the Inquiſition, for the freedom of his cenſures on the licentiouſneſs of the clergy, and the ſuperſtitions of the Romiſh church, (ſee FEYJOO,) no mention of the local and ſymbolical memory occurs until the year 1806, when it was announced in the "Philoſophical Magazine," (vol. xxvi. p. 282.) that the ſtudy of the ſcience of mnemonica was revived in Germany. In 1807, M Gregor Von Feinaigle, a native of Baden, viſited Paris, and delivered lectures on his "New Syſtem of Mnemonics and Methodics."

In 1811, M. Feinaigle viſited England; and in June of that year he obtained leave from the managers of the "Royal Inſtitution" to exhibit to the public an experiment of the efficacy of his method "of facilitating and aſſiſting memory."—"Four children, two boys and two girls, all under 14 years of age, had been put under M. Feinaigle's care but two or three days before: he had one of the girls but an hour and a half; and the longeſt tuition that any of them had received was but four hours and a half.—One of them repeated Goldſmith's Hermit backward and forward, and ſtated the ſtanza, the line, and the order of any remarkable word required of him.—One little girl anſwered to queſtions in the chronology of the Roman emperors; and another multiplied, without ſlate or paper, two ſums of eight figures by eight, and declared that ſhe had not previouſly been taught arithmetic.—A boy determined the geographical ſituation, in degrees and minutes, of 50 different cities; and on a planiſphere chalked out on a board, marked down the true ſituation of places named to him.—Mr. Fincher, of the Inſtitution, alſo recited the mineralogical tables of Haüy, the ſecond part of which he had taught himſelf on M. Feinaigle's ſyſtem, together with the firſt part of Briſſon's ornithologic ſyſtem; and he declared, from his own experience, that the principles of M. Feinaigle's art were equally calculated to give facility in the acquiſition, and certainty in the retention, of the tables of any other ſcience—a fact which was confirmed by ſeveral gentlemen preſent, who have attended the private courſes of the profeſſor."—M. Feinaigle has ſince that time repeated his exhibitions at Liverpool, in Scotland, and in London, to the aſtoniſhment of many perſons who attended.

Locality, or the connection of our ideas with places, as we are informed by the anonymous author, whoſe treatiſe we have cited, is made the foundation of this ſyſtem. In this reſpect, it is analogous to the ſcheme of mnemonics practiſed by the ancients, but it is here applied much more extenſively and advantageouſly than it was by them. How far it deſerves this commendation, the reader who is deſirous of farther information concerning it will be informed by conſulting the treatiſe already quoted; in which, as we conceive, there is a juſt developement of the principles of M. Feinaigle; but the detail is ſo extenſive and ſo incapable of abridgment, that it would be inconſiſtent with our limits to enlarge, ſo as to give any ſatisfaction to our readers. The general principle of this art is that of dividing walls and houſes into different compartments, and annexing numbers to them in a particular order, or words together with the numbers; the recollection of theſe words being aſſiſted by aſſociating ſome idea of relation between the objects and their ſituation. Conſonants are alſo annexed to the figures, which letters are not merely arbitrary, but adapted as nearly as poſſible to the form of the figures. Theſe letters, and the figures which they are intended to repreſent, ſhould be impreſſed ſtrongly on the memory, as the conſonants muſt be converted into words by the introduction of vowels. To each word ſhould be affixed ſome ſtriking idea; and the objects that are ſelected, each of which is expreſſed by a word, muſt be arranged in different places, beginning with the floor, and proceeding to the firſt, ſecond, and third wall, &c. Having divided a room into parts, as the floor and walls, ſubdivided theſe into places, changed figures into letters, and formed words, we ſhall by theſe means be enabled to remember a ſeries of figures or things. For this purpoſe, it would be advantageous to fix upon ſome room to which we have been accuſtomed. If this room ſhould have been hung with pictures, engravings or plans, or ornamented with buſts, &c. the remembrance of places, or localities, will be facilitated. The order of things in a room will be familiar to us. The ſquares or places may be filled with ſome pictures of our own drawing, and it will be as eaſy to remember the ſymbols, or hieroglyphics, as to remember the ſituation or place of any picture, or article of furniture in a room. By ſuppoſing the floor to be conſtructed of moſaic, inſtead of being covered with a carpet, we ſhall have ſpaces for ſymbols. The outlines of the ſymbols are intended to repreſent, as accurately as poſſible, the various figures in the two rooms, to which our plan extends, ſo that they may be permanently fixed in our memory. How theſe ſymbols are made applicable to chronology, hiſtory, &c. requires a more diffuſe detail than our limits will allow. Having already given our opinion of the various artifices that have been deviſed for aiding the memory, it is needleſs to enlarge. The reader will perceive that it muſt require time and labour, and no inconſiderable exertion of memory, to derive any advantage from mechanical modes of aiding the exerciſe of it.

Under the article MEMORY, we have given ſome examples of extraordinary retentiveneſs in the uſe of this faculty. To thoſe already mentioned, we ſhall here add ſome others. See AVICENNA, FULLER, JEWEL, and SCALIGER.

Lipſius remembered the whole hiſtory of Tacitus, and pledged himſelf to recite it word by word, or any paſſage that might be required. Francis Suarez could repeat all St. Auguſtine's works by heart, alleging particular lines and words, with the volume and page in which they occurred. Magliabecchi had a ſurpriſing memory. A gentleman who wiſhed to try it, lent him a MS. which he was going to print, and ſoon after it was returned, the author came to him with a melancholy aſpect, and pretended it was loſt. Magliabecchi being requeſted to recollect as much of it as he could, wrote the whole without miſſing a word, or making any variation in the ſpelling. We have mentioned ſome extraordinary inſtances of the power of memory poſſeſſed by Jedediah Buxton under his article. Without the aſſiſtance of pen, ink, chalk, or any other mark, he could multiply five or ſix figures by as many, or divide as large ſums off hand, in leſs time than the moſt expert arithmeticians could perform their operations. Being aſked how many cubical $\frac{1}{8}$ths of an inch were contained in a body, whoſe three ſides were 23145789 yards, 5641732 yards, and 54965 yards; after about five hours, in the midſt of more than 100 of his fellow labourers, he computed the reſult; and gave it in a line of 28 figures, without the leaſt heſitation or miſtake. He would repeat his anſwers to difficult queſtions a month or two after he had ſolved them. Of his own accord he calculated how much one farthing doubled 140 times would amount to; and the anſwer was ſet down from his lips in 39 places of pounds, and an odd 2*s.* 6*d.* Being once aſked how many barley corns would reach eight miles; he anſwered, in $1\frac{1}{2}$ minute, 1520640 barley corns. In 13 minutes he computed, that the diſtance of York from London, being 204 miles, a coach-wheel, whoſe circumference was ſix yards, would turn round in that interval 59,840 times. By the ſtrength of his memory he multiplied 39 figures by 39 figures, and had no recourſe to pen, ink, or paper.

At the moment of writing this article, the editor is informed of a boy, from Vermont in America, not eight years of age, who performs wonders in extempore calculation. The rapidity and correctneſs with which he multiplies and divides large numbers, with which he finds all the factors of a compoſite number, and whether any number propoſed be prime or not, and with which he ſolves a variety of arithmetical queſtions that are propoſed to him, are truly aſtoniſhing.

The editor has been favoured by F. Baily, eſq. of Gray's Inn, an eminently competent judge of thoſe performances in which this boy excels, with the following account. His name is Zerah Colburn. He was born at Cabut, a town lying at the head of Onion river, in Vermont, America, on the 1ſt of September 1804. He began to manifeſt his extraordinary powers in Auguſt 1810, when he was not ſix years of age; though he had derived no other advantage from education beyond what was to be obtained at a ſmall ſchool in a remote part of the country. On the 12th of May 1812 he arrived in this country, and has ſince exhibited his aſtoniſhing performances to a great number of ſpectators, and before many perſons of the firſt eminence for mathematical and philoſophical knowledge.

At a meeting of his friends, which was held for the purpoſe of concerting the beſt method of promoting the views of the father, this child undertook, and completely ſucceeded in, raiſing the number 8 progreſſively up to the ſixteenth power; and in naming the laſt reſult, *viz.* 281,474,976,710,656, he was right in every figure. He was then tried as to other numbers, conſiſting of one figure; all of which he raiſed (by actual multiplication and not by memory) as high as the tenth power, with ſo much facility and diſpatch, that the perſon appointed to take down the reſults was obliged to enjoin him not to be ſo rapid. With reſpect to numbers conſiſting of two figures, he would raiſe ſome of them to the ſixth, ſeventh, and eighth power; but not always with equal facility: for the larger the products became, the more difficult he found it to proceed. He was aſked the ſquare root of 106929; and before the number could be written down, he immediately anſwered 327. He was then required to name the cube root of 268,336,125; and with equal facility and promptneſs he replied 645. Various other queſtions of a ſimilar nature, reſpecting the roots and powers of very high numbers, were propoſed by ſeveral of the gentlemen preſent; to all of which he anſwered in a ſimilar manner. One of the party requeſted him to name the factors which produced the number 247483, which he immediately did by mentioning the two numbers 941 and 263; which indeed are the only two numbers that will produce it. Another of them propoſed 171395, and he named the following factors as the only ones that would produce it; *viz.* 5 × 34279, 7 × 24485, 59 × 2905, 83 × 2065, 35 × 4897, 295 × 581, and 413 × 415. He was then aſked to give the factors of 36083; but he immediately replied that it had none; which in fact was the caſe, as 36083 is a prime number. Other numbers were indiſcriminately propoſed to him, and he always ſucceeded in giving the correct factors, except in the caſe of prime numbers, which he diſcovered almoſt as ſoon as propoſed. One of the gentlemen aſked him how many minutes there were in forty-eight years; and before the queſtion could be written down, he replied 25,228,800: and inſtantly added, that the number of ſeconds in the ſame period was 1,513,728,000. Various queſtions of the like kind were put to him; and to all of them he anſwered with nearly equal facility and promptitude; ſo as to aſtoniſh every one preſent, and to excite a deſire that ſo extraordinary a faculty ſhould, if poſſible, be rendered more extenſive and uſeful.

Being aſked to inform the gentlemen preſent how he was enabled to anſwer, with ſuch facility and correctneſs, the queſtions that were propoſed to him, he declared that he did not know how the anſwers came to his mind. It was obſerved, however, that the child performed his ſeveral operations by ſome rules known only to himſelf. The diſcovery was made in one or two inſtances, when he had been cloſely preſſed upon that point. In one caſe he was aſked to tell the ſquare of 4395; he at firſt heſitated, fearful that he ſhould not be able to anſwer it correctly: but when he applied himſelf to it, he ſaid it was 19,316,025. On being queſtioned as to the cauſe of his heſitation, he replied that he did not like to multiply four figures by four figures: but, ſaid he, "I found out another way; I multiplied 293 by 293, and then multiplied this product twice by the number 15, which produced the ſame reſult." On another occaſion, his highneſs the duke of Glouceſter aſked him the product of 21,734 multiplied by 543: he immediately replied 11,801,562: but, upon ſome remark being made on the ſubject, the child ſaid that he had, in his own mind, multiplied 65202 by 181. Now, although in the firſt inſtance it muſt be evident to every mathematician that 4395 is equal to 293 × 15, and conſequently that $(4395)^2 = (293)^2 \times (15)^2$; and further, that in the ſecond caſe 543 is equal to 181 × 3, and conſequently that $21734 \times (181 \times 3) = (21734 \times 3) \times 181$; yet, it is not the leſs remarkable that this combination ſhould be immediately perceived by the child, and we cannot the leſs admire his ingenuity in thus ſeizing inſtantly the eaſieſt method of ſolving the queſtion propoſed to him.

Amongſt a variety of caſes of this kind, the following ſingular inſtance is particularly worthy of being recorded. He was aſked to tell the ſquare of 999999: which, after ſome little time, he ſtated to be 999,998,000,001; and he further obſerved, that he had produced this reſult by multiplying the ſquare of 37037 by the ſquare of 27. He then, of his own accord, multiplied that product by 49; and ſaid that the reſult (*viz.* 48,999,902,000,049) was equal to the ſquare of 6,999,993. He afterwards multiplied this product by 49; and obſerved that the reſult (*viz.* 2,400,995,198,002,401) was equal to the ſquare of 48,999,951. He was again aſked to multiply this product by 25; and in naming the reſult (*viz.* 60,024,879,950,060,025) he ſaid that it was equal to the ſquare of 244,999,755. Theſe aſtoniſhing efforts of his mind require no comment; and ſufficiently ſhew that he poſſeſſes a more intimate knowledge of the ſcience of numbers than can be obtained by the ordinary, or even more abſtruſe rules of arithmetic.

It is well known to mathematicians, that Fermat had aſſerted that $2^{32} + 1 = 4{,}294{,}967{,}297$ was a prime number; but Euler detected that error, by diſcovering that it was equal to 6,700,417 × 641. The ſame number was propoſed to this child, who (after a lapſe of ſome weeks) found out the factors by the mere operation of his mind: and the method which he took to obtain his object, clearly ſhewed that he had not derived his information from any other ſource.

MNEMOSILLA, in *Botany*, a genus of Forſkall's, which, according to Juſſieu, is the ſame as HYPECOUM. See that article.

MNEMOSYNE, in *Mythology*, was the daughter of Cœlus and Terra, according to the theogony of Heſiod; and Jupiter being enamoured of her, made her mother to the nine Muſes. To Mnemoſyne is aſcribed, according to Diodorus Siculus, the art of reaſoning, and giving ſuitable names to every being, ſo that we can deſcribe them, and converſe about them without ſeeing them. Mnemoſyne is generally allowed to have been the firſt who uſed helps for the memory, and this is intimated in her name.

MNETHEL, in *Geography*, a town of Perſia, in the province of Chuſiſtan; 102 miles E. of Suſter.

MNEVIS, in *Mythology*, the name of a ſacred bull, conſecrated to the ſun, and worſhipped by the Egyptians at Heliopolis. The worſhip of Mnevis gradually diſappeared, when Apis became the general deity of the country. From the era in which Cambyſes overthrew the magnificent temple of Heliopolis, we may date the downfall of the worſhip of Mnevis. This Mnevis was, according to Bryant, a compound of Men-neuas, the lunar god Nevas, the ſame as Noas, or Noah. The name relates to the ſame perſon who, in Crete, was ſtyled Minos; and the ſame alſo who was repreſented under the emblem of the Men-taur or Mino-taurus. Ant. Myth. vol. ii. p. 416, &c.

MNIARUM, in *Botany*, ſo called from *μνιαρος*, *moſſy*, in alluſion to its habit. Forſt. Gen. 1. t. 1. Linn. Suppl. 18. Schreb. 9. Willd. Sp. Pl. v. 1. 30. Mart. Mill. Dict. v. 3. Juſſ. 441. Brown Prodr. Nov. Holl. v. 1. 412. Labill. Nov. Holl. v. 1. 8. (Ditoca; Gærtn. t. 126.)—Claſs and order, *Monandria Digynia*. Nat. Ord. *Holeraceæ*, Linn. *Atriplices*, Juſſ. *Chenopodiis affinia*, Brown.

Gen. Ch. *Cal.* Perianth inferior, pitcher-ſhaped, permanent, cut half way down into four equal, erect, obtuſe, rigid ſegments. *Cor.* none. *Stam.* Filament one, capillary, erect, inſerted into the mouth of the calyx, ſcarcely longer than its ſegments; anther roundiſh, furrowed. *Piſt.* Germen ſuperior, oval; ſtyles two, thread-ſhaped, gradually divaricated, the length of the ſtamen: ſtigmas ſimple. *Peric.* none. *Seed* ſolitary, ſmall, oblong, with a membranous coat, encloſed in the hardened tube of the calyx.

Eſſ. Ch. Calyx pitcher-ſhaped, four-cleft. Corolla none. Seed one, encloſed in the tube of the calyx.

Akin to *Scleranthus*, from which it differs in the ſtamen being, for the moſt part, ſolitary; the calyx four-cleft; and the ſtalks two-flowered, with four bractèas at the ſummit. The ſeed in both genera is inverted, the embryo curved round the albumen, the radicle ſuperior. *Brown.*

1. M. *biflorum.* Linn. Suppl. 81. Forſt. Prodr. 2. Comm. Goett. v. 9. 19. t. 1. (M. pedunculatum; Labill. Nov. Holl. v. 1. 8. t. 2. Ditoca muſcoſa; Gærtn. v. 2. 196. t. 126. f. 1.)—Stem tufted. Branches very ſmooth. Leaves finely toothed at the baſe only, ſhorter than the fruit-ſtalks. *Br.*—Native of New Zeeland, Terra del Fuego, and Van Diemen's land. The *ſtems* compoſe denſe maſſy tufts, varying in height, with the aſpect of a *Minuartia.* Every part of the herb is ſmooth. *Leaves* oppoſite, awl-ſhaped, united and finely toothed at the baſe; otherwiſe entire. *Flower-ſtalks* axillary, ſolitary, ſimple, at firſt ſhort, but ſubſequently elongated beyond the leaves; each bearing a pair of minute ſeſſile greeniſh *flowers*, accompanied by four little ovate *bracteas.* The *calyx* of the fruit is hardened, tumid, ovate, cloſed about the ſeed, and crowned with its own little permanent ſegments.

2. M *faſciculatum.* Br. n. 2.—"Stems procumbent, branched. Branches minutely downy. Leaves finely toothed throughout. Fruit-ſtalks ſcarcely ſo long as the leaves."—Gathered by Mr. Brown in Van Diemen's land.

MNIUM, a word adopted by Dillenius from the Greeks, whoſe μνιον is ſynonymous with Moſs. He therefore choſe it for one of his own genera of Moſſes, the character of which is to have two different kinds of heads, or fructification; the one powdery and naked, that is, deſtitute of calyx as well as of capſule; the other of the ſame capſular nature as in *Bryum* and *Hypnum.* Conſidering this character as ſufficient to diſtinguiſh *Mnium* from all other Moſſes, he proceeds to inquire into the nature of theſe different parts of fructification. In his concluſion he miſtakes the male for the female, though his error has not commonly been obſerved, becauſe he terms capſule what he believed to be the anther, but which is indeed the capſule, properly ſo called. (See Dillenius and Musci.) We therefore now reſume the language, though we diſcard the ideas, of this eminent writer.

Dillenius, conſidering every moſs as a *Mnium* in which he met with a powdery head, although he did not detect the capſule, has made eight ſpecies; but this principle has widely miſled him. His fifth and ſixth ſpecies are *Jungermanniæ*, his ſeventh is the *Blaſia puſilla*, previouſly well defined, as a diſtinct genus, by Micheli. In the reſt of his ſpecies, Dillenius is as correct as any perſon could, at that time, be.

Linnæus, following up the principle he had adopted from Dillenius, referred to *Mnium* every moſs, with a terminal fruit-ſtalk, in which the powdery head of male flowers, ſuppoſed by them female, had been obſerved. As his followers proceeded to look more and more cloſely into the ſtructure of theſe minute vegetables, the powdery heads, or ſtars, as they were termed when ſurrounded by leaves, were diſcovered in many ſpecies, hitherto referred to *Bryum.* Nor is this wonderful, for the diſcoveries of Hedwig have proved them eſſential to every moſs, they being unqueſtionably the male flowers. For a long time botaniſts were perpetually diſputing, whether to refer particular ſpecies to *Mnium* or *Bryum*, according as they had met with the powdery head or not. Hudſon alone has ſhewn his judgment, in conſidering the naked or leafleſs head as proper to the former; by which, except the original blunder reſpecting two or three *Jungermanniæ*, he has preſerved himſelf from error. Hedwig has confuſed the ſubject by reverſing the original characters. His *Bryum* has a round or capitate male flower, or powdery head; his *Mnium* a flat or diſcoid one. This leads to no natural character. Indeed the difference itſelf is uncertain, the part in queſtion varying in convexity at different periods of growth. The ableſt botaniſts who have in general followed Hedwig, as Schreber, Swartz, and Roth, well aware of his miſtake in this inſtance, thought to correct it, by uniting the two genera into one, under the name of *Bryum.* Hoffmann, more boldly but leſs ſucceſsfully, recurred to the fringe alone, making almoſt every terminal-fruited moſs with a ſingle fringe *Bryum*, with a double one *Mnium.* See Fringe *of Moſſes.*

The writer of the preſent article at length propoſed to diſtinguiſh *Mnium* by the longitudinal furrows of its capſule, which in another double-fringed genus, *Bartramia*, had been found a certain and clear mark of difference. This character keeps the original real *Mnia* of Dillenius together, except the firſt, which is the *Tetraphis pellucida;* and has the advantage of aſſociating with them moſt naturally the *Arrhenopterum* of Hedwig, a genus whoſe diſtinction was founded by its author on the axillary, not terminal, male flowers; a character which the ſlighteſt attention to moſſes will ſhew to be of no importance, as to generic diſcrimination. *Mnium* is therefore now defined as follows. Tr. of Linn. Soc. v. 7. 261. Fl. Brit. 1344.

Eſſ. Ch. Capſule cylindrical, at length furrowed. Outer fringe of ſixteen tapering teeth; inner a laciniated membrane. Veil ſmooth. Flowers terminal.

The furrows are always ſixteen, being equal in number to the teeth of the outer fringe, and indeed to the principal ſegments of the inner one. Six ſpecies are defined in the Tranſactions of the Linnæan Society above quoted.

1. M. *androgynum.* Narrow-leaved Spring-moſs. Linn. Sp. Pl. 1574. Sm. Fl. Brit. 1344. Engl. Bot. t. 1238. Hedw. Theor. 149. t. 12. f. 48—50. (M. perianguſtis et brevibus foliis; Dill. Muſc. 230. t. 31. f. 1. Bryum androgynum; Hedw. Sp. Muſc. 178. Turn. Muſc. Hib. 11.)—Monoecious. Capſule ſtraight. Lid conical. Leaves imbricated every way, ſpreading; toothed at the point.—Native of moiſt ſhady boggy places throughout Europe, flowering in March. The capſules, which ripen in April or May, are very rare. The *ſtems* form denſe perennial tufts, and are branched, clothed with bright green, dotted, pellucid, lanceolate, ſingle-ribbed, acute leaves; toothed towards the point; entire and revolute below. *Flowers* terminal; the male in little round ſtalked heads; female on the ſame plant, ſeſſile. *Capſule* nearly upright, on a ſhining red ſtalk an inch long. *Lid* ſhort, conical, blunt, ſtriated, a little curved.

2. M. *conoideum.* Club-fruited Spring-moſs. Sm. Fl. Brit. 1345. Engl. Bot. t. 1239. (Bryum conoideum; Dickſ. Crypt. faſc. 4. 9. t. 11. f. 2. Turn. Muſc. Hib. 112. Grimmia? Forſteri; Sm. Fl. Brit. 1196. Engl. Bot. t. 2225. Bryum Forſteri; Dickſ. Crypt. faſc. 3. 4. t. 7. f. 8.)—Monoecious? Capſule ſtraight, obovate. Lid awl-ſhaped. Leaves imbricated every way, ſpreading, entire.—Native of

the trunks of trees in Scotland and Ireland, but rare. Smaller than the former. The *ſtems* compoſe ſmall, convex, perennial patches, and are moſtly ſimple, leafy, half an inch high. *Leaves* oblong, entire, pale green, ſingle-ribbed, pointleſs, dotted juſt as in the foregoing. *Male flowers* unknown. *Fruit-ſtalks* ſolitary, terminal, half an inch high. *Capſule* obovate, with a curved lid, of nearly its own length. The more we conſider the matter, the leſs doubt have we reſpecting the above ſynonyms.

3. M. *paluſtre.* Greater Forked Spring-moſs. Linn. Sp. Pl. 1574. Sm. Fl. Brit. 1346. Hedw. Sp. Muſc. 188. Schmidel. Ic. 218. t. 56. f. 2. (M. majus, ramis longioribus bifurcatis; Dill. Muſc. 233. t. 31. f. 3, 4. Bryum paluſtre; Engl. Bot. t. 391. Turn. Muſc. Hib. 113.)—Dioecious. Capſule oblique. Lid conical. Leaves acute; the upper ones curved to one ſide. Stem erect, forked.—Native of bogs, about mountain rivulets, and in various watery ſituations throughout Europe; flowering in April and May; fruiting in June and July. The *ſtems* are three or four inches high. *Leaves* of a light yellowiſh-green, lanceolate, acute, channelled, ſingle-ribbed, entire; wavy when dry. *Male flowers* like a broad diſk, ſurrounded with radiating leaves; often proliferous, throwing up ſtalked round heads, like the male flowers of the firſt ſpecies; *female* ſeſſile. *Fruit-ſtalks* ſolitary between the new ſhoots of the ſeaſon, two or three inches high, wavy, red below. *Capſule* curved, with a ſhort conical lid.

4. M. *reclinatum.* Procumbent American Spring-moſs. Sm. Tr. of Linn. Soc. v. 7. 262. (M. ramis brevibus, inordinatè progredientibus; Dill. Muſc. 239. t. 31. f. 8.)—Dioecious. Capſule nearly erect. Lid conical. Leaves bluntiſh, rather turned one way. Stem procumbent, much branched.—Gathered by Mitchell in bogs in Virginia. *Dillenius.* Its colour and habit are like the laſt, but the ſize only half as great. *Capſule* ſlender, nearly erect. *Stem* much branched, not forked. *Male flowers* ſtalked, naked.

5. M. *pendulum.* Pendulous-fruited Spring-moſs. Sm. n. 5.—Capſule pendulous. Lid nearly flat. Leaves awl-ſhaped, ſtriated, recurved. Stem erect.—Gathered by Mr. Menzies, in New Zeeland. *Stems* determinately branched, leafy, clothed with ruſty down, like many moſſes that grow in clear ſprings. *Leaves* yellowiſh, ſingle-ribbed, imbricated every way, but recurved, chiefly toward one ſide. *Fruit-ſtalks* red, two inches high. *Capſule* cylindrical, or ſomewhat bell-ſhaped, cheſnut-coloured. *Lid* flat, with a central knob.

6. M. *arrhenopterum.* Axillary Spring-moſs. Sm. n. 6. (Arrhenopterum heteroſtichum; Hedw. Sp. Muſc. 198. t. 46. f. 1—9. Bryum heteropterum pellucidum; Dill. Muſc. 352. t. 45. f. 11; but indifferent. B. foliis membranaceis obtuſis; Dill. Muſc. 552. t. 35. f. 19; better; both determined by the Dillenian herbarium. Hypnum illecebrum; Linn. Sp. Pl. 1594; excluding the ſynonym of Dillenius. Fl. Lapp. ed. 2. 329.)—Capſule inclining. Lid awl-ſhaped. Leaves elliptical, obtuſe. Stem erect. Native of Virginia, Pennſylvania and Lapland.—*Stems* about two inches high, branched. *Leaves* imbricated, pale whitiſh-green, elliptical, concave, ſhining, ſingle-ribbed, ſerrated at the end. *Fruit-ſtalks* an inch long, ſtraight, rather ſtout. *Capſule* curved, with a beaked red lid.

There appear to be ſeveral ſpecies ſtill referrible to this genus, which are not as yet any where deſcribed.

MO, in *Geography*, a town of Sweden, in Helſingland; ſix miles W. of Soderhamn.

MOA, an iſland in the Eaſt India ſea, about 30 miles long and 10 broad. S. lat. 8° 21′. E. long. 127° 45′.

MOAB, *Land of*, or MOABITIS, ſo called from Moab one of the inceſtuous ſons of Lot, in *Ancient Geography*, was ſituated in Arabia Petræa, on the north of Midian, having the river Arnon on the weſt, which divided it all the way from the tribe of Reuben, the Iſhmaelites on the eaſt, and the land of Gilead on the north. Their country was at firſt inhabited by the gigantic Emims, whom they expelled, making themſelves maſters of it, and of all its cities, which were both numerous and conſiderable. Some of theſe cities, mentioned by Joſephus, were on the other ſide of the Arnon, and therefore not ſo properly in Moabitis, as in the land of the Amorites, or Reubenites; particularly Heſhbon; but they might have been inhabited by the Moabites. The limits of this country, indeed, were continually fluctuating; ſo that we read of the plains of Moab, called alſo by Moſes the land of Moab; but which had been taken by Sihon, quite as far as the river above mentioned. Mount Nebo is placed by Moſes in the land of Moab, though ſeated on the other ſide of the Arnon, in the kingdom of Sihon. This river, however, ſeems to have been the proper northern boundary between theſe two kingdoms, as Moab ſeems to have been the ſouthern boundary between Arabia Petræa and Deſerta. See MOABITES.

MOAB, in *Geography*, a town of Arabia, in the province of Hadramaut; 83 miles W. of Hadramaut.—Alſo, a town of Arabia Felix, in the province of Yemen, and reſidence of the prince, built in 1708, and ſituated between Damar and Sanaa.

MOAB, or *El-Raba*, a town of Syria; 50 miles S.E. of Jeruſalem.

MOABITES, in *Ancient Hiſtory*, the deſcendants of Moab, the ſon of Lot, by his eldeſt daughter. The poſterity of Lot ſettled in the country bordering on the mountain, where he was born, which ſome make part of Cœleſyria, while others allege that it belongs to Arabia; and having driven out the old inhabitants, they poſſeſſed a ſmall tract called Moabitis, or the land of Moab. (See MOAB.) They were governed by kings, practiſed circumciſion, and employed themſelves moſtly in paſturage and breeding cattle, which conſtituted their chief wealth. It is probable that their language was a dialect of the Canaanitiſh or Hebrew. They had once the knowledge of the true God, and retained it till the time of Moſes, even after they had very much corrupted their religion by introducing the worſhip of falſe gods. The idols of the Moabites, mentioned in ſcripture, were Chemoſh and Baal-Peor. Some ſuppoſe that theſe were different names of the ſame idol: but others think that Baal-Peor was Bacchus, and Chemoſh ſeems to have been a different idol. In the practice of their religious rites, they ſacrificed both in the open air, on mountains dedicated to that ſervice, and in temples built for their idols in the cities: beſides oxen and rams, they offered on extraordinary occaſions human victims, according to the Phœnician cuſtom.

The firſt inhabitants of the country were a gigantic race, called Emims, or Terribles, probably deſcendants of Ham. Theſe were expelled by the Moabites; but the latter in proceſs of time loſt that part of their land which lay to the N. of the river Arnon. When the Iſraelites, after the death of Othniel, returned again to idolatry, Eglon, king of Moab, was an inſtrument in puniſhing them; he invaded Iſrael and kept the Iſraelites in ſubjection eighteen years. Ehud, having ſecretly put Eglon to death, was obliged to make his eſcape beyond Jordan; and there he aſſembled a body of forces, who attacked the Moabites, and ſlew 10,000 of their beſt men. By this diſaſter the power of the Moabites was broken, and the Iſraelites were freed from the yoke of that nation. Notwithſtanding the protection which the king of Moab afforded to the parents of David and to David himſelf, when he was perſecuted by Saul, as ſoon as he came to the crown the Moabites entered into a confederacy againſt him; but in conſequence of a ſignal victory which he obtained over them, many of them were put to the ſword, and the reſt became his vaſſals and tributaries. From this time they continued ſubject to Solomon and Rehoboam, until the revolt of the ten tribes, upon which they became tributaries to the kings of Iſrael, though they had kings of their own, who were little better than viceroys. After the death of Ahab, Meſha, king of Moab, rebelled againſt his ſon Ahaziah, but the ſhort reign of this prince not permitting any attempt to reduce him, his brother and ſucceſſor Jehoram, aſſiſted by Jehoſhaphat, king of Judah, and the king of Edom, his tributary, made an expedition for this purpoſe; the reſult of which was, the defeat of the Moabites and the devaſtation of a great part of their country. It was not long before the Moabites, entering into an alliance with the Ammonites, the Edomites of mount Seir, and other neighbouring nations, attempted to revenge the loſſes they had ſuſtained in this invaſion of their country on Jehoſhaphat, king of Judah, who had encouraged Jehoram to undertake it. Their attempt proved unſucceſsful, and terminated in their total ruin. After this period the Moabites do not ſeem to have diſturbed Iſrael for many years. On the declenſion of the kingdom of Iſrael, they ſeem to have retaken from the tribes of Reuben and Gad a great part of the land which formerly belonged to them, before the invaſion of Sihon; but elated by their ſucceſs, they behaved with pride and inſolence, in conſequence of which ſeveral of the ancient prophets, and Iſaiah in particular, threatened them with utter deſtruction. After the dreadful diſcomfiture of the army of Sennacherib, the ſon of Shalmaneſer, the Moabites often revolted from his ſucceſſors, and were as often reduced, till they were entirely ſubdued by Nebuchadnezzar; but upon Nebuchadnezzar's departure from Judea and Syria, after his ſecond expedition into theſe parts, they, with the other neighbouring nations, propoſed to Zedekiah to enter into a league againſt the Chaldæans, to which that prince conſented, on the acceſſion of the Egyptians to their confederacy; but this meaſure, adopted by Zedekiah againſt the remonſtrance of the prophet Jeremiah, became the occaſion of his utter ruin; for his new allies deſerted him in his diſtreſs. From this period hiſtory makes little mention of the Moabites, who became ſubject to the great empires, and at length coaleſced as one people with the neighbouring nations which inhabited the deſerts of Syria; ſo that, although Joſephus mentions the Moabites as a diſtinct nation long after, obſerving that they were ſubdued by Alexander Jannæus, king of the Jews, and that in his time they were a numerous nation; yet, in the third century after Chriſt, they had loſt their ancient name, and were comprehended under the more general denomination of Arabians. Anc. Un. Hiſt. vol. i.

MOAGANORE, in *Geography*, a town of Hindooſtan, in Golconda; 10 miles N.W. of Rachore.

MOAGAS, a cluſter of ſmall iſlands in the Caribbean ſea, near the coaſt of South America, at the entrance of the gulf of Venezuela: they are eight or nine in number, extending from north to ſouth, and but one excepted, low, flat, and covered with trees. The ſouthernmoſt is the largeſt.

MOAMAA, a port and good harbour of Nubia, in the Red ſea; 15 miles S. of Aidab.

MOANESS, a cape on the N. coaſt of the iſland of Shetland. N. lat. 60° 44′. W. long. 1° 32′.

MOANGUNGE, a town of Bengal; 72 miles N.N.W. of Dacca.

MOAR, a town of Hindooſtan, in Bahar; 22 miles N.E. of Bahar.

MOAR-LOVRE, in *Agriculture*, a term made uſe of by ſome to expreſs a peculiar diſtemperature of corn, a ſort of blight. In this caſe the earth is ſaid to ſink away from the roots of the corn, and to leave the plants ſtanding in a great part above the ground with naked roots; which are too weak to ſupport the ſtalks: the plants, of courſe, fall down, and the ears become light. It is a diſtemper peculiar to corn growing on light and looſe lands, which Mr. Tull has mentioned in his Horſe-hoeing Huſbandry. And it is ſuppoſed that the beſt remedy is to bring up mould againſt the rows, when they are ſtrong enough to bear it, and it is fine and dry; the motion of the ſtalks with the wind draws in this looſe powdery mould, and it ſpreads equally, ſettles about the roots, and covers them ſo as to produce freſh nouriſhment and ſupport.

MOAT, in *Fortification*, a deep trench dug round a town or fortreſs to be defended, on the outſide of the wall, or rampart. See *Plate* VII. *Fortif. fig.* 1. *lit. h, h, h*, &c.

The depth and breadth of a moat often depend on the nature of the ſoil; according as it is marſhy, rocky, or the like. The brink of the moat next the rampart in any fortification is called the *ſcarp*, and the oppoſite one the *counterſcarp*. See DITCH.

MOAT, *Dry*, is that which is deſtitute of water: this ought to be deeper than one which is full of water.

MOAT, *Lined*, is that whoſe ſcarp and counterſcarp are caſed with a wall of maſon's work lying aſlope.

MOAT, *Flat-bottomed*, is that which hath no ſloping, its corners being ſomewhat rounded.

MOAT, *Angle of the*. See ANGLE.

MOATAZALITES, MOTAZALITES, or *Separatiſts*, a religious ſect among the Turks, who deny all forms and qualities in the divine Being: or who diveſt God of his attributes.

There are two opinions among the Turkiſh divines concerning God. The firſt admits metaphyſical forms, or attributes; as, that God has wiſdom, by which he is wiſe; power, by which he is powerful; eternity, by which he is eternal, &c.

The ſecond allows God to be wiſe, powerful, eternal; but will not allow any form or quality in God, for fear of admitting a multiplicity.

Thoſe who follow this latter opinion are called *Moatazalites*: they who follow the former, *Sephalites*.

The Moatazalites alſo believed that the word of God was created *in ſubjecto*, as the ſchoolmen term it, and to conſiſt of letters and ſound; copies thereof being written in books to expreſs or imitate the original; they denied abſolute predeſtination, and affirmed that man is a free agent. They held that if a profeſſor of the ſame religion be guilty of a grievous ſin, and die without repentance, he will be eternally damned, though his puniſhment will be lighter than that of the infidels. Moreover, they denied all viſion of God in paradiſe by the corporeal eye, and rejected all compariſons or ſimilitudes applied to God. This ſect is ſaid to have firſt invented the ſcholaſtic divinity, and is ſubdivided into no leſs than twenty inferior ſects, which mutually brand one another with infidelity. Of theſe the moſt remarkable are the Hodeilians, the Jobbaians, the Haſhemians, the Nodhamians, the Hayetians, the Jahedhians, the Mozdarians, the Bacharians, the Thamamians, and the Kadarians. Sale's Prelim. Diſc. p. 159, &c.

MOATE, or MOATE GRENOGUE, in *Geography*, a poſt-town, or rather village in the county of Weſtmeath, Ireland. It is 52 miles W. by N. from Dublin, and $7\frac{1}{2}$ from Athlone.

MOAWIYAH, in *Biography*, ſixth caliph of the Arabians, was the ſon of Abu Sofian, a chief of Koreiſh, and an eminent commander under Mahomet. Moawiyah was appointed ſecretary to the prophet, an office which he filled for ſeveral years, but after the conqueſt of Syria, he was made governor of the province of Omar, and was continued in that high ſtation by Othman. He obtained great ſucceſs againſt the Greek emperors, and, in 654, he conquered the iſle of Rhodes, and demoliſhed the famous coloſſus of the ſun. In the following year he became a competitor for the caliphate, but Ali was elected; Moawiyah inſtantly declared againſt him, and prevailed upon Amru to join him. He was proclaimed caliph at Mecca and at Medina, and maintained a civil war againſt Ali, till the aſſaſſination of that caliph in 660. Moawiyah was, at the ſame time, ſeverely wounded by one of the three conſpirators who undertook to reſtore peace among the Muſſulmans by the aſſaſſination of the two rivals, but he eſcaped with his life. At firſt, Haſſan, Ali's ſon, oppoſed the pretenſions of Moawiyah, but ſoon reſigned his power to his opponent, who obtained the caliphate without a rival in 661, being the firſt prince of the dynaſty of the Ommiyans. An inſurrection of the Kharegites was one of the firſt events of his reign, which was quelled by the people of Irak, with the total extermination of the ſect. A reconciliation with his illegitimate brother Ziyad, a man of great talents, who had taken the part of Ali, and was made governor of Perſia, added great ſtrength to the throne of Moawiyah, who, to gain him, did not ſcruple to violate the laws of the Koran, by acknowledging him as the blood of the Koreiſh, though his legal father was a Greek ſlave. The temper and ſeverity of Ziyad was of great ſervice in ſuppreſſing ſome commotions which threatened to diſturb the peace of the empire. In 668, Moawiyah ſent his ſon Yezid with an army to beſiege Conſtantinople, but the undertaking was beyond the Muſſulman power, and after ſpending ſeven years in a ſeries of repeated ſummer attacks, attended with a variety of petty events, but ſignalized by no great action, they relinquiſhed the enterprize. The caliph's arms were more ſucceſsful in another quarter, and obtained for him the complete poſſeſſion of Samarcand. Moawiyah fixed his reſidence at Damaſcus, and the great object of his latter years was to ſecure the crown to his ſon Yezid, who was by no means fitted for the high rank to which he aſpired. Moawiyah, after a long ſtruggle with the people, procured the public recognition of Yezid as his own colleague, and preſumptive heir to the caliphate. In a very ſhort time after this he expired at Damaſcus, after a reign of about twenty years, and when he had attained to the age of ſeventy-five. He was, ſays his biographer, the moſt eminent of the Saracen caliphs, and extolled for his capacity, courage, generoſity, and clemency. He was the firſt of the caliphs who wore rich garments, and affected royal ſplendour. He was a patron of learning, particularly of thoſe who were proficients in poetry. Univer. Hiſt.

MOBARACGUNGE, in *Geography*, a town of Hindooſtan, in Oude; 14 miles W. of Fyzabad.

MOBAS, a town of New Mexico, in the province of Hiaqui; 25 miles S.E. of Riochico.

MOBILE, Moveable., any thing ſuſceptible of motion, or that is diſpoſed to be moved either by itſelf, or by ſome other prior mobile, or mover.

Mobile, *Primum*, in the *Ancient Aſtronomy*, was a ninth heaven, or ſphere, imagined above thoſe of the planets, and fixed ſtars.

This was ſuppoſed to be the firſt mover, and to carry all the lower ſpheres round along with it; by its rapidity communicating to them a motion by which they revolved in twenty-four hours. But the diurnal revolution of the planets is now accounted for, without the aſſiſtance of any ſuch primum mobile.

Mobile, *Perpetuum*. See *Perpetual* Motion.

Mobile, in *Geography*, a large, navigable river of America, formed by two main branches, the Alabama, and the Tombeckbee, in the S.W. part of Georgia, juſt below a conſiderable iſland, the S. point of which is in about N. lat. 31° 26′, and W. long. 87° 55′. Purſuing a S. courſe into Weſt Florida, the confluent ſtream enters the gulf of Mexico at Mobile Point in N. lat. 30° 17′, 11 leagues below the town of Mobile. Large veſſels cannot approach the town within the diſtance of ſeven miles: the breadth of the bay is in general about three or four leagues. Alligators of a large ſize and in great number baſk on the ſhores, as well as ſwim in the rivers and lagoons. The courſe of this river from the N.E. ſource of the waters of the Alabama to Mobile Point is eſtimated at about 460 miles. Large boats can navigate 350 miles, and canoes much farther.

Mobile, a city of Weſt Florida, formerly important and ſplendid, but now in a ſtate of decline. Its figure is oblong, and it is ſituated on the W. bank of the river. The bay of Mobile terminates a little to the N.E. of the town in marſhes and lagoons, which ſubject the inhabitants to fevers and agues in the hot ſeaſon. The town contains ſeveral elegant houſes, occupied by French, Engliſh, Scotch, and Iriſh. Fort Conde, ſituated near the bay, towards the lower end of the town, is a regular fortreſs of brick; and there is a neat ſquare of barracks for the officers and ſoldiers. Mobile, when poſſeſſed by the Engliſh, ſent yearly to London ſkins and furs to the value of from 12 to 15,000*l.* ſterling. It ſurrendered to the Spaniſh forces in 1780.

Mobile, *Mobiles*, plural, in the *Ancient Greek Muſic*, the moveable or central ſounds of each tetrachord, ſuch as were tuned differently in different genera; whereas the two extremes, or the loweſt and higheſt ſound of each genus, were fixt: *ſoni ſtantes.* See Tetrachord, Genus, and Sound.

MOBILIA Bona, in the *Civil Law*, are what in common law, &c. we call *moveables*, or *moveable goods.*

MOBILITY, in the *Schools*, &c. an aptitude or facility to be moved.

The hypotheſis of the mobility of the earth is the moſt plauſible; and is that univerſally admitted by the later aſtronomers. Pope Paul V. appointed commiſſioners to examine the opinion of Copernicus touching the mobility of the earth. The reſult of their enquiry was, a prohibition to aſſert, not that the mobility was poſſible, but that it was actually true: that is, they allowed the mobility of the earth to be held as an hypotheſis, which gives an eaſy and ſenſible ſolution of the phenomena of the heavenly motions; but forbad the mobility of the earth to be maintained as a theſis, or real effective thing; becauſe they conceived it contrary to ſcripture. See Copernican *Syſtem*, and Copernicus.

MOCAMBO, in *Geography*, a river of Africa, which runs into the Indian ſea; 15 miles S. of Mozambique.

MOCANERA, in *Botany*, Juſſ. 318, the name by which the *Viſnea Mocanera*, Linn. Suppl. 251, is known in the Canary Iſlands, and which Juſſieu preferred as a generic appellation, becauſe he was informed the perſon from whom the other was derived, was unworthy of botanical commemoration. We have indeed been aſſured of this by the late

Mr. Maſſon, the diſcoverer of the ſhrub, who was very indignant at the name of *Viſnea*. Mr. De Viſme, deſigned to be honoured by it, was a merchant at Liſbon, who had a choice garden, and took delight in the cultivation of rare and curious plants, in a country where that taſte was then in its infancy. So that, though he might not be a ſcientific botaniſt, his claim is equal to that of abundance of perſons, on whom a ſimilar honour has been, rather too indiſcriminately indeed, beſtowed. See VISNEA, or rather, as Schreber more correctly has it, VISMEA.

MOCARA, in *Geography*, a village of Egypt, ſituated in a chain of mountains, extending acroſs the deſert more than 150 miles from E. to W., in the road from Cairo to Siwah, and deriving their name from that of the village; 90 miles W. of Cairo.

MOCARANGA, or MOCARA, which has been erroneouſly called *Monomatapa*, from the title of the monarch, an extenſive country of Africa, ſituated at ſome diſtance from the Indian ſea, between 15° and 20° S. lat., and 28° and 36° E. long. But within its whole extent other countries are included, almoſt as far ſouthward as the Cape of Good Hope, and on the N.W. to the confines of Congo; but on the W. and N.W. it is bounded by Monoemugi. The climate is temperate, though the mountains called Lupata, or the ſpine of the world, forming a great chain from N. to S., are perpetually covered with ſnow; the air clear and ſalubrious, and the ſoil fertile and well watered, ſo that its paſtures feed a great number of cattle, more valued by the inhabitants than their gold. The country affords plenty of rice, millet, and other grain, but no wheat; fruit trees in abundance, and ſugar-canes, which grow without culture; its foreſts ſwarm with wild beaſts and variety of game; and its rivers abound with fiſh, and alſo with gold; nevertheleſs it is but thinly inhabited. Whilſt thoſe lands which are watered by the rivers Cuamo or Zambezi, which encircles the kingdom on the N. and W., and Spiritu Sancto, and others that flow into them, are fertile and productive, the inland parts are ſandy, dry, and barren; and the occupiers, who are few in number, are under a neceſſity of fetching from a great diſtance water for waſhing their gold-duſt, if their ciſterns, for want of rain, fail to ſupply them. This country, though deſtitute of horſes, and other beaſts of burden, is overſtocked with elephants, many of which are annually deſtroyed, ſo that the Portugueſe are plentifully ſupplied with ivory. The oſtriches of this part of Africa are of a large ſize, and ſupply greaſe and oil, which, as the inhabitants conceive, is a ſovereign remedy againſt pains and aches as well as ſprains and rigidity of the limbs, when taken inwardly, or applied externally. The natives are black, with woolly hair, they are well formed, robuſt, and healthy, and more agile and active than thoſe of Quiloa, Mombaſo, and Melinda. They are fond of war, which they prefer to traffic; and thoſe of the lower claſs are habituated to diving; and by this practice, they fetch up from the bottoms of their rivers and lakes the mud that yields gold; and having ſeparated the one from the other, they exchange their gold with the Portugueſe for cotton cloths, and other articles of merchandize, which are brought hither from India and Europe. Their food conſiſts of the fleſh of oxen and elephants, ſalted and dried fiſh, and a variety of fruits; and alſo of bread made in their cities of rice or millet; and their drink is ſour milk and oil of Seſame or Turkey wheat. Perſons of ſuperior rank and opulence have ſtrong liquors made of honey, millet, and rice, and alſo palm-wine, which is held in high eſtimation. Their dreſs extends only from the girdle downwards; that of the common people is made of dyed cotton; but perſons of quality wear Indian ſilks, or cotton embroidered with gold, over which they commonly have a lion's ſkin, or that of ſome other wild beaſt, with the tail hanging behind, and trailing on the ground. The men marry as many wives as they can maintain; but the firſt is the chief, and her children are the father's heirs, the reſt being treated as ſervants. The king, or emperor, is ſaid to have 1000 wives, all of whom are the daughters of ſome of his vaſſal princes; but the title and honour of queen belong excluſively to the firſt. He neither wears in his own dreſs nor ſuffers his ſubjects to wear any clothes that are manufactured out of his own dominions, under an apprehenſion that they conceal ſome charm or poiſon. The metropolis of this empire is called "Benematapa," or "Banamatapa," and by ſome writers it is called "Medrogan." It is a ſpacious city, about 20 miles W. of Sofala. The houſes are neat, white-waſhed within and without, and adorned with beautiful cloths of cotton, finely wrought or dyed. But the greateſt ornament of the city is the imperial palace, which is a large and ſpacious edifice of wood, well flanked with towers, with four avenues, or ſtately gates, at which a numerous guard is conſtantly ſtationed. The emperor's guard is ſaid to conſiſt of women lightly armed. The Portugueſe have two fortreſſes, and another ſtation near the mountains of Fura, which are ſaid to abound in gold. One of the emperor's queens is ſaid to be the protectreſs of the Portugueſe, and another of the Moors. The emperor, by the account of a Dutch commodore who viſited this country in 1606, ruled from Mozambique to the Cape of Good Hope. The chief province is in an iſle or delta, between two branches of the Cuamo and the Eſpirito. This iſle is about 750 French leagues in circuit, and the chief town was Banamataxa. At that period there were many ſubject kings, and the emperor had a guard of 200 deys. Among the rivers that roll gold are the Panami, Luanga, and Mangiano. But later accounts of this country, and of other Portugueſe ſettlements on the eaſtern coaſt of Africa, are wanting; the Portugueſe, probably from motives of intereſt, are ſilent.

MOCAUMPOUR, capital of a country of the ſame name to the N. of the country of Bengal; 40 miles S.S.E. of Catmandu. N. lat. 27° 35'. E. long. 85° 37'.

MOCEFU, a town of Peru, in the dioceſe of Truxillo; 10 miles S.E. of Lambayeque.

MOCENIGO, ANDREW, in *Biography*, a noble Venetian, flouriſhed in the early part of the ſixteenth century, and was employed in the public ſervice of his country, which he managed with ſucceſs. As an author he wrote in Latin a "Hiſtory of the War ſuſtained by the Republic of Venice, in conſequence of the League of Cambray, from 1500 to 1501, in four Books:" and he compoſed a poem in Latin verſe on the war with Bazajet II., which is loſt. Moreri.

MOCHA, a ſmall iſland in the Pacific ocean, near the coaſt of Chili. S. lat. 38° 30'.

MOCHA, or *Mokha*, a town of Arabia, in the province of Yemen, ſituated on a dry and barren ſpot in that part of the province called Tehama, or the plain country. Its fortifications are the walls which ſurround it, ſome towers on the way to Muſa, dignified with the name of caſtles, and two other caſtles of the ſame ſort, upon the two arms of the harbour. The greateſt of theſe two caſtles is called "Kalla Tejar," and the ſmalleſt "Kalla Abdurrah," from the names of two ſaints buried in theſe places. Theſe are provided with ſome few pieces of cannon. The houſes in the city are built of ſtone: ſome of them are handſome; but others, both within and without the walls, are not better than the common huts that are found through all the

Tehama. In the environs of this city are abundance of date trees and many agreeable gardens. Mocha was built about four centuries ago, and like many other cities of the Tehama, it owes its origin to a ſaint, the celebrated ſcheik Schædeli. This ſaint was in ſuch reputation, that a multitude of perſons from the moſt diſtant countries reſorted hither to receive his inſtructions. His hermitage ſtood on the ſea-ſide, and many huts were built around it for the accommodation of his followers: theſe formed a village, which by degrees was enlarged into a city. Some other circumſtances contributed to give celebrity to its eſtabliſhment. A ſhip bound from India to Jidda caſt anchor, about 400 years ago, in this latitude. Several of the crew, perceiving huts in the deſert, had the curioſity to viſit them. The ſtrangers were hoſpitably received by the ſcheik, and regaled with coffee, to which he aſcribed ſingular virtues. The Indians, who were unacquainted with the uſe of coffee, thought that it might be a ſeaſonable remedy to the maſter of the ſhip, who was ill. Schædeli aſſured them, that he ſhould not only be cured by the efficacy of his prayers and of the coffee, but that if they would land their cargo there, they might diſpoſe of it to conſiderable advantage. Aſſuming at the ſame time the air and the tone of a prophet, he told them that a city ſhould one day be built upon that ſpot, which would become an eminent mart of the Indian trade. The maſter of the veſſel viſited the prophet, drank the coffee, and was reſtored to health. Many Arabs flocked to hear the preaching of the ſaint, and among them were ſeveral merchants, who purchaſed the whole cargo. The Indians returned home, related their adventure, and induced many of their countrymen to reſort to this place. An elegant moſque was raiſed upon the tomb of the prophet, which ſtands without the walls of the city. The well that ſupplies the inhabitants with water, and one of the city gates, bear his name. His deſcendants are held in honour, and enjoy the title of ſcheik; the people ſwear by him; and his name will be remembered as long as Mokha ſtands. He is not only the patron of Mokha; but all the Muſſulmans who drink coffee mention him every morning in their prayers, eſteeming him as *their* patron; thanking God that through his mediation mankind were taught the uſe of coffee, and imploring the favour of heaven on the ſcheiks, his deſcendants. Mokha was the laſt city in Yemen of which the Turks retained poſſeſſion. It is ſaid that the Arabs did not conquer but buy it. Since the Turks were diſpoſſeſſed, it has never had another maſter but the Imam. A Dola, having enriched himſelf in the government of this city, fortified it, and drew a ditch round it, which is now filled up. He was ſuſpected of aſpiring to independence, and was caſt into priſon. From that time, a Dola has never been continued above three years in this lucrative poſt. After the monſoon ſeaſon, the Dola of Mokha is annually obliged to give an account of his adminiſtration, and is either confirmed in his employment, or inſtantly recalled to Sana. Many Jews live here in a ſeparate village, as in the other cities of Yemen. Here are alſo about 700 Banians, Rajaputs, and other Indians, ſome of whom are merchants, and others gain a ſubſiſtence by the exerciſe of different mechanic arts. When they have made a ſmall fortune, they return home to India; and on this account are always regarded as ſtrangers. Several nations frequently traded to this port. The Portugueſe, who two centuries ago were very powerful on the Arabic gulf, have long ſince ceaſed to ſend ſhips thither. The Dutch rarely appear here; and the French never in time of war, though they ſtill continue to rent warehouſes. The Engliſh at preſent engroſs, by way of India, almoſt excluſively, the whole trade of this place, which is conducted for them by a Banian. The trade of Mokha being ſo conſiderable, the cuſtoms muſt afford a large revenue to the Imam. The Turks, Arabs, and Indians, pay eight or ten *per cent.* upon their value; after they have been inſpected at the cuſtom-houſe: all Europeans enjoy the privilege of having their goods inſpected in their own warehouſes, and of paying only three *per cent.* upon their value. The Indians of late, ſince the Engliſh have become ſo powerful in Bengal, pay only three *per cent.* but the merchants in Mokha pay likewiſe five *per cent.* on all Indian goods which they purchaſe. There is alſo a tonnage duty, regulated not by the tonnage of the veſſel but by the number of its maſts. A merchant, however, who lades a large European ſhip with coffee in this port, receives from the Dola a premium of 400 crowns. The Arabs have ſcarcely any article for exportation except coffee, and of this the Indians are not very fond. The Engliſh ſhips muſt return empty to India, if they did not gain conſiderably by carrying money, with which the Arabian merchants entruſt them. When a foreign veſſel arrives in the road of Mokha, it muſt not ſalute with guns, but only hoiſt a flag. It is obſervable, that the trade on the coaſts of the Red ſea cannot be advantageous to any nation which have not ſettlements in India. The Arabians make no uſe of the productions of Europe. There is, indeed, a quantity of iron ſold in Arabia, which has in times paſt been purchaſed chiefly from the Danes. A ſtranger cannot be too much on his guard againſt Mahometan brokers. He will find it advantageous to addreſs himſelf rather to the Banians, among whom are many conſiderable merchants, who are very honeſt men. N. lat. 13° 19′. E. long. 43° 23′.

Mr. Bruce, in his "Travels to diſcover the Source of the Nile," mentions two other Mochas, beſides that which we have above deſcribed. The firſt is in Arabia Deſerta, in N. lat. 30° nearly, not far from the bottom of the gulf of Suez. The ſecond is in S. lat. 3°, near Terſhiſh on the coaſt of Melinda. The meaning of Mocha, he ſays, is in the Ethiopic *priſon*, and it is particularly given to thoſe three places, becauſe in any of them a ſhip is forced to ſtay or be detained for months, until the change of the monſoon ſets her at liberty to purſue her voyage.

MOCHICAGUI, a town of New-Mexico, in the province of Cinaloa; 60 miles W.N.W. of Cinaloa.

MOCHLIA, from μοχλος, *a lever*, in *Surgery*, a reduction of bones from an unnatural to a natural poſition.

MOCHO, or Mocoa *Stones*. See Agate and Dendritis.

MOCHOW, in *Geography*, a town of Bohemia, in the circle of Kaurzim; 12 miles W.N.W. of Kaurzim.

MOCK-Bird, *Indian*, in *Ornithology*. See Turdus *Cyanus*.

Mock-*Bird of Guiana*. See Oriolus *Americanus*.

Mock *Lead*, in *Mineralogy*, a name given by the Engliſh writers to a ſort of foſſil, called alſo *blende* and *galena*.

Mock *Nightingale*, in *Ornithology*. See Motacilla *Atricapilla*.

Mock *Orange*, in *Botany*. See Philadelphus.

Mock *Privet*. See *Mock* Privet.

Mock, or running a *muck*, is a practice that has prevailed time immemorial in Batavia. To *run a muck*, in the original ſenſe of the word, is to get intoxicated with opium, and then ruſh into the ſtreet, with a drawn weapon, and kill any one that comes in the way, till the party is himſelf either killed or taken priſoner. If the officer takes one of theſe *omocks* or *mohawks* (as they have been called by an eaſy corruption) alive, he has a conſiderable reward, and the unhappy wretches are always broken alive on the wheel: but ſuch is the fury of their deſperation, that three out of four are neceſſarily deſtroyed, in attempting to ſecure them. See Amok.

MOCKELN, in *Geography*, a lake of Sweden, in the province of Smaland; 25 miles S.W. of Wexio.

MOCKERN, a town of the duchy of Magdeburg; 16 miles E. of Magdeburg.

MOCKJACK Bay, a bay of America, on the coaſt of Virginia, in the Cheſapeak. N. lat. 37° 24′. W. long. 76° 23′.

MOCLIN, a town of Spain, in the province of Granada; 12 miles S. of Loja.

MOCO, in *Commerce*, a ſmall ſilver coin in the Weſt Indies, which in ſome places is ¼th of the dollar, and in others ⅛th.

MOCOA, in *Geography*, a town of South America, in the province of Popayan; 70 miles S.E. of Popayan.—Alſo, a town of Mexico, in the province of Culiacan, on the river St. Sebaſtian; 90 miles N.W. of Culiacan.

MOCOCO, or Maucaco, in *Zoology*. See Lemur *Catto*.

MOCODAME, in *Geography*, a ſmall iſland near the S.E. coaſt of Nova Scotia. N. lat. 45° 4′. W. long. 61° 20′.—Alſo, a river of Sumatra.

MOCOES, a tribe of the Eboe ſlaves, brought from the interior of Africa. See Eboes.

MOCO-MOCO, a town of Sumatra, the capital of Anac-Soongey, on the S.W. coaſt. This country roſe from the ruins of Indrapour, and extends on the ſea-coaſt from Mandoota river to that of Oori. A ſmall tax was laid on the people of Anac-Soongey, in ſatisfaction for the murder of a prince by the raja of Indrapour, which is now paid to the ſultan of Moco-Moco. The tax is a ſoocoo (the 4th part of a dollar), a bamboo of rice, and a fowl, from each village annually. The government of Anac-Soongey is Malay, but a great part of the country dependent upon it is inhabited by the original dooſoon or village people. The chiefs are obliged to attend the ſultan, and carry their contribution or tax; but his authority is very much limited. The officers next in rank to the ſultan are called Mantrié, a corruption, as ſome have ſuppoſed, of Mandarin; 30 miles S.W. of Indrapour. S. lat. 2° 25′. E. long. 101° 12′. Marſden's Sumatra.

Moco-Moco, or *Little Oroonoko*, a river of South America, which runs into the Atlantic, a little S. of Oroonoko.

MOCORITO, a town of Mexico, in the province of Culiacan; 72 miles N.W. of Culiacan.

MOCOS, a collection of ſmall iſlands in the Indian ſea, near the coaſt of Siam. N. lat. 13° 50′. E. long. 97° 52′.

MODAGHIRY, a town of Hindooſtan, in Myſore; 13 miles N. of Vencatighery.

MODAIN, Madain, or *el Modain*, a town of the Arabian Irak, on the ſide of the Tigris, on the ſcite of the ancient Cteſiphon. It is ſaid by Herbelot to have been founded by Sapor and enlarged by Choſroes, who built a palace here that was the moſt magnificent in all the Eaſt. In 637 this place was taken and plundered by Said, the lieutenant of Omar. The riches of which it was deſpoiled were immenſe, conſiſting, in part, of the throne, the crown, the royal ſtandard, and carpet of the ancient Perſian kings; 20 miles S. of Bagdad.

MODAL, in *Logic*, &c. a term applied to propoſitions which include certain conditions and reſtrictions.

Modal, in *Muſic*. The characters for time in the firſt ſtages of figurative muſic or counter-point were called *modal ſigns* for the moods.

The different modes or moods for aſcertaining the *quantum* of each tact, or pulſation of time in muſic, were the following:

○ ○3, for a perfect long, or three breves.

○, a perfect breve, or three ſemibreves.

Ͼ, two imperfect breves, and, in the compoſitions of Tallis and Bird, ſometimes three minims.

C, an imperfect breve, or two ſemibreves.

Beſides theſe, there were others for a ſpecies of jig time, in which ſemibreves or minims were ternary, and moving in triplets, while the longer notes were binary: ○3, ○2, C3, &c. Zacconi, Prat. Muſ. lib. ii. cap. 54. makes the modal ſigns amount to fourteen.

MODANE, in *Geography*, a town of France, in the department of Mont Blanc, and chief place of a canton, in the diſtrict of St. Jean de Maurienne; 15 miles E. of it. The place contains 925, and the canton 3267 inhabitants, on a territory of 450 kiliometres, in 7 communes.

MODBURY, a market-town and borough, ſituated in the hundred of Ermington, and county of Devon, England. The town conſiſts chiefly of four ſtreets, running in the direction of the cardinal points, and croſſing each other at right angles. It is a borough by preſcription, but has loſt its right of ſending members to parliament, having petitioned to be exempted from that *burthen*, as it was then conſidered, in the reign of Edward I. The plea of exemption was the poverty of the inhabitants, who were unable to pay their repreſentatives, as was cuſtomary at that early period. Modbury is now governed by a portreeve (uſually ſtyled mayor), two conſtables, and ſeveral other officers, who are elected annually at a court-leet held at Michaelmas. All perſons who poſſeſs any freehold within the borough are liable to be choſen; being conſidered in the light of freemen or free burgeſſes. Even ſo late as the commencement of the laſt century, it appears from the records, that the borough-court here took cognizance of all debts under forty ſhillings; and in the reign of Charles I. the ſame records ſhew that the inhabitants poſſeſſed the authority of enrolling deeds in the rolls of the borough. The chief ſupport of this town is its woollen trade, which was formerly much more conſiderable than at preſent. A great quantity of yarn was likewiſe ſpun here and in the neighbourhood about fifty years ago, at which time a weekly market was held, diſtinctly to facilitate the ſale of that article. This market has long been diſcontinued, but to preſerve the right, the bell ſtill rings for the yarn-market at twelve o'clock. A pluſh and hat manufactory have alſo been eſtabliſhed of late years. The petty ſeſſions for the hundred are held here. Thurſday is the market-day for proviſions.

The population of this town, according to the parliamentary returns of 1801, compriſed 1813 perſons, 832 males, and 981 females, of which number 862 were returned as engaged in trade, and 944 in agriculture.

The church of Modbury is a very ſpacious and handſome building, ſurmounted by a lofty ſpire, of later erection than the reſt of the edifice. On the ſouth aiſle ſtands a fine alabaſter ſtatue, in armour, ſuppoſed to be the effigy of one of the Champernoune family. Beſides the eſtabliſhed church, there are two other buildings in this town appropriated to divine worſhip; one belonging to the Preſbyterians, and the other to the Anabaptiſts. Here was formerly an alien priory, dependent on the abbey of St. Peter ſur Dive, in Normandy, which ſeems to have been founded ſhortly after the conqueſt. Its religious inmates were monks of the order of St. Benedict. On the diſſolution of the alien monaſteries, in the reign of Henry VI., this priory was granted to the college at Eaton. The preciſe ſcite on which it ſtood is uncertain, but as there are two fields adjoining to the weſtern ſide of the church-yard, ſtill called "Priors'-parks," it was moſt probably ſituated ſomewhere near that ſpot. Indeed, on the oppoſite ſide of the road which paſſes theſe parks, there appear ſome remains of an ancient building, which may have formed part of the priory.

The proprietor of the manor here, at a very remote period, was ſir James Okeſtone, or Oxton, from whoſe family it paſſed into that of the Champernounes, who poſſeſſed a ſplendid manſion immediately adjoining to the town, only a ſmall portion of which is now ſtanding. Of the grandeur of this ſeat, and the magnificent manner in which its owner lived, tradition ſpeaks very highly. They are ſaid, in particular, to have kept a fine band of ſingers and muſicians, with whoſe execution queen Elizabeth was ſo much delighted, that ſhe requeſted the loan of them for a month, but being refuſed by Mr. Champernoune, out of pique found ſome pretence to ſue him at law, and occaſion his ruin; he being compelled to ſell no leſs than nineteen manors to ſupport the litigation.

The vicinity of this town is adorned with a number of family ſeats, ſome of ancient and others of modern erection. Wimpſton, the ancient manſion of the Forteſcues, is particularly remarkable as being the houſe in which the celebrated ſir John Forteſcue was born. This gentleman raiſed himſelf by his talents to the dignity of chief juſtice and chancellor in the reign of king Henry VI., and wrote a work entitled "De Laudibus Legum Angliæ," which is ſtill held in great repute among legal antiquaries. The other ſeats of note near Modbury, are Train, Fleet-houſe, Madridge, Fowleſcombe, Stowford, Butterford, Shilſton, and Fardel, which laſt was long in poſſeſſion of the Raleighs. Polwhele's Hiſtory, &c. of Devonſhire, two vols. folio. Beauties of England and Wales, vol. iv.

MODDAPOUR, a town of Bengal, on the right bank of the Ganges; 27 miles N. of Mahmudpour.

MODDIGONG, a town of Hindooſtan, in Goondwana; 10 miles N. of Ramteak.

MODDIGUBA, a town of Hindooſtan, in the circar of Gooty; 10 miles W. of Amantpour.

MODE, or Mood, *Modus*, in *Philoſophy*, a manner of being; or a quality or attribute of a ſubſtance, or ſubject, which we conceive as neceſſarily depending on the ſubject, and incapable of ſubſiſting without it.

Mr. Locke defines modes to be thoſe ideas (he ſhould have ſaid *things*) which do not imply any ſuppoſition of ſubſiſting by themſelves, but are conſidered as mere dependencies, and affections of ſubſtances.

Our ideas of things may be reduced to two kinds: the one of things, which we conceive ſeparately, and by themſelves, called *ſubſtances;* and the other of things which we conceive as exiſting in others, in ſuch manner as that we cannot allow them exiſting without them, and theſe we call *modes* or *accidents.*

It is the characteriſtic, then, of a true mode, to have ſuch a relation to ſome ſubject, as not to be clearly and diſtinctly conceivable without conceiving the ſubject, of which it is a mode, at the ſame time: when, on the other hand, the conception of the ſubject does not at all infer or require that of the mode.

Thus, what gives us to know that thought is not a mode of extended ſubſtance, or matter, is, that extenſion, and the other properties of matter, may be ſeparated from thought, without ceaſing to conceive thought all the while.

We always conſider things as clothed with certain modes, except we reflect on them in the abſtract, or general; and it is the variety of modes, and the relations, that occaſions the great variety of denominations of the ſame thing. They are the various modes of matter, *e. g.* that make all the diverſity of bodies, or corporeal beings, in nature.

There are various diviſions and kinds of modes: as, 1, *eſſential*, or *accidental*. An *eſſential* mode, or *attribute*, is that which belongs to the very nature or eſſence of the ſubject in which it is; and the ſubject can never have the ſame nature without it, as roundneſs in a bowl, ſolidity in matter, thinking in a ſpirit, &c. and this is *primary*, when it is the firſt or chief thing that conſtitutes any being in its particular eſſence or nature, and makes it to be that which it is, and diſtinguiſhes it from all other beings, as roundneſs in a bowl: or *ſecondary*, which is any other attribute of a thing, that is not of primary conſideration, called a *property;* as volubility in a bowl. An *accidental* mode, or *accident*, is ſuch a mode as is not neceſſary to the being of a thing; for the ſubject may be without it, and yet remain of the ſame nature which it had before; or it is that mode, which may be ſeparated from its ſubject, as blackneſs or whiteneſs in a bowl, learning in a man, &c.

2. Modes are *abſolute* and *relative*. An *abſolute* mode is that which belongs to its ſubject; without reſpect to any other beings whatſoever. A *relative* mode is derived from the regard which one being has to others: thus, roundneſs and ſmoothneſs are the *abſolute* modes of a bowl; but greatneſs and ſmallneſs are *relative.* See Relation.

3. Modes are *intrinſical*, or *extrinſical*. The former are conceived to be in the ſubject or ſubſtance; as when we ſay a globe is round, &c. The latter mode is a manner of being which ſome ſubſtances attain by reaſon of ſomething that is external or foreign to the ſubject, and is called external denomination; as the globe lies within two yards of the wall, &c.

4. Modes are alſo *inherent*, or *adherent*, i. e. *proper* or *improper*. *Adherent* modes ariſe from the joining of ſome accidental ſubſtance to the chief ſubject, which yet may be ſeparated from it; as when a bowl is wet, &c. *Inherent* modes have a ſort of in-being in the ſubſtance itſelf; as the bowl is ſwift or round, &c.

5. *Action* and *paſſion*, uſing the terms in a philoſophical ſenſe, are modes which belong to ſubſtances; as when a ſmith with a hammer ſtrikes a piece of iron, the ſmith and hammer are agents or ſubjects of action, and the iron is the patient, or ſubject of paſſion.

6 Modes may be divided into *natural*, *civil*, *moral*, and *ſupernatural*, all which pertain to the apoſtle Paul, who was a little man, a Roman by the privilege of his birth, a man of virtue or honeſty, and an inſpired apoſtle.

7. Modes belong either to *body*, or to *ſpirit*, or to both. Modes of *body* belong only to matter, or corporeal beings; ſuch are *figure*, *reſt*, *motion*, &c. Theſe are *primary*, when they belong to bodies conſidered in themſelves, whether there were any man to take notice of them or no, as ſhape, ſize, &c.; or *ſecondary*, which are ſuch ideas as we aſcribe to bodies, on account of the various impreſſions that are made on the ſenſes of men by them, called ſecondary qualities: ſuch are all colours, ſounds, taſtes, ſmells, and all tactile qualities. (See Quality.) Modes of *ſpirit* belong only to minds, ſuch are *knowledge*, *will*, &c. Modes belonging to body and ſpirit, are called mixt or human modes, becauſe they are found in human nature; ſuch are *ſenſation*, *imagination*, *paſſion*, &c. in which there is a concurrence of the operation of animal and intellectual nature.

8. There are alſo modes of other modes, which, though they ſubſiſt in and by the ſubſtance, as the original ſubject of them, are properly and directly attributed to ſome mode of that ſubſtance; thus ſwiftneſs and ſlowneſs are modes of motion, which is itſelf the mode of a body.—Watt's Logic, p. i. c. 2. § 3 and 4.

Mr. Locke divides modes into *ſimple*, and *mixt* or *compound.*

Modes, *Simple*, are combinations of ſimple ideas of the ſame kind, or even of the ſame ſimple ideas divers times repeated; as a dozen, a ſcore, &c. which are only the ideas of ſo many diſtinct units put together.

The modifications of any ſimple idea, Mr. Locke obſerves, are as perfectly different and diſtinct ideas in the mind, as thoſe the moſt remote and inconſiſtent: thus, *two* is as diſtinct from *three* as blindneſs is from heat. With this view that author examines the *ſimple* modes of ſpace; which are found to be diſtance, capacity, extenſion, figure, place, and duration.

The mind has ſeveral diſtinct ideas of *ſliding*, *rolling*, *walking*, *creeping*, &c. which are all but the different modifications of motion. *Swift* and *ſlow* are two different ideas of motion, the meaſures of which are made out of the diſtance of time and ſpace put together.

The like variety we have in ſounds; every articulate word is a different modification of ſound, as are all notes of different length put together, which makes that complex idea called *time.*

The modes of colours might be alſo very various; ſome of which we take notice of as the different degrees, or as they are termed *ſhades of the ſame colour.* But ſince we ſeldom make aſſemblages of colours without taking in figure alſo, as in painting, &c. thoſe which are taken notice of, do moſt commonly belong to mixed modes; as *beauty*, *rainbow*, &c. All compounded taſtes and ſmells are alſo modes made up of the ſimple ideas of thoſe ſenſes.

As to the modes *of thinking;* when the mind turns its view inward upon itſelf, *thinking* is the firſt idea that occurs, in which it obſerves a great variety of modifications; and therefore frames to itſelf diſtinct ideas.

Thus the perception annexed to any impreſſion on the body made by an external object, is called *ſenſation.* Where an idea recurs without the preſence of the object, it is called *remembrance.* When ſought after by the mind, and brought again in view, it is called *recollection.* When held there long under attentive conſideration, it is called *contemplation.* When ideas float in the mind without regard or reflection, it is called in French a *reverie.* When the ideas are taken notice of, and, as it were, regiſtered in the memory, it is *attention.* When the mind fixes its view on any one idea, and conſiders it on all ſides, it is *intention* and *ſtudy.*

Of theſe various modes of thinking, the mind forms as diſtinct ideas, as it does of white and red, or of a ſquare or a circle.

Modes, *Mixt*, are combinations of ſimple ideas of ſeveral kinds; as in *beauty*, which conſiſts in a certain compoſition of colour, figure, &c.; *theft*, which is the concealed change of poſſeſſion of any thing, without conſent of the proprietor, &c.

There are three ways by which we get ideas of *mixt* modes: 1. By experience and obſervation of things themſelves: thus, by ſeeing two men wreſtle, we get the idea of wreſtling. 2. By invention, or voluntary putting together of ſeveral ſimple ideas of our own minds: ſo he that firſt invented printing, had an idea of it firſt in his mind before it ever exiſted. 3. By explaining the names of actions we never ſaw, or notions we cannot ſee; and by enumerating all thoſe ideas, which go to the making them up: thus, the *mixt* mode which the word *lye* ſtands for is made up of the ſimple ideas. 1. Articulate ſounds. 2. Certain ideas in the mind of the ſpeaker. 3. Words, the ſigns of theſe ideas. And, 4. Thoſe ſigns put together by affirmation, or negation, otherwiſe than the ideas they ſtand for are in the mind of the ſpeaker.

Mixt modes have their unity from an act of the mind, combining thoſe ſeveral ſimple ideas together, and conſidering them as one complex one: the mark of this union is one name given to that combination.

This gives the reaſon, why there are words in every language, which cannot be rendered by any one ſingle word of another. For the faſhions and cuſtoms of one nation make ſeveral combinations of ideas familiar in one, which another had never any occaſion to make. Such were οςρακισμος among the Greeks, and *proſcriptio* among the Romans.

This alſo occaſions the conſtant change of languages; becauſe the change of cuſtom and opinion brings with it new combinations of ideas, which, to avoid long deſcriptions, have new names annexed to them, and ſo they become new ſpecies of *mixed* modes.

Of all our ſimple ideas, thoſe which have had moſt *mixed* modes made out of them, are thinking, and motion (which comprehend in them all action), and power, from whence theſe actions are conceived to flow.

Of this kind are the modes of actions, diſtinguiſhed by their cauſes, means, objects, ends, inſtruments, time, place, and other circumſtances; as alſo of the powers fitted for thoſe actions. Thus *boldneſs* is the power to do or ſpeak what we intend, without fear or diſorder; and this power of doing any thing when it had been acquired by frequent doing the ſame thing, is that idea we call *habit;* and when forward and ready, upon every occaſion, to break into action, we call it *diſpoſition:* thus *teſtineſs* is a diſpoſition or aptneſs to be angry. Power being the ſource of all action, the ſubſtances, in which thoſe powers are, when they exert this power, are called *cauſes:* and the ſubſtances thereupon produced, or the ſimple ideas introduced into any ſubject, are called *effects.* The efficacy by which the new ſubſtance or idea is produced, is called in the ſubject exerting that power, *action;* and, in the ſubject in which any ſimple idea is changed, or produced, *paſſion:* which efficacy, in intellectual agents, we can conceive to be nothing elſe but modes of thinking and willing: in corporeal agents nothing elſe but modifications of motion.

Mode, *Diviſion of a.* See Division.

Mode, in *Grammar.* See Mood.

Mode, in *Logic.* See Mood.

Mode is alſo uſed for the modification of a propoſition; or that which renders it *modal* and *conditional.*

Mode, *Indirect.* See Indirect.

Mode, Fr. a key in *Muſic.* In plain-chant the modes are numbered.

The eccleſiaſtical modes are called *authentic*, when the 5th is above the principal, as $\overset{a}{\underset{A}{E}}$; and *plagal*, when the 4th is above the principal, and the 5th below its octave, as $\overset{d}{\underset{D}{G}}$. See Canto-fermo, and Tones *of the* Church.

Modes *of the Ancient Greek Muſic.* The ancients differ extremely among themſelves in defining their modes; obſcure in all parts of their muſic, upon this ſubject they are nearly unintelligible. They all agree that a mode is a certain ſyſtem or conſtitution of ſounds, and it ſeems as if this conſtitution was in itſelf nothing more than an octave filled with all the intermediate ſounds according to the genus.

In high antiquity, the Greeks had but three modes, at the diſtance of a tone from each other, which was national:

the loweſt being called the *Dorian*, the middle the *Phrygian*, and the higheſt the *Lydian*.

Afterwards, in dividing the tones into ſemitones, two other modes were obtained, as the *Ionian* and the *Æolian;* the firſt being inſerted between the Dorian and the Phrygian, the ſecond between the Phrygian and the Lydian.

In proceſs of time the ſyſtem being extended above and below, muſicians eſtabliſhed new modes at both extremities, which took their denomination from the firſt five, adding the prepoſitions *hyper*, above, and *hypo*, below. Thus the Lydian mode was followed by the hyper-Dorian, the hyper-Ionian, the hyper-Phrygian, the hyper-Æolian, and the hyper-Lydian, aſcending: and after the Dorian mode, came the hypo-Lydian, the hypo-Æolian, the hypo-Phrygian, the hypo-Ionian, and the hypo-Dorian, in aſcending. Theſe fifteen modes are all enumerated in Alypius. See the plate, where their order and intervals are expreſſed in Greek characters, and by equivalent notes in the Guido ſcale. But it muſt be remembered, ſays Rouſſeau, that the hypo-Dorian was the only mode which was uſed to its whole extent. In proportion as the others mounted, the upper notes were avoided, in order not to exceed the natural compaſs of the voice. Theſe obſervations are neceſſary for the clearing up ſome paſſages in ancient authors, which ſeem to imply that the loweſt modes had the higheſt notes, which indeed was true, in having in their melodies more notes above the key-note. For want of this knowledge, Doni is extremely embarraſſed by theſe apparent contradictions.

Greek theoriſts differ in the number of modes: while with ſome they amount to 15, Ariſtoxenus, according to Euclid, admitted only 13, ſuppreſſing the two higheſt; the hyper-Æolian, and hyper-Lydian. But in the work of Ariſtoxenus that is come down to us, he only ſpecifies ſix, concerning which he relates the different ſentiments of the times.

At length, Ptolemy reduced the number of theſe modes to ſeven; ſaying that modes were introduced in muſic in order to vary the melodies by the contraſt of grave and acute; for it is evident that they may be multiplied far beyond 15; but theſe ſeven ſuffice to facilitate the tranſition from one mode to another, by conſonant intervals eaſy to produce.

He therefore includes all the modes in the compaſs of an octave, of which the Dorian mode was the centre; ſo that the mixo-Lydian was a 4th above, and the hypo-Dorian a 4th below. The Phrygian a 5th above the hypo-Dorian; the hypo-Phrygian, a 4th below the Phrygian: whence it appears, that to count from the hypo-Dorian, which is the loweſt mode, there was the diſtance of a tone to the hypo-Phrygian; from the hypo-Phrygian to the hypo-Lydian, another tone; from the hypo-Lydian to the Dorian, a ſemitone; from that to the Phrygian, a tone; from the Phrygian to the Lydian ſtill a tone, and from the Lydian to the mixo-Lydian, a ſemitone, which extend to a ſeventh, in the following order:

1	-	F	- -	Mixo-Lydian.
2	-	E	- -	Lydian.
3	-	D	- -	Phrygian.
4	-	C	- -	Dorian.
5	-	B	- -	Hypo-Lydian.
6	-	A	- -	Hypo-Phrygian.
7	-	G	- -	Hypo-Dorian.

Ptolemy retrenched all the other modes, pretending that theſe ſeven occupied all the ſounds of the diatonic octave. From theſe ſeven modes of Ptolemy, with the addition of the hypo-mixo-Lydian, it is ſuppoſed that Guido formed the eight eccleſiaſtical modes. See Tones *of the* Church.

Such is the cleareſt notion which we are able to form of the tones or modes of the ancient muſic; while we conſider them as differing from each other only by grave and acute: but ſtill other differences ſubſiſted, which characterized them more particularly: as expreſſion, the kind of poetry to which they were applied, the kind of inſtrument by which they were accompanied, the rhythm or cadence of the verſe, names or airs peculiar to certain people from whom the principal modes had their names: as the Dorian, Phrygian, Lydian, Ionian, Æolian.

There were ſtill other modes, which ſhould rather be called ſtyles or kinds of compoſition: as the tragic mode, appropriated to the theatre; the nomic, conſecrated to Apollo; the dithyrambic, to Bacchus, &c. See Style and Melopœia.

In our old muſic, the word *mode*, or *mood*, was applied to meaſure or time, in order to fix the relative value of all the notes in a movement by a general ſign, which was placed after the clef, at firſt by circles and ſemi-circles pointed, or without points, according to the numbers 2 and 3, differently combined. It is from theſe ancient expedients that we ſtill retain 𝄴 for common time, and a barred 𝄵 for a quicker dual meaſure. See Modal and Prolation.

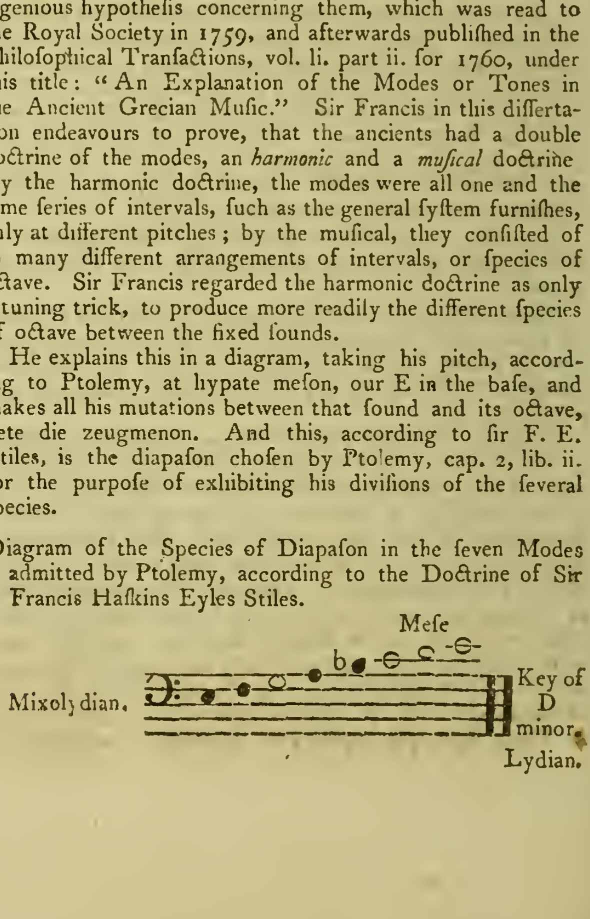
Theſe characters, except the two laſt mentioned, have long been diſuſed; yet it is neceſſary to underſtand them, in order to be able to decipher old muſic.

Thus far the chief of this article is from Rouſſeau, which includes almoſt all the knowledge on the ſubject, that the moſt laborious and profound commentators of the ſeven ancient Greek writers on muſic, publiſhed by Meibomius, ever conjectured, we dare not ſay diſcovered, on the ſubject.

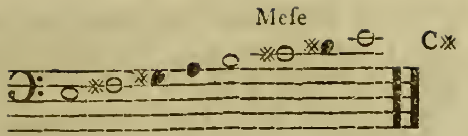
The general opinion concerning the modes of Ptolemy, till about the middle of the laſt century, was ſuch as we have deſcribed, till ſir Fr. Haſkins Eyles Stiles formed an ingenious hypotheſis concerning them, which was read to the Royal Society in 1759, and afterwards publiſhed in the Philoſophical Tranſactions, vol. li. part ii. for 1760, under this title: "An Explanation of the Modes or Tones in the Ancient Grecian Muſic." Sir Francis in this diſſertation endeavours to prove, that the ancients had a double doctrine of the modes, an *harmonic* and a *muſical* doctrine By the harmonic doctrine, the modes were all one and the ſame ſeries of intervals, ſuch as the general ſyſtem furniſhes, only at different pitches; by the muſical, they conſiſted of ſo many different arrangements of intervals, or ſpecies of octave. Sir Francis regarded the harmonic doctrine as only a tuning trick, to produce more readily the different ſpecies of octave between the fixed ſounds.

He explains this in a diagram, taking his pitch, according to Ptolemy, at hypate meſon, our E in the baſe, and makes all his mutations between that ſound and its octave, nete die zeugmenon. And this, according to ſir F. E. Stiles, is the diapaſon choſen by Ptolemy, cap. 2, lib. ii. for the purpoſe of exhibiting his diviſions of the ſeveral ſpecies.

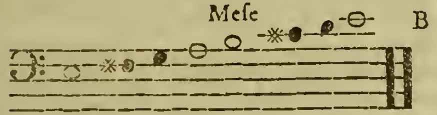
Diagram of the Species of Diapaſon in the ſeven Modes admitted by Ptolemy, according to the Doctrine of Sir Francis Haſkins Eyles Stiles.



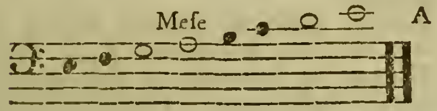
Lydian.



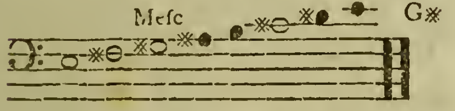
Phrygian.



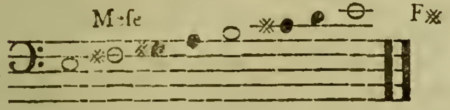
Dorian.



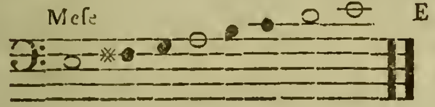
Hypolydian.



Hypophrygian.



Hypodorian.



Sir Francis gives quotations from the ancient Greek writers in confirmation of his doctrine, ſeveral of which indeed ſeem favourable to it; at leaſt they imply a difference on ſome occaſions from the intervals in the natural or great ſyſtem: this difference he imagines to be expreſſed by the term μεταϐολη, *mutation*.

He very truly aſſerts, that no tranſpoſition of the ſame melody into a higher or lower key, can have ſo powerful an effect as a change in the modulation, or ſucceſſion of intervals; and obſerves, that modern muſic has but two conſiderable changes in the ſame key; theſe are from major to minor, and from minor to major. The firſt ſeems reſerved for pathetic effects.

Sir Fr. Haſkins Eyles Stiles falls foul on all his predeceſſors. After his opinion, we have that of Rouſſeau, the chief part of whoſe article in his Dict. de Muſ. we have tranſlated, and given whatever is moſt new and uſeful in former and ſubſequent articles, and his opinion on the ancient Greek modes and other articles peculiar to the muſic of the ancients.

Metaſtaſio, in two letters to Saverio Mattei on the Grecian muſic, has conſidered it with his uſual elegance, candour, and clearneſs; but he does not treat of the modes in particular, ſo much as on ancient Greek muſic in general. We ſhall therefore reſerve our extracts from theſe two letters, till Greek muſic and muſic of the ancients are conſidered at large. See SYSTEM.

MODECCA, in *Botany*, a genus of the Cucurbitaceous order, figured in Rheede Hort. Malab. v. 8. t. 20—23, and indicated by Juſſieu under *Paſſiflora*, Juſſ. Gen. 398. A ſpecies of the ſame, from Sierra Leone, flowered many years ago, in lady Amelia Hume's ſtove, and ſtill exiſts there. We believe it to be a perfectly well defined genus, and have propoſed to call it *Blepharanthes*, on account of the fringed petals, which make its eſſential character, and to preſerve an analogy with its near ally *Trichoſanthes*. We have only waited for a more correct knowledge of the ſeveral ſpecies, and of ſome circumſtances in the generic character. It is abundantly diſtinct from *Paſſiflora*. S.

MODEL, an original, or pattern, propoſed for any one to copy or imitate.

St. Paul's church is ſaid to be built after the model of St. Peter's at Rome.

MODEL is particularly uſed in building for an artificial pattern, made of wood, ſtone, plaiſter, or other matter, with all its parts and proportions; in order for the better conducting and executing ſome great work, and to give an idea of the effect it will have in large.

In all great buildings it is much the ſureſt way to make a model in relievo; and not to truſt to a bare deſign, or draught. There are alſo models for the building of ſhips, &c. and for extraordinary ſtair-caſes, &c.

MODEL, in *Painting* and *Sculpture*, is any thing propoſed to be imitated. And

Hence, in the academies, they give the term model to a naked man, diſpoſed in ſeveral poſtures, to give an opportunity to the ſcholars to deſign him in various views and attitudes.

The ſculptors have little models of clay or wax to aſſiſt them in their deſigns of others that are larger, in marble, &c. and to judge of the attitude and correctneſs of a figure.

Statuaries likewiſe give the name model to certain figures of clay or wax, which are but juſt faſhioned, to ſerve by way of guide for the making of larger, whether of marble or other matter.

MODENA, *Duchy of*, in *Geography*, a principality of Italy, bounded on the N. by the duchy of Mantua, on the E. by the Bologneſe, on the S. by the republic of Lucca, and on the W. by the duchy of Parma, and part of Tuſcany; about 60 miles in its greateſt length, and from 20 to 36 in breadth. The ſoil reſembles that of the duchy of Parma; the agriculture is little ſuperior, the middle-men and metayers impeding induſtry, though ſome peaſants in the mountains are proprietors of land. The breed of ſheep is neglected. The country, however, abounds in corn, excellent wine, and other productions. In ſome parts is found a kind of alkaline earth, which, being reduced to powder, has been uſed as an antidote to poiſons, fevers, dyſenteries, and others diſorders. In other parts wells are dug, 40 or 60 feet deep, and on the water a reddiſh petroleum is ſeen to float, which abounds moſt in autumn and ſpring. Theſe wells are encloſed, and every fortnight oil is ſkimmed off the ſurface; and this oil is uſed for embalming, varniſhing, painting, and as an ingredient in ſome medicinal preparations. Amber is dug out of a ſoil impregnated with petroleum. This duchy affords a variety of petrifactions. In digging wells near Modena, to a certain depth, a particular ſtratum is found, on penetrating which the water guſhes up as from a ſubterranean lake or river. About 10 miles S. of the capital there is an aperture in the earth called "La Salza," whence, particularly in ſpring and autumn, aſcend, with a very loud noiſe, ſmoke, flame, aſhes, and ſtones, attended with a ſtrong ſmell of ſulphur. Carrara, in the S. of this duchy, affords the celebrated marble uſed in ſtatuary. The chief rivers are the Croſtolo, the Secchia, and the Panaro. This duchy is a remnant of the power of the celebrated family of Eſte, who alſo poſſeſſes the adjacent country of Ferrara, which was ſeized by the pope in 1598. The remaining territory contains about 320,000 ſouls, and the city of Modena 30,000; the revenue being 140,000*l*. Since the French revolution, which has produced ſuch changes in the geography, as well as in the general ſtate of Europe, the whole of this duchy forms a part of Italy, and is now divided into the departments of the Croſtolo, the Panaro, and the Apennines.

Modena, the capital of the above duchy, and now capital of the department of Panaro, the ducal reſidence, and a biſhop's ſee, is an ancient, large, tolerably built, fortified town, with a ſtrong citadel, containing a ducal palace, which is large and ſplendid, and diſtinguiſhed by a well furniſhed picture-gallery, a cathedral, many pariſh churches and convents, and from 25,000 to 30,000 inhabitants. It is ſituated in a fertile plain; and its ſtreets are, in general, large, ſtraight, and ornamented with porticoes and piazzas. The univerſity was for a long time under the direction of eminent profeſſors; and the magnificent college of Charles Boromeo, is an academy for 70 or 80 young noblemen. In a chamber under the cathedral tower is the curioſity ſo much talked of by travellers, called "Secchia rapita," which is nothing more than a well-bucket, with iron hoops, hung up by an iron chain, taken in a war from the inhabitants of Bologna, and preſerved here as a trivial monument of courage and victory. The houſe of Eſte poſſeſſed this city ever ſince the year 1288. On the approach of the French, the duke retired from his dominions, with a large ſum of money, to Venice. Upon an armiſtice, he agreed to pay to the republic 7,500,000 livres in caſh, 2,500,000 livres in proviſions and military ſtores, and to give, beſides, pictures and other douceurs; 30 miles S. of Mantua. N. lat. 44° 38′. E. long. 10° 56′.

MODENORE, a town of Hindooſtan, in the circar of Condapilly; 20 miles N.W. of Maſulipatam.

MODERATA, Misericordia, in *Law*, a writ that lies for him who is amerced in a court-baron or other court, not of record, for any tranſgreſſion beyond the quality or quantity of the offence. It is directed to the lord of the court, or his bailiff, commanding them to take a *moderate amercement* of the party. This writ is founded upon Magna Charta.

If a man be amerced in a court-baron on preſentment by the jury, where he did not any treſpaſs, he ſhall not have this writ, unleſs the amercement be exceſſive and outrageous: and if the ſteward of the court, of his own head, will amerce any tenant or other perſon without cauſe, the party ought not to ſue for this writ of moderata miſericordia if he be diſtrained for that amercement; but he ſhall have action of treſpaſs. (New Nat. Br. 167.) When the amercement which is ſet on a perſon is affeered by his peers, this writ of moderata miſericordia doth not lie; for then it is according to the ſtatute 10 Edw. II.

MODERATION, in *Ethics*, is a virtue conſiſting in the proper government of our appetites, paſſions, and purſuits, with reſpect to honours, riches, and pleaſures; and in this ſenſe it is ſynonimous with *temperance*: it is alſo often uſed to denote *candour*.

MODERATO, Ital. in *Muſic*, implies a time neither quick nor ſlow; much reſembling *andante*, but ſomewhat quicker. See Andante.

MODERATOR, in the *Schools*, the perſon who preſides at a diſpute, or in a public aſſembly.

Such a doctor was the moderator, that is, the preſident, at ſuch a diſputation, in ſuch an aſſembly, &c.

Moderator-*Ring*, in *Anatomy*, is uſed by Valſalva for that ring which the muſcles of the eye make round the optic nerve, at the bottom of the orbit. He alleges, that the exterior fibres of theſe muſcles which riſe from the nerve, muſt ſhorten it when they contract, and when the interior fibres act they muſt compreſs it; ſo that theſe different fibres of the muſcles affect the nervous fluid here very differently.

Valſalva alſo deſcribes ſuch another ring made round the motory nerves of the eye; but acknowledges, that it is neither ſo remarkable nor diſtinct as the former. Med. Eſſ. Edin. Abr. vol. ii. p. 410.

MODERE′, Fr. in *Muſic*. See Moderato.

MODERN, ſomething new, or of our time. In oppoſition to what is antique, or *ancient*.

Modern authors, according to Naude, are all thoſe who have written ſince Boethius: the modern philoſophy commences with Galileo: and the modern aſtronomy with Copernicus.

Modern *Medals* are reckoned all thoſe that have been ſtruck within theſe three hundred years. See Medal.

Modern, in *Architecture*, is improperly applied to the preſent, or Italian manner of building; as being according to the rules of the antique. Nor is the term leſs abuſed when attributed to architecture purely Gothic.

Modern architecture, in propriety, is only applicable to that which partakes partly of the antique, retaining ſomewhat of its delicacy and ſolidity; and partly of the Gothic, whence it borrows members and ornaments, without proportion or judgment.

Modern *Muſic*, *Muſica Moderna*, may be divided into two parts: firſt, *antiquo moderna*, which is generally a ſerious ſort of muſic, conſiſting of many parts; and which has been in uſe from Guido's time to the beginning of the laſt century. Secondly, the *modern*, which has been uſed in the two laſt centuries: it is very different from the *antiquo moderna*, being briſker, lighter, gayer, and more ſprightly.

The characteriſtics of the firſt ſtate of counterpoint, or muſic in parts, were *plain ſimple harmony*, conſiſting of common chords, of note againſt note; then *figurative harmony*, or notes of different lengths, conſiſting of different figures or characters moving at the ſame time. After this was found to be poſſible, the more artificial contrivances were cultivated of fugue and canon, but without air or melody, except in fragments of canto-fermo, and tunes of ſuch popular ballads as were ſung in the ſtreets, and upon which moſt of the early maſſes in four parts were conſtructed.

Modern, or *Moddra*, in *Geography*, a town of Hungary; 14 miles N.N.E. of Preſburg.

MODESTY, in *Ethics*, is ſometimes uſed to denote humility; and ſometimes to expreſs chaſtity or purity of ſentiment and manners. Modeſty was deified by the Romans under the name of "Pudicitia;" and at Rome ſhe had two temples, one dedicated to the chaſtity of the nobles, and the other to that of the populace, and alſo altars on which ſacrifices were offered to her. The origin of the diſtinction between the chaſtity of the Patrician ladies, and that of the Plebeians, is thus related by Livy (l. x. c. 25.) Virginia, of a Patrician family, having married a Plebeian named Volumnius, who was, however, afterwards conſul, her ſiſter, looking upon this match to be unworthy her name, having joined with the other matrons, would no longer ſuffer her to partake in the myſteries of the goddeſs of Chaſtity, but drove her out of the temple. Virginia, ſtung with this affront, got a chapel raiſed in the long ſtreet, the ſame where was the goddeſs's temple from which ſhe was excluded, and ſhe dedicated it to the chaſtity of the Plebeian ladies; where the wives, who were not of the ſenatorian order, convened from that time to offer ſacrifice to that goddeſs. Chaſtity was repreſented under the figure of a woman veiled, or ſeeming to point her right-hand, or her fore-finger, to her face, to ſignify that ſhe has no reaſon to bluſh.

MODI, in *Geography*, a ſmall iſland in the gulf of Engia. N. lat. 37° 27′. E. long. 23° 33′.

MODIANORE, a town of Hindooſtan, in Myſore; 45 miles E.N.E. of Bangalore.

MODIBOO, a town of Africa, in the kingdom of Bambarra, delightfully ſituated on the banks of the Joliba or Niger, which is here very broad, and enlivened with many ſmall and verdant iſlands, all of them ſtocked with cattle, and crowded with villages; 65 miles N.E. of Sego. N. lat. 14° 38′. W. long. 1° 35′.

MODICA, a town of Sicily, in the valley of Noto; 8 miles W. of Noto. N. lat. 36° 51′. E. long. 14° 43′.

MODIFICATION, in *Philoſophy*, that which modifies a thing; that is, gives it this or that manner of being.

Quantity and quality are accidents which modify all bodies.

According to Spinoſa's ſyſtem, all the beings that compoſe the univerſe are only ſo many different modifications of one and the ſame ſubſtance. And the different arrangement and ſituation of their parts make all the difference between them.

MODIFICATIVE, ſomething that modifies, or gives a thing a certain manner of being.

Father Buffier eſtabliſhes a new part of ſpeech, which he calls *modificative*. Nouns and verbs, he obſerves, are ſuſceptible of divers circumſtances or modifications: in the phraſe, *zeal acts*, we have a noun and verb without any modification; but in that, *zeal without diſcretion acts raſhly*, the noun and verb are each attended with a modification or circumſtance.

The laſt kind of words, which ſerve to modify nouns and verbs, ſince they have no general name in the common grammars, he chooſes to call modificatives: which include what grammarians commonly call *adverb*, *conjunction*, and *prepoſition*.

MODILLIONS, in *Architecture*, mutules carved into conſoles, placed under the ſoffit or bottom of the drip of the corona in the Corinthian and Roman orders, for ſupporting the larmier and cyma, or appearing to perform the office of ſupport.

In Grecian architecture, the Ionic order is without modillions in the cornice, and alſo the Roman examples of the ſame order, except the temple of Concord at Rome, which has both dentils and modillions.

A ſingular and curious example of a modillion cornice, but contrary to the principles of architecture, is to be found in the interior cornice of the Tower of the Winds at Athens, where the projecting part is much thicker than the interior part, where the ſtreſs ſeems to lie, and, conſequently, gives the idea of weakneſs.

A ſingular example of modillions is to be found in the frontiſpiece of Nero at Rome, where they conſiſt of two plain faces, ſeparated by a ſmall cyma reverſa, and crowned with an ovolo and bead.

Another very extraordinary form of modillions is that placed in the frieze of the fourth order of the Coliſeum, cut on the outſide, or projecting part of a cyma reverſe form.

In moſt examples of the Corinthian and Roman orders, the cornices have both dentils and modillions; but in our opinion, if the two are uſed together, in good proportion to the other parts, ſo as to appear diſtinctly at a reaſonable diſtance, the cornice will be overcharged, both in proportion and weight, to the other principal members of the entablature, or the entablature to the whole order; the one or the other ought, therefore, to be omitted in the ſame cornice.

In the general diſpoſition of modillions, if each one is conceived to be divided into two equal parts by a vertical plane at right angles to the ſurface of the frieze, one of the modillions is ſo diſpoſed, that its dividing vertical ſurface will be entirely in a plane paſſing through the axis of the column, and in the column next the angle of the building there is generally only one modillion between that through which the plane along the axis paſſes, and the angle of the cornice.

The vertical ſides of modillions at right angles to the face, are generally finiſhed with volutes of different ſizes, and turned on different ſides of the ſame line, the greater being that next to the vertical ſurface, to which they are attached, and the leſſer at the extremity.

The ſoffits of the modillions, ſo conſtructed, follow the under line of the volutes, and the connecting undulated line which joins them. The upper part of each volute is on the ſame level, and is attached to a moulding of the cyma inverſe form, which returns round it, and this moulding is again attached to the corona, which hangs over the modillion.

In ſome of the Roman buildings the modillions are not placed over the axes of the columns, neither upon thoſe at the extremes, nor over the axes of the intermediate ſhafts. In the Pantheon, the modillion next each angle of the building has its vertical ſide, which is oppoſed to the next modillion nearer to the central plane of the portico, over the axis of the column, and conſequently the whole breadth of the modillion on one ſide of the axis entirely, and on that ſide next to the angle of the building. In the whole portico are forty-ſeven modillions, including the one at each extreme; the intervals are, therefore, forty-ſix in number, and forty-four between the columns that are between their axes. The portico is octo-ſtyle, and, conſequently, the inter-columns are ſeven in number; from this it will be found, that if the columns were placed equidiſtantly, the number of inter-modillions would be 6^2ths in number. In this temple the correſponding intervals are very irregular. The two extreme ones are, according to Deſgodetz, 9′ $4\frac{1}{2}$″, and 9′ $2\frac{3}{4}$″: the next two, nearer the centre, are 9′ $5\frac{1}{6}$″, and 9′ $1\frac{7}{8}$″: the next two, ſtill nearer to the centre, are exactly equal, being 9′ 5″ each, and the central intercolumniation is 10′ $4\frac{3}{4}$″: ſo that the modillions appear to be equally divided, without any regard to the axis of the columns. The ſame irregularity in the diſpoſition of the modillions may be obſerved in the temple of Concord, and in that of Jupiter the Thunderer. In the three remaining columns of the temple of Jupiter Stator, each column has a modillion placed over its axis, and each inter-column has three modillions regularly diſpoſed: the diſtance between the lower ends of the ſhafts are 3 mod. 4 pa. $\frac{1}{2}$, and the columns are in height 20 modules, 6 parts $\frac{5}{6}$ths.

In the Pantheon, the modillions are placed in the pediment, contrary to the authority of Vitruvius.

MODILOWA, in *Geography*, a town of Poland, in Volhynia; 36 miles N.E. of Zytomiers.

MODIN, a village of Paleſtine, ſituated on a hill, deſerving of notice, on account of the tomb of the Maccabees, and alſo of a victory obtained by Judas Maccabæus, over Antiochus Eupator; 14 miles E.S.E. of Jaffa.

MODINAGUR, a town of Hindooſtan, in Bahar; 25 miles E.N.E. of Hajipour. N. lat. 25° 34′. E. long. 85° 51′.

MODIOLI, in *Natural Hiſtory*, a name given by ſome authors to the trochitæ or ſingle joints of the rays of the petrified magellanic ſtar-fiſh, which, when connected in numbers together, form that foſſil called entrochus. Others have alſo uſed this word, *modiolus*, to expreſs the compound body, or entrochus itſelf. Though the general form of the trochitæ be thin and flat, yet they are ſometimes found conſiderably thick; and though the entrochi or compound modioli are uſually ſo many cylinders of equal diameter in all parts, yet there are ſometimes found ſuch as are thick in the middle, and thence gradually taper to each end; ſome alſo are compoſed of joints, each of this form ; theſe differ very greatly from the common kind, and inſtead of conſiſting of a number of little wheels, are made up of a ſeries of little barrels, joined, as it were, end to end.

MODIOLUS, from *modus*, a meaſure, in *Surgery*, ſince it was formerly ſo conſtructed, that it would only enter to a certain depth : the crown or ſaw of the trepan. Anciently it reſembled in ſhape the nave of a wheel.

MODIUM, in *Geography*, a town of Norway, in the province of Aggerhuus ; 20 miles W. of Chriſtiania.

MODIUS, in *Antiquity*, a kind of dry meaſure in uſe among the Romans for ſeveral ſorts of grain.

The modius contained thirty-two heminæ, or ſixteen ſextaries ; or ⅓ of the amphora ; amounting to an Engliſh peck. See Measure.

Modius, Francis, in *Biography*, a learned critic, was born at Oudenburg, in Flanders, in 1546. The wars of the Low Countries obliged him to retire to Cologne, and he ſpent the greater part of his life in Germany. Being at Bonne in 1587, he loſt all his effects, and was himſelf dangerouſly wounded. Towards the cloſe of life, he was preſented with a canonry at Aire, where he died in 1597. Modius wrote annotations upon many of the Latin claſſics, which are moſtly to be found in his "Lectiones Nov-antiquæ," which were firſt printed at Frankfort in 1584, and were reprinted in letters by Gruter, in the fifth volume of his "Theſaurus Criticus." He was author likewiſe of poems and other pieces. Moreri.

MODO & *Forma*, in *Law*, a phraſe uſed in proceſſes and pleadings, by which the defendant abſolutely denies the thing charged on him by the plaintiff, *modo & forma declarata*, in the manner and form ſet forth.

The civilians in the like ſenſe ſay, *negat allegata, prout allegantur, eſſe vera.*

MODON, in *Geography*, a ſea-port town on the S.W. coaſt of the Morea ; with a large and ſafe harbour. The town is the reſidence of a pacha, and ſee of a Greek biſhop ; 42 miles W.S.W. of Miſitra. N. lat. 36° 58′. E. long. 21° 35′.

MODRITZ, a town of Moravia, in the circle of Brunn ; five miles S. of Brunn.

MODRSAW, a town of Auſtrian Poland, in the palatinate of Cracow ; 24 miles W. of Cracow.

MODRUSCH, a town of Auſtrian Croatia, the ſee of a biſhop ; 24 miles W.N.W. of Sluin.

MODULATION, from *Modulatio*, Lat., in *Muſic*, is one of the moſt important terms of a muſical dictionary. In the articles Composition and Counterpoint, it has been treated after our own ideas and experience ; here we ſhall give our readers the rules laid down by others, not to confute, but to confirm and ſtrengthen our own. And firſt, we ſhould give Padre Martini's inſtructions, and thoſe of Dr. Pepuſch on the ſubject, as the moſt profound contrapuntiſts of Italy and Germany during the early part of the laſt century, if theſe learned theoriſts had not adhered ſo religiouſly to the eccleſiaſtical modulation of the old maſters, founded on the modes or tones of the church, ſo as to preclude all the modulation of ſecular muſic, which has been extended, and in many inſtances improved, during the laſt hundred years. We ſhall, therefore, now chiefly tranſlate and confine ourſelves to the article *Modulation* in the dictionary of Rouſſeau, in which it is amply and clearly treated, according to the practice of the beſt maſters at the time of his writing ; that is, 30 or 40 years ago. See works on the ſame ſubject by ſubſequent writers ſtill living, ſuch as Frike, Bemitzrieder, Kollmann, &c.

But firſt we muſt obſerve, that *to modulate* during the ſixteenth century, implied nothing more than a change of voice from one ſound to another ; but the ingenious citizen of Geneva, more conſonant to preſent practice in muſic, defines modulation, "the manner of eſtabliſhing and treating a key ;" but adds, that the word, at preſent, generally implies the art of conducting melody and harmony, ſucceſſively, into many keys, in a manner agreeable to the ear, and according to rule. If the key is announced by harmony, it is from harmony that the laws of modulation ariſe.

Theſe laws are eaſy to conceive, but difficult rigorouſly to obſerve. To modulate properly in the ſame key, we muſt begin firſt by running through all the notes of that key in good melody, frequently repeating its eſſential chords, and ſtrongly marking them. That is, paſſing from the chord of the 7th to the 5th, or $\frac{6}{5}$ of the 7th to the key-note ; but in various ways to avoid monotony. Secondly, to make no cloſes, nor to repoſe but upon thoſe two chords, or at moſt on that of the 4th of the key, called by the French the ſubdominant, or 5th below the key. Thirdly, never to alter any of the ſounds of the principal key by a flat or ſharp, which would lead to another key.

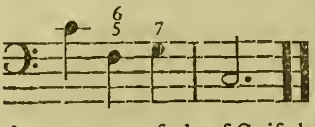
But to paſs from one key to another, which is now underſtood to be the principal buſineſs of modulation, analogy muſt be conſulted, with reſpect to the relation of keys, and the number of chords appertaining to two keys.

Let us begin by a major key, or key with a ſharp 3d. Whether we conſider the 5th of the key as being more immediately related and connected with it of any ſound except the octave of the key-note ; or whether we regard it as the firſt ſound that is heard in the reſonance of the key-note, the 5th will always be found the moſt agreeable interval upon which to eſtabliſh a modulation the moſt analogous to that of the key-note.

The 4th of the key, if not a part of the chord of the key-note, the key-note is at leaſt a part of the chord of the 4th. For if C E G form the chord of the key-note, that of the 4th will be F A C ; thus C is the bond of union between the two keys. Indeed it is only neceſſary to change one ſound of the principal key to form the ſcale of its 5th above, and 5th below, or 5th and 4th of any major key. In the key of C, an F♯ or a B♭ does the buſineſs.

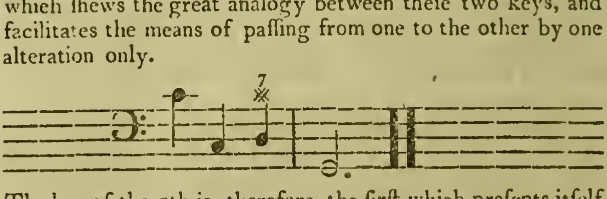
There are two minor chords in the key of C, in which only one note differs from the chord of C, as A *c e*, and *e g* B. But the ſharp 7th, and other accidents which happen to the chords and melody of theſe minor keys, changes their character ſo much, that the double relation between the chords of C and A, and C and E is ſoon effaced.

As all the ſounds of the ſcale of C are compriſed in the chords of the key-note, and its two 5ths,



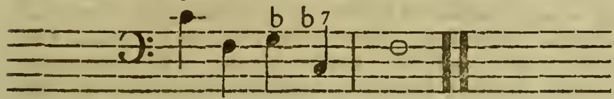
See plates throughout this article.

the gammut or ſcale of C, if altered only by one ſingle ſharp, furniſhes the ſcale and chords of G, the 5th above C, which ſhews the great analogy between theſe two keys, and facilitates the means of paſſing from one to the other by one alteration only.

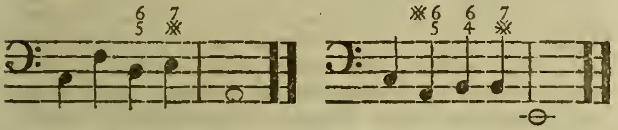


The key of the 5th is, therefore, the firſt which preſents itſelf after the key-note in the order of modulation.

The ſame ſimplicity of relative ſounds between the key-note and its 5th above is alſo found to ſubſiſt between the key-note and its 5th below, or 4th above.

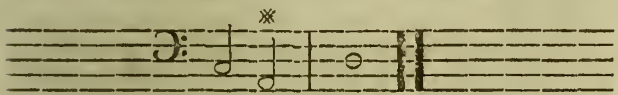


Though the modulating from C to A minor, its 6th, and from C to E minor, its 3d, is only by the change of one note in the chords, the ſharp 7th muſt be heard in one of the chords of theſe minor keys, to make either A or E a key-note.



Theſe immediate modulations furniſh the means of paſſing to more remote keys by the ſame rules, and of returning afterwards to the key-note, of which we muſt never loſe ſight.

We have four regular modulations from the key of C major; E F G A. To modulate into D, wholly unrelative to C, it muſt be brought about by means of a conſonant movement of the fundamental A with a ſharp 3d.



But we muſt dwell but an inſtant in this modulation, leſt the key of C is forgotten, which itſelf is altered in going into D. A long period in D would require intermediate modulations to return to C, into which it would be dangerous to wander. No good modulation into B, the ſharp 7th of C, can have place, at leaſt immediately, as it has no true 5th, and would lead to a harmony too ſudden and remote from that of the principal key. In every modulation, all the parts muſt change the key at the ſame inſtant, to avoid carrying on two modulations at the ſame time. Huygens, ſays Rouſſeau, has well remarked, that the prohibition of two ſucceſſive 5ths has this rule for its principle; for it is impoſſible to have many perfect ſucceſſive 5ths between two parts, without modulating into two unrelative keys. The hexachords are compoſed of pure harmony to fundamental baſes, without modulation. The deſcending ſcale in the *règle de l'octave*, modulates into the 5th of the key. But, in fact, only three notes in the baſe can aſcend in one key, diatonically; the 4th note arrives at a new key to the top of the ſcale, which produces a perpetual modulation by 4ths, from C natural into all the 23 keys.

To modulate on a keyed inſtrument, is uſually done in arpeggio, by preluding extempore, of which the variety, to a man of ſcience, is unbounded. Abel, no leſſon-player on the clavichord or harpſichord, poſſeſſed this talent to a wonderful degree.

MODULE, in *Architecture*, a certain meaſure taken at pleaſure, for regulating the proportions of columns, and the ſymmetry or diſtribution of the whole building.

Architects uſually chooſe the diameter or ſemidiameter of the bottom of the column for their module; and this they ſubdivide into parts or minutes.

Vignola divides his module, which is a ſemidiameter, into twelve parts, for the Tuſcan and Doric; and into eighteen, for the other orders.

The module of Palladio, Scamozzi, M. Cambray, Deſgodetz, Le Clerc, &c. which is alſo the ſemidiameter, is divided into thirty parts, or minutes in all the orders.

Some divide the whole height of the column into 20 parts for the Doric, 22½ for the Ionic, 25 for the Roman, &c. and of one of theſe parts they make a module, by which to regulate the reſt of the building.

There are two ways of determining the meaſures or proportions of buildings: the firſt by a fixed ſtandard meaſure, which is uſually the diameter of the lower part of the column, called a module, ſubdivided into ſixty parts, called minutes. In the ſecond there are no minutes, nor any certain and ſtated diviſion of the module; but it is divided occaſionally into as many parts as are judged neceſſary. Thus the height of the Attic baſe, which is half the module, is divided either into three, to have the height of the plinth; or into four, for that of the greater torus; or into ſix, for that of the leſſer.

Both theſe manners have been practiſed by the ancient as well as the modern architects; but the ſecond, which was that chiefly uſed among the ancients, is in the opinion of Perrault preferable.

As Vitruvius, in the Doric order, has leſſened his module, which, in the other orders, is the diameter of the lower part of the column, and has reduced that great module to a mean one, which is a ſemidiameter; M. Perrault reduces the module to a third part for the ſame reaſon, *viz.* to determine the ſeveral meaſures without a fraction. For in the Doric order, beſide that the height of the baſe, as in the other orders, is determined by one of theſe mean modules; the ſame module gives likewiſe the heights of the capital, architrave, triglyphs, and metopes. But our little module, taken from the third of the diameter of the lower part of the column, has uſes much more extenſive; for, by this, the heights of pedeſtals, of columns, and entablatures, in all orders, are determined without a fraction.

As then the great module or diameter of the column has ſixty minutes; and the mean module, or half the diameter, thirty minutes; our little module has twenty. See COLUMN.

MODULER, Fr. in *Muſic;* to modulate extempore is a reſearch after new effects and new combinations. Learning, hand, and experience are neceſſary to do credit to the performer, and pleaſe and ſurpriſe the hearer. And we may add that a prelude, toccata, or voluntary by a great player, ſeems inſpiration, and is worth a hundred pieces committed to paper.

MODULI CAMPANORUM, chimes. See Graſſineau, p. 139, a long article on the ſubject. See CARILLONS.

MODUNDAH, in *Geography*, a town of Bengal; 18 miles N.N.E. of Calcutta.

MODUS DECIMANDI is when a parcel of land, a ſum of money, or a yearly penſion, belongs to the parſon, either by compoſition or cuſtom, time out of mind, in ſatisfaction for tithes in kind: or, when there is by cuſtom a particular manner of tithing allowed, different from the general law of taking tithes in kind, which are the actual tenth part of the annual increaſe.

This is ſometimes a pecuniary compenſation, as twopence an acre for the tithe of land; ſometimes it is a compenſation in work and labour, as that the parſon ſhall have only the twelfth cock of hay, and not the tenth, in conſideration of the owner's making it for him: ſometimes in lieu of a large quantity of crude or imperfect tithe, the parſon ſhall have a leſs quantity, when arrived to greater maturity, as a couple of fowls inſtead of tithe eggs, &c. In ſhort, any means by which the general law of tithing is altered, and a new method of taking tithes is introduced, is called a *modus decimandi*, or ſpecial manner of tithing. In order to make a good and ſufficient modus the following rules muſt be obſerved :

1. It muſt be certain and invariable. (1 Keb. 602.) 2. The thing given, in lieu of tithes, muſt be beneficial to the parſon, and not for the emolument of third perſons only. (1 Roll. Abr. 649.) 3. It muſt be ſomething different from the thing compounded for. (1 Lev. 179.) 4. One cannot be diſcharged from payment of one ſpecies of tithe, by paying a modus for another. (Cro. Eliz. 446. Salk. 657.) 5. The recompence muſt be in its own nature as durable as the tithes diſcharged by it ; *i. e.* an inheritance certain. (2 P. Wms. 462.) 6. The modus muſt not be too large, which in law is called a *rank* modus. (11 Mod. 60.) In theſe caſes of preſcriptive or cuſtomary moduſes, the law ſuppoſes an original real compoſition to have been regularly made, which being loſt by length of time, the immemorial uſage is admitted as evidence to ſhew that it did once exiſt, and that from thence ſuch uſage was derived. Now time of memory hath been long aſcertained by the law, to commence from the reign of Richard I. and any cuſtom may be deſtroyed by evidence of its non-exiſtence in any part of the long period from his days to the preſent. Blackſt. Com. b. ii.

MODYPOUR, in *Geography*, a town of Hindooſtan, in Bahar ; nine miles S. of Patna.

MODZIEN, a town of Perſia, in the province of Mazanderan ; 48 miles S.W. of Aſtarabad.

MOECKARN, a town of the duchy of Magdeburg ; 16 miles E. of Magdeburg.

MOEDA. See MOIDORE.

MOEN, or MONA, in *Geography*, an iſland of Denmark, in the Baltic, ſeparated from the S. end of the iſland of Zealand, and from the N.E. coaſt of Falſter, by a narrow ſea, about 16 miles in length, and from three to five in breadth ; containing one town, *viz.* Stoege or Stege, and ſeveral villages. N. lat. 55°. E. long. 12° 20′.

MOEN, or MÖN, a river which riſes in Weſtphalia, three miles N.W. of Brilon, paſſes by Rhuden, &c., and joins the Roer at Nehem.

MOENCHIA, in *Botany*, received its name from Ehrhart in memory of Conrad Moench, a profeſſor of botany at Heſſe Caſſel, author of the *Flora Haſſiaca*. Ehrh. Beitr. faſc. 2. 177. This genus conſiſts of only one ſpecies, *Sagina erecta*, Linn. Sp. Pl. 185. Sm. Fl. Brit. 200. Engl. Bot. t. 609. The only difference in the eſſential character conſiſts in the ſtructure of the capſule, which ſplits at the top into eight teeth, inſtead of ſeparating, more or leſs perfectly, into four valves, like other *Saginæ*. The habit of this elegant little plant muſt alſo be allowed to be diſſimilar to that of the genus with which it has always been aſſociated. See SAGINA.

MOERDA, See MURDER.

MŒRHINGIA, in *Botany*, was named by Linnæus in honour of Paul Henry Gerard Mœrhing, a German phyſician, in the duchy of Oldenburg, who was the author of various botanical tracts. His firſt treatiſe appeared in 1733, entitled the anatomy of vegetables, in which the apparent ſtructure of leaves, after being macerated in water, is particularly conſidered.—Mœrhing printed a catalogue of his own garden in 1737, and furniſhed afterwards ſeveral papers for the *Ephemerides Naturæ Curioſorum*. He died in 1792, at the advanced age of 82 years. Linn. Gen. 195. Schreb. 264. Willd. Sp. Pl. v. 2. 439. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 416. Juſſ. 300. Lamarck Illuſtr. t. 314.—Claſs and order, *Octandria Digynia*. Nat. Ord. *Caryophyllei*, Linn. and Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of four lanceolate, ſpreading, permanent leaves. *Cor.* Petals four, ovate, undivided, ſpreading, ſhorter than the calyx. *Stam.* Filaments eight, capillary ; anthers ſimple. *Piſt.* Germen ſuperior, globoſe ; ſtyles two, erect, the length of the ſtamens ; ſtigmas ſimple. *Peric.* Capſule roundiſh, of one cell and four valves. *Seeds* numerous, roundiſh, convex on one ſide, angulated on the other.

Eſſ. Ch. Calyx inferior, of four leaves. Petals four. Capſule of one cell, and four valves.

1. M. *muſcoſa*. Linn. Sp. Pl. 515. Jacq. Auſtr. t. 449. (Alſine ſaxifraga anguſtifolia minima montana ; Column. Ecphr. p. 1. 292. t. 290.)—Found growing in moſſy ſituations, near trickling rills, on mountains in the ſouth of Europe, flowering throughout the ſummer. *Root* perennial, thread-ſhaped and creeping. *Stems* annual, herbaceous, thread-ſhaped, round, ſlender, ſmooth, much branched. *Leaves* oppoſite, linear, very narrow, ſmooth, dilated at the baſe, ſo as to make the ſtem ſomewhat perfoliate. *Flowers* ſolitary, on long, erect, ſlender, axillary ſtalks. *Petals* ovato-linear, obtuſe, milk white. *Capſules* yellowiſh when ripe. *Seeds* eight or ten, kidney-ſhaped, dark-brown, furniſhed with a large, white, jagged border to their ſcar of inſertion.

MŒRIS, LAKE, in *Ancient Geography*, a lake of Egypt, concerning the ſituation and extent, and even the exiſtence of which, authors have differed. It has been repreſented as the nobleſt and moſt wonderful of all the works of the kings of Egypt ; and accordingly Herodotus conſiders it as much ſuperior to the pyramids or labyrinth. As to its ſituation, Herodotus (lib. ii.) and Strabo (lib. xvii.) mark it out by placing the labyrinth on its borders, and by fixing the towns, which were round it, ſuch as Achantus to the ſouth, Aphroditopolis towards the eaſt, and Arſinoé to the north : Diodorus Siculus (lib. i.) and Pliny (lib. v.) confirm theſe authorities, by placing it at 24 leagues from Memphis, between the province of that name and that of Arſinoé. If the lake, like that of Mareotis, had totally diſappeared, doubts as to its ſituation might ſtill have been entertained ; but the poſition marked by the above-mentioned hiſtorians leads us to a lake, actually exiſting, known by the name of BIRKET *Caroun*, (which ſee,) more than 50 leagues in circumference. With regard to the extent of this lake, we recur again to the teſtimonies above cited : Herodotus ſays, that the circumference of the lake Mœris was 3600 ſtadia, or 60 ſchenes, which, ſays the hiſtorian, form the dimenſions of the maritime baſe of Egypt, (75 leagues.) He adds, that it ſtretches from N. to S. and that its greateſt depth is 300 feet. The hiſtorian has fixed the meaſure of the ſchene in Lower Egypt at four miles, or 1¼ league, ſo that the 60 ſchenes make 75 leagues. If we compare the meaſures by Strabo and Diodorus Siculus, we ſhall find that the baſe of Egypt was eſtimated at 75 leagues, and hence it will follow, according to the account of Herodotus, that the lake was in circuit 75 leagues. Some writers, who have taken the uſual meaſure of the ſtadium at 100 toiſes, have aſſigned to this lake a circumference of 150 or even 180 leagues. But as the hiſtorian has determined the meaſure of 3600 ſtadia to be 60 ſchenes, or 75 leagues, he muſt have made uſe of ſtadia of 50 toiſes each. Boſſuet, the biſhop of Meaux, has vindicated the ſtatement of the largeſt extent of 180 leagues, which Voltaire has treated with raillery ; and M. Rollin, conceiving it to be incredible, adopts the opinion of Pomponius Mela, who ſays, that this lake is but 20,000 paces, that is, ſeven or eight French leagues in circumference. Pliny eſtimates it at 250,000 paces, or about 80 leagues. M. d'Anville, with a view of conciliating the different contending parties, has, in his map of Egypt, marked a great canal, to which he gives the name of the lake Mœris. The depth of 300 feet aſcribed to this lake by hiſtorians muſt be exaggerated; but perhaps leſs ſo than we may be led to imagine. The bottom which it occupies is a baſon, formed by the mountains. It is very low, ſince the Nile runs into it even by the canal of Tamieh. Although the mud may have gradually collected in a ſeries of ages, its depth is ſtill very conſiderable. Two pyramids, ſays Herodotus, conſtructed in an iſland towards the middle of the lake, riſe from 300 feet below the water, and are as high out of it. Each of them has on its ſummit a coloſſal ſtatue, ſeated on a throne. Their total elevation, taken from the baſe, is a ſtadium of 600 feet; thus marking the meaſure of the ſtadium, as he had before, in giving the circumference of the lake, reduced it to 50 toiſes. Theſe pyramids no longer exiſt; nor indeed did they exiſt in the time of Auguſtus, for they are not mentioned by Strabo. Lake Mœris, ſays Herodotus, occupies a ſoil very dry, and deſtitute of ſprings. It derives its waters from the Nile, which runs into it during ſix months; and during the remainder of the year it reſtores them to the river. During the former period, the fiſhery produces a talent of ſilver daily to the royal treaſury, and 20 minas only during the latter. According to the natives of the country, a canal is pierced acroſs the mountain, the extended chain of which commands Memphis. This is an outlet by which the ſuperfluous waters are poured into the ſands of Libya on the weſtern ſide. As for the earth that was taken from the lake, the hiſtorian was informed, that it had been conveyed to the river, and carried by the current into the ſea. According to the account of Strabo, the province of Arſinoé contains the wonderful lake of Mœris, which reſembles the ſea in its extent, its colour, and its ſhores. As deep as it is extenſive, it receives at the beginning of the inundation the waters which would otherwiſe cover the harveſts and the habitations of men; they are conducted thither by a large canal. When the Nile ſubſides, they return by two other canals (thoſe of Tamieh and of Bouch), which, as well as the former, ſerve for watering the fields, which is naturally performed. At the head of the canals ſluices are formed, which are opened at pleaſure; whether to introduce or to let off the waters.

At preſent this lake is only about 50 leagues in circuit; but this diminution by no means proves that Herodotus and Pliny were deceived in their calculations. Conſidering the revolutions to which Egypt has been ſubject for a ſeries of 2000 years, it might have undergone ſtill greater changes. The noble deſign of forming this lake is ſaid to have been conceived by one of the Pharaohs, called Mœris, and he determined to change a part of the country, which was ſandy and deſert, into an uſeful lake. After the excavation had been made by the labour of ſome thouſands of men, and at an immenſe expence, he drew a canal 40 leagues in length, and 300 feet wide, for the purpoſe of conducting thither a part of the waters of the Nile. This great canal, which ſtill ſubſiſts entire, is known under the name of “Bahr Jouſeph,” Joſeph's river. It opens near “Tarout Eccherif,” and ends at “Birket Caroun.” As in ſeveral places this canal was cut out of the rock, the labour and expence muſt have been very great. It was not ſufficient to have diſengaged Egypt from the exceſs of the inundation, which in thoſe remote ages remained too long on the lands, at that time lower than they are in our days, and occaſioned its ſterility; it was neceſſary alſo to render theſe waters uſeful to agriculture. This great prince ſucceeded in doing this by drawing two other canals from the lake to the river. At their opening were formed two ſluices, which were kept ſhut during the increaſe of the Nile; then the waters conveyed by the canal of Joſeph were heaped up in the immenſe incloſure of lake Mœris, encompaſſed with dykes and mountains. During the ſix months that the Nile was on the decline, theſe ſluices were opened, and a ſurface of water of about 80 leagues in circumference, and 30 feet higher than the ordinary level of the river, formed a ſecond inundation to be directed at pleaſure. One part returned to the Nile, and ſerved for the navigation. The other part branched out into innumerable rivulets, watered the fields, and diffuſed fertility even to the very ſandy hills. This great work ſupplied the deficiency of water in years of a moderate overflow, by retaining thoſe precious waters, which otherwiſe would have flowed uſeleſsly to the ſea. Its benefits were ſtill more ſtrongly marked in the time of a great inundation. It received that hurtful ſuperfluity of them, which would have prevented the ſowing of the earth. Leſt this artificial ſea ſhould break down the barriers that were oppoſed to it, and cauſe frightful devaſtation in the country, a canal was cut through the mountains, by which the ſuperfluous waters were poured into the ſands of Libya. At preſent this lake has loſt almoſt all its advantages. From the period of nearly 1200 years, ſince which Egypt has fallen into the hands of barbarous nations, they have either deſtroyed, or ſuffered to periſh, the chief part of theſe monuments. The Mareotis is dried up, the canal of Alexandria is no longer navigable, and the Mœris is only 50 leagues in circumference. If the canal of Joſeph were cleared out, where the mud is collected to a vaſt height, if the ancient dykes were re-eſtabliſhed, and the ſluices of the canals of Tamieh and of Bouch reſtored, lake Mœris would ſtill ſerve the ſame purpoſes. It would prevent the devaſtation, of the too great ſwellings of the rivers, and ſupply the deficiency of thoſe which are inadequate. We ſhould ſee it, as on former occaſions, extending itſelf from Neſle and Arſinoë to the Libyan mountains, and offering to the view of the aſtoniſhed traveller, a ſea formed by the hand of man. Rollin's Anc. Hiſt. vol. i. Savary's Letters in Egypt, vol. i.

MOERSBERGEN, in *Geography*, a town of Holland, in the department of Utrecht; 10 miles E. of Utrecht.

MŒSIA, called by the Greeks *Myſia*, in *Ancient Geography*, a country of Europe, lay N. of Macedonia and Thrace, and extended from S. to N. as far as the right bank of the Danube. From W. to E. it extended from Pannonia, where the Drinus (Drin), paſſing to Sirmium and Singidunum (Belgrade), in order to diſcharge itſelf into the Danube, ſerved for its boundary: to the W., comprehending the territory called “Pontus-Euxinus,” from the promontory called “Hæmi-Extrema,” and to the S. as far as the Iſtropolis. This large extent of country was divided into two diſtinct territories, partly by the mountains, and partly by the river Cebrus (Zebris), which diſcharged itſelf into the Iſter. The part comprehended between the Drinus and the Cebrus was called “Mœſia Superior,” and that which extended from the Cebrus to the ſea was called “Mœſia Inferior;” *i. e.* Upper and Lower Mœſia. The principal river of Upper Mœſia was the Margus (Morava), formed of two other rivers; and farther to the E. it had the Tinacus (Timak). The principal towns were Singidunum (Belgrade), Viminacium (Minas), Bonomia (Vidin), and Ratiaria (Artzar). In the interior of the country is

Neiſſus (Niſſa) ; beſides other places mentioned by Ptolemy. The principal rivers of Lower Mœſia were the Œſcus (Eſker), the Oſmus (Oſmo), the Utus (Vid), the Iatrus (Jantra), all which rivers ran from S. to N. and emptied themſelves into the Danube : the Panyſus ran from W. to E., and diſcharged itſelf into the Euxine ſea, near Odeſſus (Vaſna). The principal towns are, upon the Danube, Œſcus (Artzar), Nicopolis (Nicopoli), Duroſtom (Driſtra or Siliſtria), Axopolis (Raſſovat), and Traſmi. In the interior country were Sardica or Triaditza, near Sophia, Taureſium, the birth-place of Juſtinian, called Juſtiniana prima (Dginſtendil), Nicopolis ad Hæmum (Ternova), Nicopolis ad Iatrum (Nicopi), and Marianopolis (Marienopoli). Upon the coaſts of the Euxine ſea, in the part called Scythia, and S. of this part, were Tomi (Temeſwar), the place of Ovid's exile, Caria (Kalgri), and Odeſſus (Varna).

MOESKIRCH, in *Geography*, a town of Germany, and capital of a lordſhip, belonging to the princes of Furſtenburg ; 18 miles N. of Conſtance. N. lat. 47° 59′. E. long. 9° 14′.

MOESTLIN, Michael, in *Biography*, a German Lutheran divine, and celebrated mathematician, who flouriſhed in the 17th century, was born at Goppingen, in the duchy of Wirtemberg. He obtained the friendſhip and patronage of the duke, who ſent him to the univerſity of Tubingen, where he was quickly diſtinguiſhed by his diligence and talents, and took his degrees. After this he embarked in the miniſtry, was choſen paſtor of the town of Tetſchen, and diſcharged the duties of his office to the ſatisfaction of his flock, and acquired univerſal reſpect by his unaffected piety and exemplary manners. He alſo obtained conſiderable reputation for profound ſkill in the mathematics, for which he had a ſort of natural turn. On this account he was elected mathematical profeſſor at Heidelberg, where he remained about three years, and then returned to Tubingen. Here he was appointed to the mathematical chair, in which he continued during the remainder of his life. He died in 1650. He is ſaid to have been the firſt perſon who explained the cauſe of the pale light obſervable on the diſk of the moon a little before and after the change. In Italy he delivered an harangue in defence of the Copernican ſyſtem, and is thought to have influenced Galileo in renouncing the old hypotheſes, and in embracing the ſyſtem which has now obtained a ſure footing. He publiſhed "Ephemerides," and ſeveral other works connected with ſcience. Moreri.

MŒURS, Fr. morals, manners. Rouſſeau has treated this word as a muſical term ; and informs us that it conſtituted a branch of Greek muſic, under the title of "Hermoſmenon," which conſiſted in knowing how to chooſe what was moſt beautiful and proper in each genus, without permitting muſicians to give to each object and each character all the forms of which it was ſuſceptible ; but obliged them to confine themſelves to what was moſt appropriate to the ſubject, the occaſion, the perſons, and the circumſtances. The morals conſiſted further in ſo arranging and proportioning all the conſtituent requiſites in muſical compoſition, ſuch as the mode, the time, the rhythm, melody, and even the tranſitions ; ſo that in the entire piece there ſhould be a conformity and agreement which left no diſproportion ; but that all its ſeveral parts ſhould conſtitute one perfect whole.

To preſcribe to what point of perfection an art ſhould be carried, and reduce to rules what is decorous, fitting, and excellent, was a degree of refinement to which the moderns pretend not to have arrived.

MOEY, in *Geography*, a ſmall iſland in the Eaſt Indian ſea. S. lat. 5° 50′. E. long. 132° 50′.

MOFFAT, a large village in the county of Dumfries, Scotland, is ſituated upon the banks of the river Annan, at the diſtance of fifty miles ſouth-weſt from Edinburgh, and is diſtinguiſhed chiefly as the moſt celebrated watering place in the northern diviſion of our iſland. It ſtands upon a conſiderable eminence, encompaſſed on the eaſt, weſt, and north ſides by hills of different heights, ſome of which are incloſed and cultivated, and others laid out as paſture lands. A fine holm, or valley, extends to the ſouth, carrying in its boſom the limpid ſtream of the Annan. The principal ſtreet, declining in the direction of this vale, commands a charming view of it, for the ſpace of ſeveral miles. The houſes here are for the moſt part well built, and the ſtreets are kept exceedingly clean and ſmooth ; and from their height and gravelly foundation dry ſo rapidly, that in an hour after the heavieſt rain, the inhabitants may promenade without the ſmalleſt inconvenience. There is one capital inn in the village, where the poſt-office is kept, and ſeveral leſſer ones, as well as excellent lodging-houſes, fit for the reception of the moſt genteel families. Here are an aſſembly-room and a bowling-green.

The Moffat Well is ſituated about a mile and a half from the village, having an excellent carriage road leading to it, and a long room, ſtables, and other conveniences for the accommodation of the company when they are ſtationed there. The valuable medicinal properties of this well were firſt diſcovered about 160 years ago ; ſince which time it has been conſtantly held in great eſtimation. Its waters are powerfully diuretic, and generally allowed to be effectual in the cure of ſcurvy and ſcrophula, if the patient's lungs are not injured previouſly to the uſe of them. When poured into a glaſs the water ſparkles like champagne, and is ſo extremely volatile that it cannot be drank in perfection, unleſs at the fountain. According to the late Dr. Garnet, who paid conſiderable attention to this ſubject, when analyſed, it is found to contain of muriat of ſoda (common ſalt) 36 grains ; ſulphuretted hydrogen gas 10 cubic inches ; azotic gas 4 ditto ; carbonic acid 5 ditto.

At the diſtance of four miles from Moffat, is another mineral ſpring, called the Hartfell Spaw, becauſe iſſuing from a rock of alum-ſlate in a tremendous ravine, on the ſide of a mountain of that name. The chief mineral ſubſtances of this water are the ſulphats of iron and alumina, which give it a powerful tonic quality. It is principally uſed, therefore, in caſes of weakneſs ; but has likewiſe been found ſerviceable in tetterous complaints and obſtinate old ulcers. This well is honoured with high encomiums by Dr. Johnſon. Several other chalybeate and petrifying ſprings have been diſcovered in the country adjacent to this village. One at Evan-bridge is equal in ſtrength to the wells at Harrowgate, but it has hitherto been entirely neglected.

The vicinity of Moffat is no leſs fruitful in remains of antiquity than in ſalubrious ſprings. Part of a Druidical temple is ſtill viſible cloſe to the bank of a rivulet which paſſes out of a ſmall lake, and falls into the water, deriving its name from the village. Near this ſpot are likewiſe veſtiges of a Roman road ; and ſeveral ſtations and encampments of that people. A piece of gold was found a few years ago in a moſs adjoining to the road, which is ſuppoſed to have formed part of ſome military ornament. Its outer edge was adorned with a border, in which were the following letters formed by cutting through the interſtices, IOV. AVG. VOT. XX. Veſtiges of a Britiſh encampment may be ſeen about three miles ſouth-eaſt from the village. On the road between it and the well is a large mound, of a conical form, with a very deep ditch round it: another of ſmaller dimenſions ſtands at the diſtance of a few hundred yards. A mile eaſt from the Roman road are two caves, cut out of free-ſtone rock; they are of a large ſize, but by whom formed, or for what purpoſe, it is difficult to conjecture. Many ruins of old towers are viſible in this pariſh, as well as in the adjoining one of Kirkpatrick-juxta; ſome of which are placed in ſmall encloſures, defended by walls and ditches. Among the more remarkable of the entrenched parks, as they are called, is the park of Achencaſs, where the walls meaſure 15 feet in thickneſs, and upwards of 20 in height.

According to the parliamentary returns of 1801, the reſident population of this pariſh amounted to 1619 perſons, *viz.* 748 males, and 871 females. Sinclair's Statiſtical Account of Scotland.

MOFFEN Island, in *Geography*, an iſland in the North ſea, N. of Spitzbergen; it is of a round form, about two miles in diameter, with a lake or large pond of water in the middle, and between this lake and the ſea the ground is from half a cable's length to a quarter of a mile broad: the whole iſland, beſides this pond, is covered with gravel and ſmall ſtones, without the leaſt verdure or vegetation of any kind. The navigators of the Carcaſs, who viſited this iſland, ſaw only one piece of drift wood, about three fathoms long, with a root on it, and as thick as the ſhip's mizen-maſt, which had been thrown up near the high part of the land, and lay upon the declivity towards the pond. They alſo ſaw there bears, and a number of wild ducks, geeſe, and other ſea-fowls, with bird's neſts all over the iſland. They found an inſcription over the grave of a Dutchman, who was buried there in July 1771. The tide ſeemed to flow eight or nine feet, and a current was found which carried the ſhip to the N.W. from the iſland, but which before carried it to the S.E., at the rate of a mile an hour, towards it. On the W. ſide is a fine white ſandy bottom, from two fathoms, at a ſhip's length from the beach, to five fathoms, at the diſtance of half a mile. It is remarked, as ſurpriſing, that no notice ſhould be taken of this iſland by the old navigators; unleſs it may be ſuppoſed that it did not then exiſt, and that the ſtreams from the great ocean up the W. ſide of Spitzbergen, and through the Waygat's ſhoals, meeting here, raiſed this bank, and occaſioned the quantity of ice that generally blocks up the coaſt in its vicinity. N. lat. 80° 5′. E. long. 12° 30′. Phipps's Voyage towards the North Pole.

MOFHAK, a ſmall town of Arabia, in the province of Yemen, ſituated on the ſummit of a ſteep hill. This town has a dola. The revenue of the town, and of the territory annexed to it, is enjoyed by one of the Imam's ſons. Mofhak lies in the route from Sana to Beit el Fakih.

MOGADOR, or Mogodor, called alſo by the Moors *Suera,* a town of Morocco, in the province of Hea, which received its name from a ſaint, held here in great veneration, by the name of Sidi Mogodor, whoſe tomb is to be ſeen at a ſmall diſtance to the ſouth of the town. It had formerly a wretched caſtle, built by the Portugueſe, to preſerve a communication with their ſettlements to the ſouth of this coaſt; and alſo to protect the entrance of a harbour, formed by a channel between the main land and a ſmall iſland. The ſituation appearing favourable for a place of trade, the emperor reſolved to found a city here; and the wealthier Moors began to build houſes, to gratify the wiſhes of their ſovereign. Foreign merchants were invited to do the ſame; and with a view of inducing them to comply with the emperor's wiſhes, large abatements were offered in the cuſtom duties; but promiſes to this purpoſe were not very ſcrupulouſly obſerved. This city was begun in 1760, and has ſince been completely finiſhed. It contains a great number of houſes, handſomely and ſolidly conſtructed. The ſtreets are all ſtraight lines, and there is no town in the empire in which a regularity of plan is ſo ſtrictly obſerved. It is ſurrounded with walls, and batteries are erected, not only on the ſea-ſide, but towards the land, to defend it from any incurſion of the ſouthern Moors. The emperor has brought all the European merchants to ſettle at Mogodor, and, notwithſtanding its diſtance from Europe, it is the only port on the coaſt which maintains a continual commercial intercourſe with that quarter of the world. This city ſtands on marſhy ground, and ſo low, that, at ſpring-tides, it is almoſt ſurrounded by the ſea. The country about it is a melancholy deſert of accumulated ſand. The Europeans, however, have the advantage of a more eaſy communication with the ſouthern provinces, which, by exchanging their productions for the commodities of Europe, render the trade of this place very flouriſhing. The port of Mogodor is formed by a channel between the main land and an iſland more than a mile in length. The entrance of this channel is to the north-weſt, and its outlet to the ſouth. It is ſufficiently large for ſhips of a middling ſize, but in general it has not ſufficient depth; and this diſadvantage is daily increaſed by the accumulation of ſand. The number of ſhips which have been loſt in this port in winter, by violent ſtorms from the ſouth-weſt, ſufficiently prove how very dangerous it is in bad weather; 80 miles S.W. of Morocco. N. lat. 31° 30′. W. long. 9° 30′. Chenier.

MOGADOURO, a town of Portugal, in the province of Tras-los-Montes; 22 miles S.W. of Miranda di Duero.

MOGAMI, a town of Japan, in the iſland of Niphon; 110 miles N. of Jedo.

MOGANOOR, a town of Hindooſtan, in Bahar; 11 miles S. of Namacul.

MOGARO, an iſland in the gulf of Venice, near the coaſt of Friuli. N. lat. 45° 47′. E. long. 31°

MOGATA, a town of Sweden, in Eaſt Gothland; 7 miles E. of Soderkioping.

MOGGIO, in *Commerce,* an Italian corn meaſure, which at Florence contains 8 ſacchi, or 24 ſtaja; the ſtajo being 4 quarti, 16 metadeli, or 32 mezzete: the moggio contains about 16 Engliſh buſhels. At Leghorn, a moggio contains 2 rubbi, or 7½ ſacchi; a ſacco, 3 ſtaja, or 384 buſſoli. A ſacco of good wheat weighs about 168 lb. of Leghorn, and contains 3720 French, or 4503 Engliſh cubic inches; ſo that 43 ſachs of Leghorn are equal to 90 Engliſh buſhels. See Tab. XXXI. under the article Measure.

MOGGURAH, in *Geography,* a town of Bengal; 8 miles N.W. of Goragot.

MOGHOSTAN, the denomination by which the ſouthern part of the province of Kerman, in Perſia, is diſtinguiſhed.

MOGILEV, a town of Ruſſia, and capital of a government, on the river Dnieper. The town is handſome and commercial, and a place in which the Ruſſians carry on a conſiderable trade. It was taken from the Ruſſians by the Poles in 1662; and by the diviſion of Poland, in the year 1773, it was ceded to Ruſſia, with its territory, and erected into an archbiſhopric of the Roman church, with an aſſiſtant biſhop; 340 miles E.N.E. of Warſaw. N. lat. 53° 52′. E. long. 30 14′.

MOGILEVSKOE, a government of Ruſſia, bounded on the north by the government of Polotſk, on the north-eaſt by that of Smolenſk, on the ſouth-eaſt by that of Novgorod Sieverſkoe, on the ſouth by that of Tchernigov, and on the weſt by Poland; about 176 miles in length, in its wideſt breadth 120, in the north part 68, and in the ſouth only 24. N. lat. 52° to 55°. E. long. 29° to 33°.

MOGILNICA, or MOULNICZA, a town of the duchy of Warſaw; 36 miles E. of Rawa.

MOGIMERI, a town of Brazil, in the government of St. Paul; 35 miles E. of St. Paul.

MOGLA, or MULLA, a town of Aſiatic Turkey, and principal place of a Sangiacat, in Natolia, on the ruins of the Alinda; 100 miles S.E. of Smyrna. N. lat. 37° 8′. E. long. 28° 22′.

MOGLE, a town of Boſnia; 35 miles E. of Banjaluka.

MOGNA, a town of Italy, in the Feltrin.

MOGO, a town of Perſia, in Lariſtan, on the coaſt of the Perſian gulf; 40 miles W. of Lundsje.

MOGONTUEVSKOI, a town of Ruſſia, in the government of Irkutſk, on the borders of China; 60 miles S.S.E. of Doroninſk.

MOGORIN, in *Botany*, a name given by the Portugueſe to an Indian or Chineſe flower, growing on a ſmall ſhrub. It is of a wonderful white colour, and not unlike the *ginſeng*, only that it abounds more with leaves, and ſmells much ſweeter; one ſingle flower filling a whole houſe with its odoriferous effluvia. On this account the Chineſe put a high value upon it, and carefully defend the ſhrub it grows on from the inclemency of the winter, by covering it with vaſes provided on purpoſe.

MOGORIUM, a name of barbarous origin, applied by Juſſieu, *Gen.* 106, to ſuch of the Linnæan ſpecies of *Nyctanthes*, as have a pulpy fruit, the calyx and corolla of ſuch being preſumed to have at leaſt eight diviſions; and the real *Nyctanthes*, being agreed to have a dry capſular fruit, beſides other marks of diſtinction. Sir Joſeph Banks and Dr. Solander have referred all the above-mentioned ſpecies to JASMINUM, (ſee that article,) in which they have been followed by Vahl and Willdenow. The meaſure is juſtified by the variableneſs of number in the parts of theſe flowers, even on the ſame individual plant, and the ſtrong generic affinity between them all, independent of number. Such as have naturally a five-cleft flower, very commonly acquire one, two, or three additional ſegments; and thoſe which have naturally eight, as *J. Sambac*, are liable to have twelve or more, without any obliteration of their organs of impregnation. When the latter takes place, the diviſions of the corolla become greatly multiplied, as in other common inſtances.

MOGRABIANS, MOGARBA, or *Men of the Weſt*, in *Military Language*, a name given to the infantry of the Turks, compoſed of the peaſants of Tunis, Algiers, and Morocco, who have thought proper to ſeek in Syria and in Egypt that reſpect which is denied them in their own country. All the accoutrements and baggage of theſe ſoldiers are confined to a ruſty firelock, a large knife, a leathern bag, a cotton ſhirt, a pair of drawers, a red cap, and ſometimes ſlippers. Their pay is 5 piaſtres (about 10*s.* 10*d.*) *per* month, out of which they are obliged to furniſh themſelves with arms and clothing. They are maintained at the expence of the pacha, &c.

MOGUAR, in *Geography*, a town of Spain, in the province of Seville, at the mouth of the Tinto; 43 miles W. of Seville. N. lat. 37° 12′. W. long. 6° 58′.

MOGUL EMPIRE, in an extenſive ſenſe, denotes that empire of Aſia, over which Tamerlane and his immediate ſucceſſors reigned, and in which India was not included; but in a more reſtricted ſenſe, it ſignifies, as cuſtom has in later times appropriated the name, that empire which was held by the deſcendants of Tamerlane in Hindooſtan and the Deccan. The origin of the Mogul empire is ſo far remote, that it is difficult to diſtinguiſh between fabulous tradition and the records of authentic hiſtory. It probably aroſe from ſmall beginnings, and extended itſelf by the conqueſts of ambitious princes. It appears, however, to have been of very limited extent, if indeed it exiſted at all under this appellation, when Temujin, better known under the name of Jenghiz Khan, or Gengiz Cawn, made his appearance. The birth of this conqueror is referred to the year 1163; and at the time of his father's death, his ſubjects are ſaid to have amounted to between 30,000 and 40,000 families: but a majority of theſe revolted, and in the earlier part of his life and reign he was left almoſt without any ſubjects. He roſe, however, into notice and power, under the protection of Vang Khan, who was ſovereign of a conſiderable number of Tartar tribes, ſituated to the north of Kitay, or China, and who has been known among Europeans by the name of Preſter John. Thus encouraged and aided, he ſubdued thoſe ſubjects who had revolted in the year 1201, and was able to keep poſſeſſion of his throne. It was not long, however, before Vang Khan became jealous of the growing power, and perhaps manifeſt ambition, of Temujin, whom he had made his general; ſo that he contrived treacherous meaſures for deſtroying a prince, whom he conſidered as his rival. This diſagreement terminated in an open war, which Temujin proſecuted with ſucceſs. Vang Khan was defeated in a battle, by which he loſt 40,000 men; and ſoon after was ungenerouſly put to death by the father-in-law of Temujin, to whom he had fled for refuge. The conqueror ſeized on the dominions of the vanquiſhed Khan, and rapidly extending his marches and victories, reduced all the Mogul tribes in the year 1205. In a diet, held in the ſpring of the following year, to which all the great lords both of the Moguls and Tartars were ſummoned, the Mogul empire was confirmed to him and his ſucceſſors, together with thoſe kingdoms which he had ſubdued, and he was ſolemnly proclaimed emperor. During his inauguration, a prophet is ſaid to have appeared in the aſſembly with a divine meſſage, declaring that from this time Temujin ſhould aſſume the name of "Jenghiz Khan, or the moſt great khan of khans;" and at the ſame time predicting, that his poſterity ſhould be khans from one generation to another. Thus eſtabliſhed on the throne, and held in the moſt profound veneration by his ſubjects, he projected the extenſion of his dominions by more conqueſts. He began with the emperor of Hya, the weſtern part of the empire of Kitay, and in 1209 compelled him to become his tributary: and when, in 1210, an acknowledgment of his being tributary to the emperor of Kitay was demanded of him, he reſiſted the demand, the conſequence of which was a war, that terminated in the diſſolution of the Kitay empire. In the year 1216 he reſolved to carry his arms weſtward, and, in his progreſs, defeated an army of 300,000 Tartars, who had revolted; and in 1218 he deputed ambaſſadors to expreſs his deſire of an alliance with Mohammed Karazm (Charaſm) Shah, emperor of Gazna or Ghizni. Although the alliance was concluded, it was ſoon treacherouſly violated; and this event occaſioned a war, which in 1221 accompliſhed the conqueſt of the empire of Ghizni, and thus terminated the dynaſty of Charaſm. Jenghiz Khan, however, left Hindooſtan undiſturbed. After the reduction of Charaſm, ſome of the Moguls marched into Iran or Perſia, where they made extenſive conqueſts; and others invaded Georgia, and the countries lying weſt of it, committing in their progreſs the moſt atrocious enormities. In 1225 Jenghiz Khan returned to Hya, ſlew the emperor, and deſtroyed the country. But this was the laſt exploit of this ambitious and ſavage conqueror, who died in 1227, as he was marching to complete the deſtruction of the Chineſe. At the death of Jenghiz Khan, the Mogul empire extended over a prodigious tract of country; being, as it has been ſaid, more than 1800 leagues in length from eaſt to weſt, and upwards of 1000 in breadth from north to ſouth. The ſucceſſors of Jenghiz Khan, urged by an inſatiable ambition, purſued the ſame plan of conqueſt; ſo that Oktay was acknowledged emperor after Jenghiz, and had under his immediate government Moguleſtan, or the country of the Moguls properly ſo called, Kitay, and the countries to the eaſt of the Tartarian ſea. His brother Jagaty governed under him a great part of the weſtern conqueſts. The country of the Kipjacks, and others to the eaſt and north-eaſt, north and north-weſt, were governed by Batu or Patu, the ſon of Juji, who had fallen in the wars; while Tuli or Tolay, another ſon of Jenghiz Khan, had poſſeſſion of Khoraſan, Perſia, and that part of India which had been conquered. On the eaſt ſide the Mogul arms prevailed, and ſubdued not only the empire of Kitay, but the ſouthern part of China. In the year 1254, Magu, or Menkho, the fourth khan of the Moguls, raiſed a large army, and gave the command of it to his brother Hulaku, or Hulagu, for the purpoſe of extending his dominions towards the weſt. With this army, in 1255, he invaded Iran, ſuppreſſing the Iſmaelians or Aſſaſſins; and two years afterwards he advanced to Bagdad, which he captured. Cruelty and devaſtation marked the footſteps of the Moguls; fire and ſword were the implements of their warfare; and it is ſaid, that in Bagdad, and its vicinity, the number of ſlain amounted to 1,600,000. In the following year he invaded Syria, took poſſeſſion of Damaſcus without reſiſtance on the part of the inhabitants, whoſe lives were therefore ſpared; and having captured Aleppo by ſtorm, murdered the inhabitants, without ſparing even the children in their cradles. Theſe cities, which in the ſucceeding year revolted, were again taken by the Moguls and plundered, and the inhabitants were either ſlaughtered without mercy, or carried into ſlavery. Hulaku died in 1264; and at the time of his deceaſe we may fix the greateſt extent of the Mogul empire. It comprehended the whole of the continent of Aſia, excepting part of Hindooſtan, Siam, Pegu, Cochinchina, and a few of the countries of Leſſer Aſia, which the Moguls had not attacked. From this period, however, this vaſt and overgrown empire began to decline. The ambitious khans failed in their attempts upon Japan and Cochinchina, and alſo upon Hindooſtan; and the empire itſelf was divided into ſeveral ſmaller partitions. The governors of Perſia, being of the family of Jenghiz Khan, owned no allegiance to any ſuperior; thoſe of Tartary purſued the ſame courſe; the Chineſe threw off the yoke: and thus the continent of Aſia aſſumed, in a great degree, the ſame aſpect which it had before Jenghiz Khan began his conqueſts. At length, in the year 1369, Timur Bek, or Tamerlane, one of the petty princes of this broken empire, having conquered a number of others, was crowned at Balk, with the pompous title of "Sakeb Karan," *i. e.* the emperor of the age and conqueror of the world. He began his reign with the exerciſe of various cruelties.

In 1370, Timur croſſed the Sihon, made war on the Getes, and attacked Charaſm. In 1379 he had fully conquered the country of the Getes, as well as Khoraſan; and from that time he purſued his conqueſts, as Jenghiz Khan had done, though with leſs cruelty. In 1387, he had reduced Armenia, Georgia, and the whole of Perſia; the conqueſt of which laſt country was completed by the reduction of Iſpahan; 70,000 of the inhabitants of which city were ſlaughtered on account of the ſedition of ſome diſaffected perſons. After the reduction of Perſia, Timur turned his arms northward and weſtward, ſubduing all the countries as far as the Euphrates. He took the city of Bagdad; reduced Syria; and having ravaged a great part of Ruſſia, returned in 1396 to Perſia, where he made a ſplendid feaſt for his whole army. After ſeveral irruptions which had been made by the Moguls into Hindooſtan, after the death of Jenghiz Khan, Timur, who had already extended his empire over all the weſtern Aſia and Tartary, turned his arms towards this country in 1398. In the preceding year he had ſent his grandſon Peer Mahomed to reduce the Panjab and Moultan, and in October croſſed the Indus himſelf; and joining his grandſon near Moultan, his army proceeded in different diviſions to Delhi, which ſubmitted without what may be properly termed a battle. The maſſacres and exterminations that ſucceeded his taking poſſeſſion of the city, were executed under his immediate direction; and juſtly entitled him to the appellation of the "deſtroying prince." Timur ſtaid in Delhi only 15 days; and then appears to have been on his return to the ſeat of his empire, when, hearing of a fortreſs in the Dooab that had reſiſted the arms of a former Mogul invader, he marched towards it and took it. From thence he proceeded to the place where the Ganges iſſues out of the mountains, and where the Hindoos reſort at certain ſeaſons, in vaſt numbers, to pay their adorations to, and to purify themſelves in, that ſacred ſtream. His object was the extermination of theſe inoffenſive people; and he partly ſucceeded. From this place, turning to the N.W., along the foot of mount Sewalick, he continued his maſſacres, though not without oppoſition, until he arrived on the frontiers of Caſhmere. He ſpent little more than five months, between the time of his croſſing and recroſſing the Indus, and in doing this he paid greater attention to the ſeaſons than Alexander had done. Timur, however, may be ſaid rather to over-run than to conquer or ſubject; for he did not diſturb the order of ſucceſſion in Hindooſtan, but left Mahmood on the throne; reſerving to himſelf the poſſeſſion of the Panjab country only; which his ſucceſſors did not long retain. His views were at this time directed towards the Turkiſh empire; and this circumſtance induced him to neglect India, which did not promiſe ſo plentiful a harveſt of glory as the other. During his life, which terminated at Samarcand in the year 1405, he was prayed for in the moſques of Hindooſtan, and the coin was ſtruck in his name; but this might be more the effect of policy in the uſurpers of Mahmood's throne than the act of Timur. On Timur's death his empire fell into great diſorder, and was diſtracted by civil wars, till at length peace was reſtored by the ſettlement of Shah Rukh, Timur's ſon, on the throne. The empire ſubject to his dominion was much reduced; Charaſm, Khoraſan, Candahar, Perſia, and part of Hindooſtan being the countries of which it conſiſted. By him his dominions in this reduced ſtate were tranſmitted to his ſon Ulug Beg, well known by his aſtronomical tables. A ſucceſſion of princes filled up the interval till the death of Abuſaid Mirza, a lineal deſcendant of Timur. From this time we may conſider the empire of Timur as diſſolved, though his deſcendants ſtill reigned in Perſia and Hindooſtan.

The conqueſt of Hindooſtan was effected by Sultan Baber, a deſcendant of Timur or Tamerlane, and Jenghiz Khan. This prince reigned over a kingdom compoſed generally of the provinces ſituated between the Indus and Samarcand. Being diſpoſſeſſed of the northern part of his dominions by the Uſbecs, he determined to try his fortune in Hindooſtan, whoſe diſtracted ſtate under Ibrahim II. in 1516, encouraged his hopes of conqueſt. His firſt expedition from Cabul, where he reſided, acroſs the Indus, was undertaken in 1518; this was ſucceeded by four others; and in the fifth (A.D. 1525), he defeated the emperor of Delhi, and put an end to the dynaſty of Lodi. He reigned only five years in Hindooſtan, chiefly employing himſelf in the reduction of the eaſtern provinces. It was in the perſon of Baber that the line of Tamerlane firſt mounted the throne of Hindooſtan; and it was in that of Acbar, his grandſon, that it was eſtabliſhed. The conqueſt of their anceſtor, about a century and a half before, had no ſhare in effecting the preſent ſettlement. Baber was, in reality, the founder of the Mogul dynaſty; and from this event Hindooſtan derived the appellation of the "Mogul empire." The princes of the houſe of Timur have ſince their firſt eſtabliſhment on the throne eagerly purſued the conqueſt of the Deccan, not conſidering that this region, which poſſeſſed ample reſources within itſelf, and innumerable advantages in point of ſecurity from an enemy without, was alſo ſituated at ſuch a diſtance from the capital, as to hold out to its viceroy the temptation of independence whenever a favourable opportunity offered. Perhaps, ſays major Rennell, if the Deccan had been originally left to itſelf, the poſterity of Timur might ſtill have ſwayed the ſceptre of Hindooſtan. In proceſs of time the Mogul empire became merely nominal; and the emperors were regarded as of no political conſequence, otherwiſe than as their names and perſons are made uſe of by different parties to forward their own views. The Mogul empire attained its full meaſure of extent under the reign of Aurungzebe, ſee his article. In this empire many parts of it were 1000 miles diſtant from the ſeat of government; and accordingly its hiſtory is one continued leſſon to ſovereigns, not to graſp at too much dominion, and to mankind to circumſcribe the undertakings of their rulers. Rennell's Memoirs, Introd. See Deccan, Delhi, and Hindoostan. See alſo Mongoles.

MOGULISTAN, or Mogolistan, the country of the Mogul Tartars. In a larger ſenſe, this term comprehends the whole of Tartary, from the Caſpian to the North Atlantic; but, in a more reſtricted ſenſe, to an extenſive tract of country between Bucharia and China, north of Thibet. See Mogul *Empire* and Mongoles.

MOGULMARY, a town of Bengal; 18 miles S. of Burdwan.

MOGULPOUR, a town of Hindooſtan, in the circar of Schaurunpour; 36 miles S.S.W. of Schaurunpour.

MOGULPURRAH, a town of Hindooſtan, in Bahar; 18 miles N.N.W. of Bahar.

MOGULS. See Mongoles.

MOGULSERAI, a town of Hindooſtan, in Benares; 10 miles S.E. of Benares.—Alſo, a town of Hindooſtan, in the circar of Sirhind; 15 miles N.N.E. of Sirhind.—Alſo, a town of Hindooſtan, in the country of Agra; 24 miles N.N.W. of Kerowly.

MOGURANI, a town of Walachia; 48 miles N. of Buchareſt.

MOGWITZ, a town of Sileſia, in the principality of Neiſſe; 6 miles N.N.E. of Ottmuchau.

MOGYESZO, a town of Hungary; 12 miles W. of Tokay.

MOHACS, a town of Hungary, on the Danube; 56 miles W. of Zegedin. N. lat. 46° 2′. E. long. 18° 44′.

MOHADAN, Al, a town of Arabia, in the province of Hedsjas; 80 miles E. of Madian.

MOHADY, a town of Hindooſtan, in Berar; 31 miles E.N.E. of Nagpour.

MOHAIR, in *Commerce*, the hair of a kind of goat, frequent about Angora in Turkey; the inhabitants of which city are all employed in the manufacture of camblet made of this hair. See Camblet and Capra *Angorenſis*.

Some give the name mohair to the camblets or ſtuffs made of this hair: of theſe there are two kinds; the one ſmooth and plain; the other watered like tabbies: the difference between the two only conſiſts in this, that the latter is calendered, the other not. There are alſo mohairs both plain and watered, whoſe woof is of wool, cotton, or thread.

Mohair-*Shell*, in *Natural Hiſtory*. See Moire.

MOHANG-LENG, in *Geography*, a town of the kingdom of Laos, ſo called by the Chineſe; *Mohang*, in the language of the country, ſignifying town. It is of conſiderable extent, but only encloſed with a paliſade; on the weſt are large foreſts and ſeveral rivers. This city ſtands on both ſides of a river, called Meinam Tai, which, by the Chineſe accounts, joins the river of Siam. Fiſh is rare, but buffalo and veniſon are common in the markets.

MOHANOO, a town of Hindooſtan, in the circar of Chanderee; 33 miles W. of Chanderee.

MOHASSIL, formerly called "Diſterdar," an officer at Aleppo, is reckoned the ſecond perſon of the city in the civil line, and, on the demiſe of the baſhaw, is by the Divan uſually appointed Mutſillem, or temporary governor, till orders come from the Porte. He is farmer-general of the land-tax, the cuſtoms, and the capitation tax; on which account he is obliged to retain a number of ſubordinate officers diſperſed in the province, and to perform conſiderable buſineſs. He exerciſes a limited judicial power in matters of revenue, and has a priſon in his own palace. The Mohaſſil's influence is conſiderable: he lives ſplendidly, and is much courted by the agas or land-renters, as well as by the merchants. He is, from his office, one of the members of the Divan, or council.

MOHAUN, a town of Hindooſtan, in Oude; 15 miles N. of Lucknow.

MOHAWK Bay, a bay in Frederickſburg, Upper Canada, which lies oppoſite to Mohawk's ſettlement, and cloſe to the mouth of the river Apannac.

Mohawk *River*, a river of New York, which riſes to the northward of Fort Stanwix, about eight miles from Black or Sable river, a water of lake Ontario, and runs ſouthwardly 20 miles to the fort, then eaſtward 110 miles, and after receiving many tributary ſtreams, falls into Hudſon's river, by three mouths, oppoſite to Lonſinburgh and Troy, from ſeven to ten miles N. of Albany. This fine river is navigable for boats from Schenectady, nearly or quite to its ſource; and the opening of this navigation by means of the locks and canals round the Little Falls, completed in 1795, is very advantageous to the commerce of the ſtate. A ſhore of at leaſt 1000 miles in length is thus waſhed by boatable waters, excluſive of all the great lakes; and many millions of acres of excellent tillage land, rapidly ſettling, are accommodated with water communications for conveying their produce to market. The intervals on both ſides of this river, of various widths, are ſome of the richeſt and beſt lands in the world; and are diſtributed into farms, which are occupied and cultivated principally by Dutch people, whoſe agricultural practice admits of great improvement, as they neglect to employ the manure of their barns in the culture of their land. The banks of this river were formerly thickly ſettled with Indians; and at the period when Albany was firſt ſettled, it is ſaid that at Schenectady there were 800 warriors, and that 300 warriors ſubſiſted within a ſpace now occupied by a ſingle farm. About three miles from its entrance into the Hudſon, the river is about 1000 feet wide; the rock over which it pours, as over a mill-dam, extends from S.W. to N.E. almoſt in a line from one ſide of the river to the other, and is about 40 feet in perpendicular height, and including the deſcent above, the fall is as much as 60 or 70 feet. About a mile below the falls is a handſome bridge; and immediately below the bridge the river divides into three branches, which form ſeveral large iſlands.

Mohawk, or *Cookquago*, a branch of Delaware river, which, after it mingles with the Popachton branch, is called Delaware.

Mohawk, formerly a town on the S. ſide of the river of the ſame name, in Montgomery county, New York, ſituated in a very fertile country. It was abandoned by the Mohawk Indians in 1780.

Mohawks, an Indian nation, acknowledged by the other tribes of the Six Nations to be the true old heads of the confederacy. They were formerly very powerful, and had their habitation on Mohawk river. As they were ſtrongly attached to the Johnſon family, a part of them emigrated to Canada with ſir John Johnſon as early as the year 1776. About 300 of this nation now reſide in Upper Canada.

Mohawk *Settlement* is in the bay of Quinti, Upper Canada, W. of Richmond, and comprehended between the river Shannon and Bowen's creek.

Mohawk *Village*, on the Grand river, or Ouſe, in Upper Canada, is the principal village of the Six Nations, in the tract purchaſed from the Miſſaſſaga nation, by his preſent majeſty, on account of their loyalty and attachment during the late revolution, in which they loſt their poſſeſſions on the Mohawk river. This tract is 100 miles long, and 12 wide, interſected by Grand river, from its mouth in lake Erie upwards. The village is beautifully ſituated, has a neat church with a ſteeple, a ſchool-houſe, and a council-houſe; and not far from it a griſt and a ſaw-mill. Theſe buildings have for the moſt part been erected by government, which pays a miller, ſchoolmaſter, and blackſmith, for their ſervices at the village; and the ſociety for propagating the goſpel makes an allowance to a clergyman of the eſtabliſhed church for occaſional viſits to theſe tribes. The liturgy of the church of England has been tranſlated into the Mohawk language, and printed for the uſe of the Six Nation Indians. In 1800, this nation, the Seneca and Oneida pagans, revived their cuſtom of ſacrificing white dogs to their gods, which had been neglected for 30 years, under a notion that the neglect of this ſacrifice had been one cauſe of their various misfortunes.

Mohawks' *Corn*, in *Botany*, a name given by the Indians to a peculiar ſort of the maize, or Indian corn. It is moſt frequent in the more northerly parts of America. The general time of ſowing the maize in Virginia and other places, is in the end of April; but this mohawk kind need not be ſown before June, and yet will come well to maturity before the winter. The ſtalks of this kind are ſhorter than thoſe of the common ſort. The ears alſo are ſhorter and grow nearer the ground, and the corn is generally of various colours. Phil. Tranſ. N° 142.

Mohawk. See Mock.

MOHAWRY, in *Geography*, a town of Hindooſtan, in the circar of Chanderee; 45 miles W. of Chanderee.

MOHEGAN, a place ſituated between Norwich and New London, in Connecticut, in America; which is the reſidence of the remaining few of the Mohegan tribe of Indians. A conſiderable part of this ſmall number removed lately to Oneida, with the late Mr. Occom.

MOHELNO, a town of Moravia, in the circle of Znaym; 24 miles N. of Znaym.

MOHERNANDO, a town of Spain, in New Caſtile; 10 miles N. of Guadalajara.

MOHERRY, a town of Hindooſtan, in the circar of Cicacole; 20 miles S.W. of Ganjam.

MOHGONG, a town of Hindooſtan, in the circar of Ruttunpour; 16 miles S.E. of Dumdah.

MOHICCONS, a tribe of Indians, whoſe habitations lie on a branch of the Suſquehannah, between Chagnet and Gwegy. Hutchins, ſome years ago, reckoned them at 100, but Imlay, in 1773, eſtimates them only at 70 fighting men. They were formerly a confederate tribe of the Delawares.—Alſo, an Indian tribe, in the N.W. territory, which inhabits near Sanduſky, and between the Scioto and Muſkingum: their warriors are reckoned to be 60.

MOHILA, one of the Comora iſlands, in the Indian ſea, between the iſland of Madagaſcar and the coaſt of Africa. It has a good road for ſhips, and it is ſaid to be fertile. It is governed by a ſultan, whoſe children ſhare his authority in different diſtricts of the iſland, bear the ſame appellation, and poſſeſs the ſame inſignia of ſtate, though they hold their power in ſubordination to him. The ſultan himſelf never appears in public, without being attended by 20 of the principal perſons of the iſland, and on ſuch occaſion his dreſs is a long robe of ſtriped calico, hanging from his ſhoulders to his feet, with a turban on his head. The people are alſo generally clad in the ſame manner, and are perpetually chewing the areca, or betle nut, like the Indians of the Eaſt, whoſe manners they greatly reſemble. S. lat. 12° 30′. E. long. 43° 50′.

MOHILL, a poſt-town of the county of Leitrim, Ireland; 78 miles W.N.W. from Dublin.

MOHILNA, a town of Poland, in Volhynia; 44 miles N. of Zytomiers.

MOHILOW, a town of Poland, in the palatinate of Braclaw; 60 miles S.W. of Braclaw.

MOHN, called by the Eſthonians "Muhoma," which literally ſignifies the land of boils or ſores, an iſland of the Baltic, ſeparated from the main land by a ſtrait, called the Great Sound, about two Swediſh miles over in its broadeſt part, and near a mile where it is narroweſt; the tranſport being made in ſummer by large boats, called Prames. Boats of a ſimilar kind paſs between Mohn and Oeſel, acroſs the Little Sound, which bears ſome reſemblance to a ſpacious haven. Mohn lies to the S.W. of Oeſel, forming a pariſh of itſelf, with its own church and preacher. Near the middle of the iſland, on an eminence, ſtands the church. Many of the boors live here comfortably; and having a little portion of foreſt, which, and alſo their hay fields, are incloſed by a wall of ſtones. As a ſhelter from ſtorms, to which theſe ſeas are ſubject, ſome have their houſes built in the midſt of theſe little thickets. Not only acorns and bilberries, but alſo wild nuts and crab apples grow here, of which laſt the boors make a tolerably well taſted cyder; and in the farms they uſe them alſo for ſwine-waſh. The circumference of the whole iſland meaſures about 95 verſts. The paſſage over the Great Sound in ſummer is made with oars in about four hours, but with a ſail and fair wind in leſs than two. To Mohn belong two ſmall iſlands; one lying towards the N., and quite uninhabited, is merely a hay-field for the boors of Mohn; the other lies nearly between Oeſel and Mohn in the Little Sound, and is occupied by three boors. On Mohn is a large ſtagnant lake, from which a canal has been made into the ſea. Tooke's Ruſſ. Emp. vol. i.

MOHO, a town of Peru, in the dioceſe of La Paz; 25 miles S.E. of Aſungaro.

MOHR, a town of Germany, in the county of Hoya; five miles W. of Hoya.

MOHRAU, a town of Sileſia, in the principality of Neiſſe, near a river of the ſame name; 28 miles S. of Neiſſe.

MOHRIA, in *Botany*, a curious genus of ferns, named by Dr. Swartz after his friend Dr. D. M. H. Mohr, of Kiel, the coadjutor of profeſſor Weber, in ſeveral excellent botanical publications, particularly reſpecting the claſs *Cryptogamia*. In theſe he has diſplayed great knowledge and application, though not without ſome inaccuracy, and rudeneſs, rather than acrimony, of criticiſm. Experience, and a naturally good diſpoſition, would gradually have overcome ſuch defects, while his ſcientific abilities would have rendered the moſt extenſive ſervices to botany, had not an early death diſappointed the hopes of his friends.—Swartz. Syn. Fil. 6. 159.—Claſs and order, *Cryptogamia Filices*. Nat. Ord. *Filices*. Linn. Juſſ.

Gen. Ch. *Capſules* ſeſſile, diſtinct, roundiſh, depreſſed, concentrically ſtriated, of one cell, burſting by a longitudinal fiſſure at one ſide, without any ſeparate ring, ſituated near the margin of the frond. *Seeds* numerous, roundiſh, minute. *Involucrum* from the crenate inflexed margin of the lobes.

Eſſ. Ch. Capſules near the margin of the frond, diſtinct, ſeſſile, concentrically ſtriated, without a ring, burſting longitudinally. Involucrum from the crenate inflexed margin.

1. M. *thurifraga*. Incenſe-fern. Swartz. Syn. Fil. 159. 385. t. 5. (Polypodium caffrorum; Linn. Mant. 307. Adiantum caffrorum; 447. Oſmunda marginalis; Lamarck Dict. v. 4. 655. O. thurifera; Swartz in Schrad. Journ. for 1800. 105. Filicula æthiopica, denticulatis pinnulis, averſâ parte, Aſplenii ritu, villoſâ lanugine tectis, pediculo ſplendente nigro; Pluk. Mant. 77. t. 150. f. 3.)—Gathered by Koenig at the Cape of Good Hope; by Sonnerat, as well as Commerſon, in the iſle of Bourbon. The *roots* conſiſt of many long, branched, blackiſh, hairy fibres. *Fronds* in denſe tufts, near a ſpan high, bipinnate, denſely clothed beneath with imbricated, taper-pointed ſcales, as are alſo the *ſtalks* in ſome degree. *Leaflets* of the barren fronds roundiſh or ovate, ſharply pinnatifid; thoſe of the fertile fronds, which are conſiderably taller, ovate, obtuſe, deeply and bluntly lobed, their edges, or terminations of the lobes, inflexed over the *capſules*, which are each the ſize of the ſmalleſt pin's head, ranged in a ſimple row, at a little diſtance from the margin of the leaflet. There are generally two *capſules* under each ſegment of the leaflet. The ſmell of the recent fern is ſaid to reſemble that of incenſe, or gum benzoin; hence the French in the iſle of Bourbon term it *la feuille d'encens*.

We cannot trace the error of Dr. Swartz's citation of Lamarck. His miſquotation of Plukenet could not, on account of the confuſed arrangement of this author's book, be, without great care, avoided; but we truſt our correction is right.—This genus differs from *Oſmunda* in the ſtructure as well as ſituation of its capſules, and is unqueſtionably very diſtinct from that and all others.

MOHRIN, in *Geography*, a town of Brandenburg, in the New Mark; 20 miles N. of Cuſtrin. N. lat. 52° 54'. E. long. 14° 31'.

MOHRUNGEN, a town of Pruſſia, in the province of Oberland, ſituated on a lake of the ſame name, which almoſt ſurrounds it; 55 miles S.S.W. of Königſberg. N. lat. 53° 31'. E. long. 19° 51'.

MOHUN, a town of Hindooſtan, in the circar of Kitchwara; 10 miles S. of Budawar.—Alſo, a town of Hindooſtan, in Oude; 16 miles N E. of Cawnpour.

MOHUNGUR, a town of Hindooſtan, in the circar of Gohud; 18 miles S.W. of Narwa.

MOHUR, in *Commerce*, a coin in the Eaſt Indies. Gold mohurs, ſometimes called gold rupees, are ſtruck at the mint of Calcutta, as well as Sicca rupees, called ſilver rupees; 16 of the latter are, by regulation, to paſs for one of the former. The value of the gold mohurs has undergone conſiderable variations at different periods. At preſent the weight of the mohur is 13.28 maſſa, or 190,894 grains, and its fineneſs $23\frac{2}{2}^{1}$ carats, containing 189.462 grains of fine gold; and it is, therefore, worth 1*l.* 13*s.* 6½*d.* ſterling. At Madras, the mohurs, or gold rupees of Bengal, occaſionally paſs for four ſtar pagodas. (See PAGODA.) At Bombay, the gold mohur paſſes in account for 15 rupees. In 1774 the coin, called the gold mohur, or gold rupee, was ordered to be made of the ſame weight as the ſilver rupee, and to be equal in fineneſs to a Venetian ſequin; ſo that the proportion of gold to ſilver in the Bombay coins was nearly as 15 to 1. Afterwards this proportion ceaſed; and gold, coined according to the regulation of 1774, exchanged for only 13 times its weight of ſilver. Accordingly, in order to remedy this, it was ſettled in 1800, that the mohur ſhould be of the ſame weight and fineneſs as the ſilver rupee; and that it ſhould paſs for 15 ſuch rupees.

The following TABLE ſhews the Aſſay, Weight, Contents, and Value of the Eaſt Indian Mohurs.

	Aſſay.		Weight.			Contents in pure Gold.	Value in Sterling.		
	car.	gr.	oz.	dwt.	gr.	Grains.	£	*s.*	*d.*
Mohur, or gold rupee of Shah Allum, 1770	1	2¾	0	7	22¼	186.8	1	13	0¾
Mohur of the ſame, 1787 - - -	1	2¾	0	7	23	188.5	1	13	4½
Half mohur of the ſame, 1787 - -	1	2½	0	3	23½	94.	0	16	7½
Quarter mohur of the ſame, 1787 - -	1	2½	0	1	23¾	47.	0	8	3¾
Sicca gold mohur of Bengal, dated 19th June, 1789	1	3⅜	0	7	23	189.7	1	13	7
Old Bombay mohur ſtill in circulation -	0	3½	0	7	10⅓	170.	1	10	1
Surat mohur, of the lateſt coinage - -	0	0½	0	7	11	165.	1	9	2½
Tippoo's gold rupee - - - - -	1	2	0	8	20½	181.5	1	12	1¼
Mohur, of the Dutch E. I. Company, 1783	3	3¼	0	10	2	181.5	1	12	1½
Ditto - - - 1797	4	1	0	9	20	174.5	1	10	10½
Half ditto - - - 1801	3	1¼	0	5	3½	96.2	0	17	0¼

Kelly's Univ. Cambiſt.

MOHURBUNGE, a province of Hindooſtan, S.W. of Bengal.

MOHYLNA, a town of Lithuania, in the palatinate of Minſk; 36 miles S.S.W. of Minſk.

MOIA, a town of Naples, in Principato Citra; 18 miles S.S.W. of Cangiano.

MOJABRA, a town of Africa, in Tripoli; 10 miles E. of Augela.

MOJAN, an iſland in the Baltic, belonging to Sweden. N. lat. 39° 22′. E. long. 18° 45′.

MOJARA, a town of South America, in the province of Tucuman; 18 miles N. of St. Salvador de Jugui.

MOIDENA, a town of Bengal; 20 miles S. of Kiſhenagur.

MOIDORE, Moeda, or *Liſbonnine*, in *Commerce*, an old gold coin, ſtruck and formerly current in Portugal.

The moidore and its diviſions are reckoned by the *ree*; which ſee.

The gold pieces coined in Portugal before the year 1722, are now, on account of the ſignorage and the riſe in the price of gold, 20 *per cent.* higher than their original value: thus, the old dobras, coined at 20,000 rees, are worth 24,000: the Liſbonnines or moidores, coined at 4000 rees, are worth 4800; and the halves and quarters in proportion; but few of theſe coins are now in circulation. The gold coins ſtruck ſince 1722, are the dobra, of 12,800 rees; the meia dobra, Joaneſe, or Portugal piece, of 6400 rees; the half Joaneſe, of 3200; the dezeſeis teſtoons, of 1600; the quartinho, of 1200; the oito teſtoons, of 800; the old cruſado, of 400, now very ſcarce, and the new cruſado, of 489 rees.

The Aſſay, &c. of Portugal Coins, will appear in the following Table.

	Aſſay.		Weight.			Contents in pure Gold.	Value in Sterling.		
	car.	gr.	oz.	dwt.	gr.	Grains.	£	s.	d.
Dobraon of 24000 rees - - - -	Standard		1	14	12	759.	6	15	0
Meio dobraon of 12,000 rees - - -	Ditto		0	17	6	379.5	3	7	6
Dobra of 12,800 rees - - - -	Ditto		0	18	6	401.5	3	11	0¾
Joaneſe of 6400 rees - - - -	0	0¼	0	9	6½	203.	1	15	11¼
Half Joaneſe of 3200 rees - - -	0	0¼	0	4	15	101.5	0	17	11¾
Moidore, or Liſbonnine (½, &c. in proportion)	Standard		0	6	22	152.2	1	6	11¼
Piece of 16 teſtoons, or 1600 rees - -	0	0⅜	0	2	6	49 3	0	8	8¾
Piece of 12 teſtoons, or 1200 rees - -	0	0¾	0	1	16¼	36.7	0	6	6
Piece of 8 teſtoons - - - -	0	0⅜	0	1	4½	25.9	0	4	7
Old cruſade of 400 rees - - -	0	0½	0	0	15	13.6	0	2	5
New cruſade of 480 rees - - -	0	0⅛	0	0	16¼	14.7	0	2	7
Milrea, coined for the African colonies, 1755	Standard		0	0	19¾	18.1	0	3	2½

The impreſſions on the gold coins of Portugal are as follows:

The dobraon: arms of Portugal, with 20,000 on one ſide, and five flowers on the other: legend, JOANNES V. D. G. PORT. ET ALG. REX. (John V. by the grace of God king of Portugal and Algarves): reverſe a croſs, with four M's in the four angles; legend, IN HOC SIGNO VINCES, (by this ſign thou ſhalt conquer). The half dobraon bears the ſame impreſſions, except that it is marked 10,000.

The moidore bears the ſame impreſſions as the dobraon, except that it is marked 4000, and has four B's in the four angles of the croſs; but ſome of an ancient date bear on the reverſe a croſs, ſurrounded by four connected ſemi-circles, and a whole circle, with the legend ET BRASILIÆ DOMINUS ANNO, &c. (and lord of Brazil, in the year, &c.) The half and quarter moidores are marked 2000 and 1000; their impreſſions are in other reſpects the ſame as on the moidore.

The Joaneſe: head of the reigning ſovereign, with name and titles; thus JOANNES V. D. G. PORT. ET ALG. REX; or MARIA I. D G. PORT. ET ALG. REGINA, (Mary I. queen of Portugal and Algarves); and the pieces coined by the prince regent, ſince 1804, bear his head, with JOANNES D. G. PORT. ET ALG. P. REGENS (John, prince regent, &c.): reverſe, arms of Portugal. The dobra or double Joaneſe, the half, quarter, and eighth Joaneſe, all bear the ſame impreſſions.

The quartinho: arms of Portugal, with 100, and the legend, MARIA, D. G. &c.: reverſe, a croſs, with four flowers, and the legend IN HOC SIGNO VINCES, as before.

The old cruſade: head of the reigning king; reverſe, a crown; legend, JOAN, V. D. G. P. REX, as before.

The new cruſade: name of the reigning ſovereign, over it a crown; and under the name two palms, with 400 at the bottom; reverſe the croſs and legend, as in the quartinho.

The milrea: coined for the African colonies,—arms of Portugal, with 1000 on the ſide, and the name and title as above: reverſe, a croſs and circles as in the old moidores; legend, ET DOMINUS AF. OR. ANNO, &c. that is, "Dominus Africæ orientalis" (lord of eaſtern Africa). Kelly's Un. Cambiſt.

MOIETY, Medietas, the half of any thing.

MOIGOLSCHAR, in *Geography*, a cape of Ruſſia, on the N.W. coaſt of Nova Zembla. N. lat. 72° 40′. E. long. 52° 14′.

MOIKA, a river of Ruſſia, which runs from the right of the Fontanka, not far below its departure from the Neva, and runs almoſt parallel with it, into which it falls to the left of the Great Neva, cloſe above its mouth.

MOILON, is a name given by the French to a kind of ſtone, that forms the upper cruſt, and lies round the free ſtone in moſt quarries. It is an excellent ſubſtance for forming the body of fluxes or ſoft enamel.

MOIMENTA de Beira, in *Geography*, a town of Portugal, in the province of Beira; 13 miles S.W. of Caſtel Rodrigo.

MOINE, Peter le, in *Biography*, was born at Chaumont, in Baſſigny, in 1602. He entered into the ſociety of the Jeſuits at ſeventeen, and continued to ſerve it by his labours and writings till his death, at Paris, in 1671. The principal work for which he is famous as a poet, is "Saint Louis, ou la Couronne reconquiſſe ſur les Infidelles," in eighteen books, which, for a time, ſtood high among the epic poems in the French language. It is ſaid to diſplay a vigorous imagination, and conſiderable powers of poetical expreſſion. Boileau, being called upon for an opinion of Le Moine, ſaid, "he had too much extravagance for his praiſe, and too much poetry for his cenſure." He was a conſiderable writer in proſe, in which his ſtyle and manner reſemble thoſe of verſe. His "Peintures Morales;" "Traitè de l'Hiſtoire;" "La Galèrie des Femmes fortes," have conſiderable merit. Moreri.

Moine, Stephen le, a very learned French Proteſtant divine in the 17th century, was born at Caen, in Normandy, in the year 1624. Having laid in a good ſtock of elementary learning at his native place, he was ſent to Sedan, where he went through a courſe of divinity under the celebrated Du Moulin. From thence he went to Leyden to ſtudy the Oriental languages. Upon his return to France in 1650, he was appointed paſtor to the church of Geſoſſe. He afterwards removed to Rouen, where his zeal in maintaining Proteſtant principles expoſed him to the perſecution of the Catholics. In 1676 he left France, came over to England, and was honoured with the degree of doctor by the univerſity of Oxford. From hence he paſſed over to Holland, and obtained the profeſſorſhip of divinity at Leyden, which he occupied with much reputation during the reſt of his life. In the year 1685, he publiſhed a collection of curious Greek treatiſes, relating to eccleſiaſtical hiſtory, preceded by long *prolegomena;* it was entitled "Varia Sacra, ſeu Sylloge variorum Opuſculorum Græcorum ad rem eccleſiaſticam ſpectantium." He was author of many other curious and learned works. He died in 1689, in the 65th year of his age. Moreri.

Moine, John le, a French cardinal, who flouriſhed in the 13th and 14th centuries, and founded a college at Paris called after his name, was a native of Creſſy, in Ponthieu. He was educated at the univerſity of Paris, where he ſtudied divinity and the canon law, and was admitted to the degree of doctor. After various promotions in the church, he was raiſed to the purple, either by pope Celeſtine, or by Boniface VIII. By the laſt mentioned pontiff he was held in high eſteem, and appointed his legate in France, at the time of his conteſt with Philip the Fair. In this buſineſs the cardinal was ready to ſacrifice the intereſts of the ſovereign and of his country, that he might gratify the ambition of the court of Rome. He died at Avignon, in 1313, He was author of "A Commentary on the ſixth Book of the Decretals," which is ſaid to diſplay the knowledge and abilities of an able and profound canoniſt. It was printed at Paris in 1536, and at Venice in 1586. Moreri.

Moine, Abraham le, a French Proteſtant divine, who was born towards the cloſe of the 17th century, and became a refugee in England on account of his religion. He officiated as miniſter to a French church at London, and died in the year 1760. He is known chiefly by "A Treatiſe on Miracles," which was written in anſwer to Chubb, and which, on many accounts, was thought well of by the late learned Mr. Hugh Farmer. Subjoined to the treatiſe on miracles is a poſtcript, intended to vindicate the authority of the ancient fathers, in anſwer to what had been advanced by Dr. Middleton in his "Free Enquiry." Le Moine publiſhed alſo "A Sermon in Defence of Sacred Hiſtory, in Anſwer to Lord Bolingbroke," and ſome other ſermons. He alſo tranſlated into the French language biſhop Gibſon's "Paſtoral Letters;" "The Trial of the Witneſſes of the Reſurrection of Jeſus;" and "Diſcourſes on the Uſe and Intent of Propheſy," by biſhop Sherlock. Theſe tranſlations are accompanied with curious and intereſting diſſertations, by the tranſlator. Gen. Biog.

Moine, in *Geography*, a river of Louiſiana, which runs from the N.W. into the Miſſiſippi, in N. lat. 40° 5'. W. long. 91° 54'.

Moine, *La*, a bay on the S. coaſt of Newfoundland; 25 miles E. of Cape Ray.

MOINEAU, in *Fortification*, is a flat baſtion, raiſed before a curtain when it is too long, and the baſtions of the angles too remote to be able to defend one another.

Sometimes the moineau is joined to the curtain, and ſometimes it is divided from it by a moat. Here muſqueteers are placed, to fire each way.

MOINHO Diego, in *Geography*, a town of Portugal, in Eſtramadura; 30 miles N.E. of Liſbon.

MOJOS, a town of South America, and capital of a province, in the viceroyalty of Buenos Ayres; 14 miles N. of St. Salvador de Jujui.

MOIRA, a poſt-town of the county of Down, Ireland, chiefly inhabited by perſons concerned in the linen manufacture, for which the neighbouring country is peculiarly favourable. White lime-ſtone is abundant in the neighbourhood. Moira gives the title of earl to the Rawdon family. It is 69 miles N. from Dublin.

Moira's *Strait*, an inlet on the E. coaſt of the Prince of Wales's Archipelago, in the duke of Clarence's ſtrait. N. lat. of the entrance 54 58'. E. long. 228 22'.

MOIRANS, a town of France, in the department of the Jura, and chief place of a canton, in the diſtrict of St. Claude. The place contains 1190, and the canton 6855 inhabitants, on a territory of 195 kiliometres, in 30 communes.

MOIRE, in *Conchology*, the mohair ſhell, a name given by the French virtuoſi to a peculiar ſpecies of *voluta*, which ſeems of a cloſely and finely reticulated texture: and reſembles on the ſurface a piece of mohair, or a very cloſe ſilk-worm's web.

MOISDON la Riviere, in *Geography*, a town of France, in the department of the Lower Loire, and chief place of a canton, in the diſtrict of Chateau-Briant; ſix miles S. of it. The place contains 1505, and the canton 4958 inhabitants, on a territory of 257½ kiliometres, in 5 communes.

MOISIE, a river of Lower Canada, on the N. ſhore of the St Lawrence, a little E. of the Seven Iſlands: it runs into the latter river in N. lat 50° 15'. W. long. 65° 40'.

MOISSAC, a town of France, in the department of the Lot, and chief place of a canton, in the diſtrict of Montauban, ſituated on the Tarn, near its confluence with the Garonne; 13 miles N.W. of Montauban. The place contains 10,035, and the canton 14,008 inhabitants, on a territory of 162½ kiliometres, in ſix communes. N. lat. 44° 6'. E. long. 1° 10'.

MOISTURE. See Humidity and Hygrometry.

The inſtrument uſed for determining the degree of moiſture in the air is called an hygrometer. Under the article Hygrometry, we forgot to introduce an account of a new hygrometer, with which the editor was ſome years ago favoured by Mr. Coventry, of Southwark, the conſtruction of which is as follows: take two ſheets of fine tiſſue paper, ſuch as is uſed by hatters and watch makers, and ſometimes called lawn-paper, each ſheet of which generally weighs about twenty-ſeven grains. Let the moiſture be thoroughly evaporated by the fire, without ſcorching the paper; till after repeated trials it is brought to its drieſt ſtate: in this ſtate cut each ſheet till it weighs exactly twenty-five grains. Theſe ſheets, thus prepared, ſhould be kept in a box or drawer, with a quantity of the ſame paper deſigned for uſe; and they will always ſerve for determining the proper weight of any quantity of paper for other hygrometers. This paper hung in any place, and kept free from duſt, and weighed with a nice pair of ſcales, will ſerve to exhibit the moiſture of the air, by its increaſe of weight above fifty grains. But to avoid the trouble of weighing, Mr. Coventry prepared an hygrometer of it in the following manner. A (*Plate* XIV., *Hydraulics*, *fig.* 2.) repreſents a pillar ſupporting the beam B B, to one end of which are ſuſpended fifty grains of paper D, cut round, and threaded on a ſilk ſtring, with a ſmall glaſs bead between the ſheets, for the freer admiſſion of the air: at the other end of the beam is a braſs weight E, to counter-balance the weight of the paper and its appendages. At the bottom there is an ivory ſcale F F, of twelve prime diviſions, anſwering to twelve grains of moiſture: each prime diviſion is ſubdivided into ten parts, making in the whole 120 diviſions: on the index C is a ſliding weight G, which, with the weight E on the beam, ſerves to adjuſt the inſtrument; ſo that twelve grains ſhall make the index juſt traverſe the ſcale of the twelve diviſions. If the air was ſo dry as to leave no moiſture in the paper, the index would then point to 0: if it contained ſix grains of moiſture, the index would point to ſixty; if twelve grains were in the paper, it would point to the moiſt extreme, one hundred and twenty: but the air has never yet been obſerved ſo moiſt, as to make the index point to the moiſt extreme, nor ſo dry as to allow its reaching to the drieſt extreme, even in the hotteſt part of ſummer, by nearly twenty diviſions: whence it is inferred that there is in the air a greater quantity of moiſture in hot weather than is generally imagined. H is an adjuſting ſcrew for fixing the ſtand upright by means of the point of a plummet that hangs behind. This hygrometer, adjuſted, may be made to correſpond with another, aſcertained to the ſame weight at any diſtance: by which we might determine the exact difference of the ſtate of the air, with reſpect to moiſture, in inland, and places near the ſea-ſide. The advantages of this hygrometer are the following: as it is made of the thinneſt ſubſtance that can be procured, it is the ſooneſt affected with dryneſs or moiſture, and exhibits immediately the firſt change of the weather: it is not acted upon by heat or cold, or any other cauſe, as moſt other inſtruments of this kind are; it has one datum from which to reckon, *viz.* the dry extreme, whence all other degrees of moiſture may be nicely eſtimated. All hygrometers of this ſort will act nearly alike, as thermometers or barometers; and may be reduced to a regular ſtandard. Mr. Coventry found by this hygrometer, that in clear froſty weather, the air contains a very conſiderable degree of moiſture: for on Jan. 27, 1776, in the morning, being a very hard froſt, the thermometer in the houſe 24°, and in the open air 17°, the hygrometer ſtood at ten grains, *i. e.* at the diviſion 100: and on the next morning, when a thaw came on, it ſtood at 96; which ſhews that there is as much moiſture in the air during the froſt, as when we perceive it diſſolved in a thaw. He adds, that it is pleaſing to obſerve the conſtant motion of this hygrometer: for even in conſtant ſettled weather, it is always in motion, from moiſt towards dry, from about eight in the morning till about four in the afternoon: and from dry to moiſt, from about 4 P.M. to about 8 A.M. In hot gloomy weather, the hygrometer is moſtly found to advance with ſpeed towards moiſt, and ſhews that the air at ſuch times retains a great quantity of moiſture: and this always forebodes heavy ſhowers. For curious experiments ſome of theſe hygrometers are made to traverſe the whole ſcale of diviſions for every grain of moiſture that is imbibed by the papers.

MOISTURE, *Radical.* See RADICAL.

MOITORET, DE BLAINVILLE, ANTHONY, in *Biography*, a French architect and geometrician, was born at a village four leagues from Dijon, in the year 1650. His genius led him to the ſtudy of geometry and architecture, in which he became an expert proficient, and ſettled in buſineſs at Rouen. Here he acquired conſiderable reputation by his ſkill as an artiſt, and by his uſeful and popular elementary writings. He was appointed ſurveyor and guager-royal of Rouen, under which office the public breweries of that city were included by a commiſſion from the king. He died at Rouen in 1710, when he was about ſixty years of age: he was author of "A Treatiſe on Guaging, with Inſtructions for meaſuring Maſon's Work, &c." which went through ſeveral editions during the author's life, and after his death it was republiſhed with improvements at Rouen, in 1714, under the care of M. Hacquet, with the title of "Blainville's New Elements of Geometry." He alſo publiſhed "A Treatiſe on the extenſive Commerce of France, for the Information of Tradeſmen," which was reprinted after his death, in 1728, with conſiderable additions, in two volumes: he is author, likewiſe, of abridgments "On the Art of Levelling;" "On Spherics," &c. which were favourably received by the public, and became very popular.

MOIVRE, ABRAHAM DE. See DE MOIVRE.

MOKA, in *Geography*, a town of Hindooſtan, in Golconda; 28 miles S. of Adoni.

MOKAMO, a town of Hindooſtan, in Bahar; 40 miles N.E. of Ramgur.

MOKATTAM, a mountain of Egypt, near *Cairo*; which ſee.

MOKEIA IBN AMER, a town of Arabia, in the province of Yemen; 22 miles N.N.E. of Chamir.

MOKERAMPOUR, a town of Bengal, 12 miles from Midnapour.

MOKESSET, a town of the Arabian Irak, on the Tigris; 116 miles N.W. of Baſſora.

MOKEYA, a name given by the Arabs to thoſe coffee-houſes which ſtand in the open country, and are intended, like our inns, for the accommodation of travellers. They are mere huts, and are ſcarcely furniſhed with a "ſerir," or long ſeat of ſtraw ropes; nor do they afford any refreſhment but "kiſcher," a hot infuſion of coffee-beans. This drink is ſerved out in coarſe earthen cups; but perſons of diſtinction always carry porcelain cups in their baggage. Freſh water is diſtributed *gratis*. The maſter of the coffee-houſe lives commonly in ſome neighbouring village, whence he comes every day to wait for paſſengers. We may here obſerve that a "manſale" is a houſe in which travellers are received and entertained *gratis*, if they content themſelves with ſuch treatment as is uſual in the country; they are all lodged in a common apartment, which is furniſhed with a "ſerir," and are ſerved with "kiſcher," hot millet bread, camels' milk, and butter. Niebuhr.

MOKLAFF, in *Geography*, a town of Arabia, in the province of Yemen, the reſidence of a ſcheick; 30 miles S.E. of Loheia.

MOKLIA, or MUCHLI, a town of European Turkey, in the Morea; 16 miles S.S.W. of Argos.

MOKNAN, or MOHANAN, a town of Egypt, on the W. ſide of the Nile, near which, according to Dr. Pocock and M. d'Anville, was the ſcite of the ancient Memphis; 5 miles S. of Gizeh. See MEMPHIS.

MOKO, a town and diſtrict of Africa, in the country of Calabar.

MOKOKF, in *Botany*, Kæmpf. Amœn. 873. t. 774, a Japaneſe tree, with very fragrant but ſhort-lived bloſſoms, the *Cleyera japonica* of Thunb. Jap. 224. This proves of the ſame genus with the Linnæan *Ternſtroemia*, and the *Taonabo* of Aublet. (See TERNSTROEMIA.) Some diſcordance between the deſcriptions of Kæmpfer and Thunberg, which puzzled Juſſieu, aroſe from a degree of inaccuracy in Thunberg's deſcription of the corolla, which is really monopetalous, like that of *Camellia*.

MOKOMOE, in *Geography*, a town of Bengal; 37 miles N.E. of Ramgur.

MOKONTPOUR, a town of Hindooſtan, in Oude; 14 miles S. of Canouge.

MOKRETZ, a town of European Turkey, in Bulgaria; 44 miles S.S.E. of Viddin.

MOKSCHAK, a town of Ruſſia, in the government of Penza, near the ſource of the river Mokſcha; 36 miles W.N.W. of Penza. N. lat. 58° 40'. E. long. 44° 50'.

MOKUI, a town of Mingrelia; 20 miles N.E. of Iſgaur.

MOL, Fr. an epithet which Ariſtoxenus and Ptolemy give to a kind of diatonic genus, and a ſpecies of the chromatic. See GENUS.

For modern muſic the word *mol* is only uſed in compoſitions where B ♭ occurs, or B *mol*, in oppoſition to B-*quarre*, or B-*quadro*, which formerly was called B-*dur*, or B-*durum*. Zarlino, however, calls the diatonic mol a kind of diatonic genus. See DIATONIC.

MOLA, PIETRO FRANCESCO, in *Biography*, was a celebrated painter, born at Lugano in 1609. He was a diſciple of Ceſari d'Arpino, but did not follow the principles of that maſter long, having too good a taſte not to improve by an abode which he enjoyed for ſome time at Venice, where he carefully ſtudied the works of Titian. Mola poſſeſſed conſiderable ſkill in hiſtorical painting; but his forte lay in landſcape; the heroic ſtyle of which he ſought from Titian; but, like him, he often weakened the intereſt of his pictures by the introduction of figures upon ſo conſiderable a ſcale as to excite a doubt which is principal, the actors or the ſcene. His peculiar excellence lay in the richneſs of his colour and the freedom and fulneſs of his touch; together with the grandeur of compoſition which he exhibited in his landſcapes, frequently not unworthy of Titian himſelf. There is a picture by him in the gallery of the Louvre in Paris, which for ſublimity almoſt vies with the St. Peter Martyr; and for colour, is quite equal to it. The ſubject of this picture is St. Bruno's Viſion in the Deſart.

The genuine pictures of this maſter are rarely to be met with in this country, though there is plenty of thoſe which bear his name, and perhaps were executed by his brother Giovanni Battiſta Mola; whoſe works bear more reſemblance to Albani than thoſe of Franceſco. He died in 1665, at the age of 56.

MOLA, or *Mola di Gæta*, in *Geography*, a town of Naples, in the province of Lavora, ſituated near the ſea. It has a cuſtom-houſe and a garriſon, which is relieved every week from Gæta. It was anciently a Roman colony, but after the defeat of the Samnites it became a prefecture, and thus continued till it was ranked among the military colonies of Italy by the triumvirs Octavius, Antonius, and Lepidus. Under the emperors it became conſiderable; but it was at length ranſacked and deſtroyed by the Saracens in 956, and its biſhopric transferred to Gæta. It is ſituated on the ancient Appian way; and it was from this place that Cicero endeavoured to make his eſcape into Greece. (See CICERO.) The city of Formiæ ſtood on or near this ſpot. Between Mola and Gæta the road is rendered agreeable by the number of orange-trees which are planted in the adjoining fields; three miles N.E. of Gæta. N. lat. 41° 18'. E. long. 13° 29'.

MOLA *di Bari*, a town of Naples, in the province of Bari, on the coaſt of the Adriatic; 20 miles E. of Bari.

MOLA, in *Phyſiology*. See MOLE.

MOLA, in *Ichthyology*, a ſpecies of *Tetrodon*; which ſee. —Alſo, a ſpecies of *Diodon*; which ſee.

MOLA, in *Anatomy*, a bone of the knee, called alſo *patella*, *rotula*, &c.

MOLANAGUR, in *Geography*, a town of Hindooſtan, in Bahar; 21 miles E.S.E. of Saſeram. N. lat. 24° 50'. E. long. 84° 32'.

MOLANDS, a town of Norway; 12 miles N.N.E. of Chriſtianſand.

MOLANUS, JOHN, in *Biography*, was born at Liſle, in Flanders, in the year 1533. As his parents were originally of Louvain, whither they returned with him while he was very young, and alſo on account of his having ſpent the greateſt part of his life in this city, the ſurname of *Lovanienſis* is generally given to him. He was educated at Louvain, where, having ſeduouſly applied himſelf to the ſtudy of divinity, he was admitted in the year 1570 to the degree of doctor of divinity, and for ſome years filled the chair of profeſſor of that faculty with great reputation. He was nominated cenſor of books by the pope and the king of Spain, as well as canon of the church of St. Peter at Louvain. He died in 1585, at the age of fifty-two. He was author of a great number of works which were in high eſtimation at the time when they were written, but are now ſcarcely ever enquired for. He was concerned, with other members of the univerſity, in publiſhing the Antwerp edition of the works of St. Auguſtine in the year 1577, and the notes at the end of the Latin bible of the divines of Louvain, publiſhed alſo at Antwerp in 1580. Moreri.

MOLANUS, GERARD-WALTER, a Lutheran divine and profeſſor in the ſeventeenth and eighteenth centuries, was born at Hamelen, in the duchy of Brunſwick-Lunenberg, in the year 1633. In 1660, he was elected profeſſor of mathematics, and in 1672 he became profeſſor of divinity in the *Gymnaſium* of Rintelen, in the duchy of Schaumburg. He obtained other inſtances of preferment, and took precedency in the ſtates of Calenberg, and was preſident of the conſiſtory of Hanover. He died in 1722, at the age of eighty-nine. He had collected a valuable cabinet of medals, and an excellent library, of which he made a good uſe. As an author his moſt important work was publiſhed firſt in the German language, in the year 1697, and afterwards repeatedly reprinted in Latin, under the title of "Lipſanographia, ſeu Theſaurus Reliquiarum Electoralis Brunſwico-Luneburgicus." He was author alſo of "Epiſtola ad Dominum Joachimum Meyerum quâ exponit cogitationes ſuas de nummo aureo Poſthumi ab eo edito, &c." Moreri.

MOLAPARA, in *Geography*, a town of Bengal; 30 miles W. of Dacca.

MOLARES, in *Anatomy*, the grinding teeth. In the old arrangement, the five poſterior teeth on each ſide of the jaw are ſo called. At preſent the two front and ſmaller of theſe are called bicuſpides, and the term molares is applied excluſively to the three poſterior ones. See the deſcription of the teeth in the article CRANIUM.

MOLARIS *Glandula*, one of the mucous glands of the mouth, placed near the back grinding teeth.

MOLARES, in the *Natural Hiſtory of the Ancients*, the name for the compound mineral bodies we now call pyritæ, and marcaſites.

MOLASSES. See Molosses.

MOLBETZKOI, in *Geography*, a town of Ruſſia, in the government of Novgorod ; 24 miles S.E. of Tichvin.

MOLCHINA, a town of Ruſſia, in the government of Tobolſk ; 60 miles S.E. of Narim.

MOLCZAR, a town of Lithuania, in the palatinate of Novogrodek ; 16 miles S. of Novogrodek.

MOLD, or Mould, a market-town in the hundred of Mold, Flintſhire, North Wales, is pleaſantly ſituated in a ſmall but fertile plain, ſurrounded by lofty and rugged hills. It conſiſts chiefly of one long and very ſpacious ſtreet, and, according to the parliamentary returns of 1801, contains a population of 4235 perſons. The market is held on Saturday every week, and there are four fairs during the year. The aſſizes for the county of Flint are holden in this town. On the north ſide of it riſes a large mount called Baily-hill, ſaid to be partly natural and partly artificial, the ſummit of which was formerly crowned by a Norman caſtle, probably erected by Euſtace de Cruer in the reign of William Rufus. This fortreſs ſeems to have been a place of great ſtrength, as the ſides of the mount are not only very arduous of aſcent, but are defended by a deep foſs and ramparts. Hiſtory records that it ſtood ſeveral ſieges without being compelled to ſurrender, till at laſt it was ſtormed by the Welſh forces under the command of prince Owen Gwynedd, in the time of Henry I. Subſequent to this period it ſuffered many viciſſitudes, and was completely demoliſhed during the deſperate conteſts maintained againſt England by the celebrated Owen Glyndwr. Wynne, in his Hiſtory of Wales, informs us, however, that it was ſoon rebuilt, and thereafter once more levelled with the ground by Griffith a Gwynwyn, about the year 1267, ſince which time it does not appear to have been reſtored. The view from the ſcite of this caſtle, though circumſcribed, is extremely beautiful. The church here is a very handſome edifice in the pointed ſtyle, conſiſting of a nave and two ſide aiſles, with a tower at the weſt end. In the interior are ſeveral monuments. The living is a vicarage in the patronage of the biſhop of St. Aſaph. A conſiderable cotton-thread manufactory is carried on here. The vicinity of Mold is decorated by ſeveral manſions, ſome of ancient and ſome of modern erection, the ſeats of independent gentlemen, who generally reſide on their eſtates. Of theſe the moſt conſpicuous are Leeſwood, Tower, Rhual, and Nerquis-hall. Immediately adjoining to Rhual is Maes-y-Garmon, or the field of Germanus, ſo called from its having been the ſcene of a moſt deciſive victory achieved by the Britiſh Chriſtians under the miſſionary biſhops, Germanus and Lupus, over the Pagan Picts and Scots, in the year 448. A pyramidal ſtone, erected on the ſpot in 1736, by Nathaniel Griffith, the then proprietor of Rhual, bears a Latin inſcription commemorative of the event. The hills which incloſe the vale in which Mold is ſituated abound with rich lead mines ſome of which are wrought with ſignal advantage both to the proprietors and contractors. On Moel-y-Famma, the higheſt point of theſe hills, a monument has been lately erected by ſubſcription, as a memorial of the event of our moſt gracious ſovereign having reigned for the unuſual period of fifty years. Beauties of England and Wales, vol. xvii. from Wynne's Hiſtory of Wales.

Mold. See Mould.

MOLDAU, in *Geography*, a town of Bohemia, in the circle of Leitmeritz ; 21 miles N.W. of Leitmeritz.

MOLDAVIA, a province of European Turkey, bounded N. and N.E. by Poland, from which it is ſeparated by the Dnieſter, E. by Beſſarabia, S. by Walachia, and W. by Tranſilvania ; eſtimated at about 180 miles in its greateſt length from N. to S., and ſomewhat leſs in breadth from E. to W. It is croſſed from N. to S. by the river Pruth. Some lands in this province are very fertile, but a conſiderable part of the eaſtern diviſion conſiſts chiefly of deſerts, and is uncultivated ; and on the weſtern ſide it is very mountainous. The Pruth and the Siret are its principal rivers. Its inhabitants are of Walachian extraction, and their religious profeſſion is that of the Greek church ; but they are intermixed by Mahometans, Ruſſians, Poles, Raſcians, and Armenians. About the cloſe of the twelfth century a colony of Walachians from Tranſilvania ſettled in this country. They migrated under the conduct of a perſon named Bogdan, who eſtabliſhed their government both civil and eccleſiaſtical; and who obtained, with a view to the latter, an archbiſhop and other eccleſiaſtics from the patriarch of Conſtantinople. As he was the firſt prince, and founded the chief towns, the country was denominated Bogdania. The prince or waywode of this province is ſtyled hoſpodar, and is the vaſſal of the Ottoman Porte, to whom he pays a yearly tribute. Moldavia is divided into Upper and Lower. Upper Moldavia extends almoſt to Jaſſy, and its boundaries are the river Dneiſter on the E., on the N. that river and Poland, and on the W. Tranſilvania. Moldavia on the W. borders on the mountains of Tranſilvania ; its ſouthern boundary is the Danube ; Beſſarabia bounds it on the S.E., and on the E. it is bounded by the Dneiſter. Its capital is Jaſſy.

MOLDAVICA, in *Botany*, Tourn. Inſt. 184. t. 85. Moldavian Balm. (See Dracocephalum.) Tournefort aſſociates with it alſo the *Dracocephalum canarienſe* of Linnæus.

MOLDAVITZA, in *Geography*, a town of European Turkey, in Moldavia ; 40 miles W. of Suczava.

MOLE, Thomas, in *Biography*, a learned Engliſh Proteſtant diſſenting miniſter, of whom little is known but from his works. He is ſuppoſed to have received his academical education under Mr. Jones of Tewkeſbury, by whom biſhop Butler, and archbiſhop Secker, were alſo inducted into the knowledge of the ſciences and theology. He was probably firſt ſettled as miniſter at Uxbridge, in Middleſex, in 1725, from which place he removed in 1728 to Rotherhithe ; and about the year 1743, he quitted Rotherhithe for Hackney, where he lived ſome years, and then returned to Uxbridge, or its neighbourhood, to ſpend the remainder of his life. The latter part of his days he employed in writing, in the Latin language, a life of the celebrated Laurentius Valla, including the religious and literary hiſtory of his time. The MS. of this work was ſold at a common auction with his other books, and has probably been long ſince conſumed as waſte paper. Mr. Mole died near Uxbridge about the year 1780, at a very advanced age. He was the author of ſeveral ſingle ſermons and tracts, that do much credit to his talents as a writer and controverſialiſt. Dr. Kippis ranks him, in point of learning, with Lardner, Benſon, and Chandler ; and Dr. Lardner has ſhewn his reſpect for Mr. Mole's critical ſkill, by incorporating with his own ſome very ingenious obſervations that he received from him, on the caſe of the demoniac who reſided among the tombs on the coaſt of Gadara. Gen. Biog.

Mole, in *Agriculture*, is a ſmall well known ſubterraneous animal, which often does great miſchief in the fields, by looſening the earth, raiſing hills, and deſtroying the roots of corn, graſs, and other productions of the vegetable kind.

In reſpect to the natural hiſtory of the mole, as connected with the art of huſbandry, it has been obſerved by M. Aurignac, that it lives under ground. Its health is liable to be injured by too free acceſs of the air: yet that it ſometimes leaves one ſubterraneous habitation and paſſes on the ſurface in ſearch of a better. It lives on the roots of plants, on inſects, and on worms. Hence it is commonly found in lands of ſoft fertile ſoil. It never fixes its abode in miry, nor in gravelly grounds. If ſurpriſed in its ſubterraneous receſſes by water, it ſprings in great haſte to the ſurface. And that in winter, and during rain, it betakes itſelf to the upper grounds, which are the leaſt humid, and the leaſt liable to be inundated. But in ſpring, the mole comes down from its winter reſidence to the meadows, where it finds a ſoft mould capable of being eaſily penetrated, and containing plenty of roots. And after ſuffering long drought, it flies to ditches, to the brink of the firſt ſtream, or to ſhelter under hedges. In the months of February, March, April, and May, the female produces its young; bringing commonly four or five at a birth. Theſe animals prepare beforehand, for this occaſion, an arched receſs under ground in a ſituation ſomewhat elevated, and generally under cover of a buſh or hedge. To the number of four or five mole-hills may be obſerved very near to the upper ſide of this receſs. It cannot live without being at work. Being obliged to ſearch under ground for its food, it forms there long tunnels or ſubterraneous paſſages, named in French *boyaux*. Theſe tunnels are uſually parallel to the ſurface of the earth, and vary in depth according to the changes of ſeaſons, from four to ſix inches. And as the moles are almoſt equally afraid of cold and of heat, they make their paſſages the deepeſt, and work at the greateſt diſtance under the ſurface, in ſummer and in winter. They are extremely timid when they perceive themſelves to be in danger. They then penetrate by a perpendicular opening, to the depth of a foot and a half below the level of their ordinary reſidence. And in forming their paſſages they throw back the mould, which they remove towards the ſurface. It is thus the mole-hills are raiſed. Upon every new change of place a mole raiſes three, four, ſix, or even nine of theſe hills, according to its age. Conſequently, all the mole-hills formed by any one mole, communicate by ſubterraneous paſſages with one another. When with any inſtrument, a tunnel or paſſage, recently formed by a mole is opened, the mole will, in a few minutes, come to cloſe up the aperture, in order to ſecure herſelf from danger, and from the acceſs of the external air. It conſtructs, for this purpoſe, over the aperture, an arch of looſe mould, having, externally, the appearance of an oblong mole-hill, and mending up the tunnel much in the ſame manner in which a plumber might mend a leaden pipe, by clumſily applying, on the outſide, a piece of lead to cover any hole in it. And ſhould this new mole-hill likewiſe be broken down, the mole will again return to repair it. Theſe two capital facts conſtitute the fundamental principles of the art of the mole-catcher. The mole works in all ſeaſons; becauſe it cannot otherwiſe have ſubſiſtence. That it ſleeps, as ſome naturaliſts have affirmed, all winter, is not true. It is, however, languid in this ſeaſon; working now much leſs than in ſummer. It is about the beginning of ſpring, that the mole ſets to work with the greateſt activity, and raiſes the greateſt number of mole-hills. It is then obliged to find food for its young; as ſpring is its ſeaſon for parturition. The ground is now more eaſily wrought than at other times. The animal, too, in itſelf becomes more vigorous, by the diminution of the cold, and the return of the genial temperature of ſpring. Theſe are the cauſes of its increaſed activity in toil. The male is much ſtronger than the female, and raiſes a greater number of mole-hills, and thoſe larger. The female works leſs than the male, throws up fewer mole-hills, and thoſe ſmaller. And the young moles form only long covered ways at the ſurface; the mould raiſed over which is ſcarcely ſufficient to hide them. When they begin to make mole-hills, theſe are ſmall, without any regular ſhape, and arranged zig-zag. The hours of working, for moles, are at ſun-riſe, at the hour of nine in the morning, at noon, at three in the afternoon, and at ſun-ſet. But it is at ſun-riſe, and at ſun-ſetting, that they ply their work with the greateſt briſkneſs. And in times of drought, they do not throw up mole-hills, except at ſun-ſetting. In winter their moments of working are when the earth is ſomewhat heated by gleams of ſun-ſhine, The ſenſe of ſeeing is exceedingly obtuſe in the moles; but its hearing is exquiſitely delicate and acute.

MÓLE-*Catcher*, a term applied to a perſon whoſe buſineſs is principally the catching and deſtruction of moles. See MOLE.

MOLE-*Catching*, the art of catching and clearing land of moles. It is ſtated in regard to the principles of deſtroying theſe animals, that it is difficult to take moles unleſs when they are at work. That the moſt favourable time for the mole-catcher is in the beginning of ſpring. And that it is in the meadows they ſhould be, in this ſeaſon, the moſt earneſtly attacked. They are to be attacked at ſun-riſe, at the hour of nine in the morning, at noon, at three in the afternoon, or at ſun-ſet. That it is better to commence an attack upon them at ſun-riſe, than at any other time in the day. And that the next moſt convenient hour is nine in the morning; becauſe, if all the moles which are wiſhed to be deſtroyed cannot be then taken, the operations may be renewed at thoſe other hours in the day at which theſe animals are known to reſume their work. In watching for a ſingle mole, care muſt be taken to make no noiſe, and eſpecially not to ſtamp nor beat upon the ground. One may, at any time, force a mole to come above ground, by pouring a ſufficient quantity of water into its ſubterraneous receſſes. And ſhould a perſon happen to be near a mole-hill, when the mole happens to betray its preſence by ſtirring the mould; let him then, with his hoe, break into the tunnelled paſſage between that and the next mole-hill; and let him, with a little earth, cloſe up the paſſage at the aperture made with his hoe. The mole is now impriſoned between the mole-hill, and the place where its paſſage is broken into, and ſtopped up. If the earth of a mole-hill be freſhed and newly raiſed, you may conclude that there is a mole within it. The ſame thing may be inferred of any number of freſh mole-hills within ſmall diſtances of one another. Yet, however freſh the earth of any mole-hill, if there be in its centre a perpendicular hole of about two inches diameter; you may be ſure that the mole is not within, but has left his reſidence in ſearch of a better. And when you find an aſſemblage of mole-hills together, of which the earth is quite freſh; then, upon removing them all with the hoe, and laying open the paſſages communicating among them, you cannot fail to find the mole that works within. This labour might prove too tedious and troubleſome. But it will become very ſimple, if the mole can be confined between two points not remote from each other. Nothing more will then remain to be done, but to open with the hoe the intermediate paſſage between theſe two points. And a mole may be reduced to confinement between two ſuch points, by making a few ſlight openings in the length of the tunnelled paſſage, in which you deſire to confine her. Theſe openings interrupt her courſe; for ſhe will not paſs, till ſhe ſhall have firſt repaired them. But when you break into the tunnelled paſſage of a mole, cloſe the paſſage ſlightly with a little looſe earth at both ends of the hole you have made.

It may be noticed, that in the practice of mole-catching on theſe principles, "the only inſtrument abſolutely neceſſary to the mole-catcher is a hoe. But that it will be convenient that he have likewiſe at hand, a few pieces of ſtraw, a few bits of paper, and a pitcher of water.

And thus prepared, "the firſt thing a mole-catcher ſhould do on a farm or eſtate which he goes to free from moles, is to examine how thoſe moles may be ſo confined, that he ſhall be able to attack them all at once; for by thus attacking them, he will the ſooneſt accompliſh his whole taſk."

In the plate of *Agriculture* (*Moles*), a repreſentation is given of a meadow covered with mole-hills, as at *figs.* 1, 2, 3, 4, 5, 6, 7, which are taken from the work of a late French writer. And by ſurveying this meadow as a mole-catcher, he perceives a detached mole-hill, as *fig.* 1; and perceiving the earth compoſing it to be freſh, or newly thrown up, he concludes, then, that there is a mole beneath. The mole-hill is large; he thence knows the mole within it to be a male. And with reſpect to the two mole-hills, *fig.* 2, they are at no great diſtance one from another; of courſe he knows them to be the work of a ſingle mole. They appear freſh; and he concludes the mole to be ſtill buſy within. They are ſmall; he, on this account, ſuppoſes it to be a female that has made them.

And the three mole-hills, *fig.* 3, are near to one another; and, conſequently, the work of a ſingle mole. They are freſh; he of courſe knows the mole to be now at work within. They are large; and have therefore been thrown up by a male. The ſix mole-hills, *fig.* 4, are not diſtant from one another; they muſt have been all thrown up by one mole. They are freſh; the mole is ſtill at work. They are ſmall; and, therefore, raiſed by a female. The zig-zag covered ways, or imperfect mole-hills, as at *fig.* 5, are freſh; a young mole is beneath.

But the five mole-hills, as at *fig.* 6, are dry; they have been deſerted. And the ſeven mole-hills at *fig.* 7. are yet freſh; but one of them, ſhewn at M, has a perpendicular hole opening at the top. The mole by which it was thrown up is hence known to be but juſt gone. By theſe obſervations he knows that there are in this meadow two male moles, two females, and a young one. And it is of conſequence to know whether the moles be males or females, young or old. The males work quicker than the females; and are, therefore, to be more narrowly watched. The young ones, raiſing but a very little mould to cover them, as they move along at the ſurface, go alſo very quick; and ſhould therefore be kept conſtantly in view, after they have once been diſcovered.

It may be obſerved, that in the operations for deſtroying them in the firſt caſe, as where a mole makes but one mole-hill, *fig.* 1, the mole-catcher removes this mole-hill with the hoe; and aſcertains whether it has communication with any of the mole-hills adjacent. For this laſt purpoſe, he hems, or makes a ſlight noiſe, at the aperture or mouth of the internal paſſage from the demoliſhed mole-hill. He at the ſame time applies his ear to liſten what enſues within. If the mole-hill be without any communication with any other; the mole being nigh is frightened by the noiſe; he hears it ſtir; and it cannot eſcape him. With his hoe he lays open the tunnelled paſſage *a b*; and at *b* he finds the mole. But the creature, aware of its danger, may poſſibly have had time to deſcend deeper into the earth, by the perpendicular paſſage *b c*; he has then two methods for taking her; he either digs to *c*, and there finds his prey; or he pours in water at *b*, and the mole comes out of herſelf. On the other hand, if upon hemming he could not hear her ſtir; he concludes that this mole-hill communicates with others near it; and he proceeds in the following manner.

This is the ſecond caſe, as that where a mole has thrown up two mole-hills A, B, *fig.* 2, he now makes an opening *d e*, more than nine inches long, in the direction of the tunnel which runs between the two mole-hills. With a little earth he cloſes the two ends *d*, *e*, of the tunnel. Within a few ſeconds, the mole, diſagreeably affected by the air, and fearful of danger, comes to repair the breach, and is diſcovered by its working at *d*, or *e*. If it come to *d*, he knows that he ſhall find it between that point and the mole-hill A. And when it comes to *e*, he is ſure of finding it between *e* and the mole-hill B. In either inſtance, he proceeds as was indicated in the firſt caſe; and lays open either that part of the tunnel which terminates at the mole-hill, or that which ends at B.

But in the third caſe, where the mole has thrown up three hillocks, C, D, E, *fig.* 3, he now makes the four apertures *f*, *g*, *h*, *i*. The mole will be ſoon diſcovered by its ſtirring the mould at *f*, at *g*, at *h*, or at *i*. If it work at *f*, it is confined between that point and the hillock C. If it be perceived to work at *i*, it is confined between the point *i*, and the hillock E. And if it work at *g*, or *h*, it is in the ſpace between theſe two points.

And in theſe three ſuppoſitions, he operates as in the firſt caſe, by laying open that part of the paſſage within which the mole is confined. If the mole be ſhut up between *g* and *h*; and he does not chooſe to take the trouble of laying all that ſpace open; he then removes the mole-hill D, and makes a third cut like the others. He watches for the working of the mole; and he then knows by the ſide this appears on, whether he ſhall find the animal between the third cut and the point *g*, or between that third cut and the point *h*.

Alſo in the fourth caſe, where a mole has made four or more mole-hills, *fig.* 4, he takes, for example, the ſix mole-hills F, G, H, I, K, L. He makes the cut *k l*. If the mole come to work at *k*, it is confined between that point and the mole-hill F. If, on the contrary, ſhe come to *l*, ſhe is confined between *l* and the mole-hill L. In either of theſe ſuppoſitions, he makes from K to F, or from *l* to L, the ſame means of operation as in the third caſe; that is, he proceeds juſt as if there were but three mole-hills.

But a different mode of operating in the ſecond, third, and fourth caſes, is this; he ſuppoſes, that when he has made the cut *d e*, *fig.* 2, the mole comes to work at *d*, and he obſerves it the moment it comes there. He knows that it muſt travel along *d e*, to repair the breach in its tunnel by an arch of earth, which it muſt raiſe from the bottom of the place laid open. If he remain there, without making a noiſe, he ſhall ſee it come to work. Then, to take this mole, he has only to put the end of his hoe behind it, before it comes to the point *e*. The earth which he had before put at the aperture, *d*, will hinder it to advance; the end of the hoe will prevent it from retiring; and he ſhall eaſily take it, by removing with his fingers that ſmall portion of looſe earth with which it is covered. Is it poſſible, even without an aperture, to know the moment a mole comes to work at it? Nothing more is, for this end, neceſſary, than to place there a chip of ſtraw, bearing a bit of paper at its upper end. This ſmall ſtandard will be ſubverted, or at leaſt ſhaken by the very firſt movement the mole ſhall make at the place where it ſtands. The ſhaking, or fall of the chip of ſtraw, calls the mole-catcher to watch and take the animal within.

Alſo in the fifth caſe, where the mole comes not to work at the cuts made firſt by the mole-catcher, he ſuppoſes, that if, after making the aperture *k l*, he finds that the mole continues to work at the mole-hill L; he is now ſure that it is between the point *l* and the mole-hill L, and his ſubſequent operations are the ſame as in the third caſe; that is, he muſt act as if there were but three mole-hills I, K, L.

In order to know whether a mole ſhall come during his abſence to work under a mole-hill, he ſoftly flattens the mole-hill with his foot; and if, on his return, he perceives a ſmall eminence to have been raiſed on the level, he can then have no doubt but the mole has been working there.

However, in the ſixth caſe, there is a different manner of operating from caſes ſecond, third, fourth, and fifth, where a perſon happens to be near a mole-hill at the moment when the mole breathes or blows at it. Should he be beſide the mole-hill L, *fig.* 4, at the moment when the mole comes to work there; he does not uſe the uncertain method of the gardeners, who remove the mole-hill with the ſpade; but he cuts at *m n*, the tunnel communicating between the mole-hill and the next one K. This is a certain means of confining the mole between the mole-hill and the point *m n*. When the mole is thus incloſed, he proceeds, as in the firſt caſe, and lays open the ſpace within which it is confined.

And in the ſeventh caſe, as when ſeveral freſh mole-hills are found near to ſome other mole-hills, old and dry, as *figs.* 4 and 6, which is more troubleſome than any other of the mole-catcher, it is doubtful whether the freſh mole-hills do or do not communicate by tunnels with the old and dry ones. It is neceſſary to begin by making cuts between the old and the new hillocks, that the mole, when attacked in the new, may not be able to eſcape to the old. One may then proceed, according to circumſtances, as in the foregoing caſes. When this happens to be the caſe, too many cuts cannot be made, unleſs a perſon is anxious to ſpare the ſurface of the ground. It is good, for inſtance, as in *figs.* 4 and 6, to make a cut in the direction from H to N, and another in the direction from H to O; as there may be a tunnel in either, or tunnels in both of theſe directions.

But on this, it is obſerved, that "if one were conſtantly to watch a ſingle mole, and not to proceed againſt any other, till after the firſt were taken; only a very few could be deſtroyed in one day. But when a farm is ſurveyed to diſcover the moles, all the freſh hillocks ſhould be greatly flattened with the foot, and all the neceſſary cuts made,—as of theſe too many cannot be made, unleſs a perſon is afraid of breaking the ſurface too much. Set up little ſtandards of ſtraw with paper ſtreamers. Then paſs about from one mole-hill to another, and proceed as directed above. If you thus proceed againſt ſeveral moles at once, you muſt exerciſe great vigilance; otherwiſe, while you are buſy with one mole, others may make a good paſſage acroſs the cuts; and then you will have to begin with them anew. A mole will be longer in repairing and croſſing one of the cuts, if a lump of hardened earth is put at the bottom. This precaution ſhould be always taken." This is conſidered by M. Dralet, the tranſlator of the above, as "of all the means hitherto employed for the extermination of moles, the eaſieſt and the ſureſt."

In the ſixth volume of the Agricultural Magazine, a writer, however, propoſes a more ſimple, eaſy, and effectual practice, and which is leſs troubleſome and expenſive. It is the invention of a common labourer, who clears nearly one half of the county of Glamorgan. His contrivance is compoſed entirely of oak, deal, or elm wood, but the firſt is the beſt, and common nails, and may be made by any carpenter or wheel-wright, and ſet to work by any common labourer. This is ſhewn at *fig.* 8, in the plate. A and B are two boards of oak, forming the ſides of the trap, eighteen inches long, five inches wide, and half an inch thick. C, the bottom of the trap, more fully explained in *fig.* 9. E, a piece of oak board, five inches long, two inches wide, half an inch thick, nailed on the top edges of the boards A and B, both to ſtrengthen the trap and to keep the ſides at a proper diſtance. A (*fig.* 9) is the trap with its bottom upwards. C, C, two pieces of oak board, five inches wide, four inches and a half long, half an inch thick. D, an aperture, nine inches long, four inches wide, made to receive the fall of the trap. L, a hole for a common clout-nail (forming the pivot of the fall) to turn in. And at *fig.* 10. is D, the fall of the trap, nine inches long from F to H, three quarters of an inch thick (the diſtance from F to G two inches and a half, or three inches), from G to H half an inch thick and four inches wide. G ſhews the hole for the clout-nail forming the pivot. M, the dotted lines, ſhews the manner in which the upper part of the fall D muſt be bevilled, to prevent its falling both ways. At *fig.* 11. is ſeen "the mole-pot, the uſes of which will be more fully explained afterwards, compoſed of four pieces of oak board, each five inches wide at the top, nine inches wide at the bottom, twelve inches long, one inch thick, or thereabouts, having two ears, as at K, K, with a hole in each large enough to carry a piece of ſmall rope or ſpun-yarn." And at *fig.* 12. is ſhewn a mole-trap ſet in the ſide of a ditch.

In the view of finding the runs or tunnels, "the farmer or his ſervant muſt carefully examine the ditches of each field, in order to diſcover where the moles have made their main tracks; which having once found, and the trap ſet thereon, he may reſt aſſured that every one paſſing through it will be inevitably deſtroyed; neither are their runs at all difficult to be found, as the only thing neceſſary to obſerve is, whereabouts they have broken out moſt on that part of the field the neareſt to the ditch, in the ſide of which he muſt then make an opening with a ſmall common ſpade, oppoſite to the neareſt place where they are obſerved to work moſt, in order to open the run. Should the firſt endeavour to ſtrike upon it prove unſucceſsful, he will not fail to find it by ſearching thereabouts, either a little higher or lower. In common fields and unincloſed lands a different method muſt be purſued; and as, of courſe, there are no ditches, the higher grounds and banks will be the certain and proper place to ſearch for their runs, which having once found, the workman muſt proceed in the following manner: Firſt, a hole muſt be cut out the length of the trap, as repreſented in *fig.* 12, in ſuch a manner that when it is inſerted, the run may enter each of its ends, as ſhewn by the dotted lines; and alſo a hole or well of ſuch a ſize that the mole-pot may be eaſily ſuſpended therein. Secondly, a ſmall clout-nail, of which he ſhould take ſeveral in his pocket; or ſhould he have forgotten to do ſo, a thorn out of the hedge muſt be thruſt into the hole *n*, *fig.* 9, which alſo communicates with the hole *n*, *fig.* 10, and will effectually prevent the fall from acting. Thirdly, a ſmall handful of fine earth, like that uſually thrown up by moles whilſt working, and which may be taken from one of their heaps, muſt be ſcattered all over the bottom of the trap ſo as to cover it, as well as both ends communicating with the run. Fourthly, a turf, ſomething longer and wider than the trap, muſt be cut off the headland, both to ſerve as a cover to it, as is ſeen at P P P P, (*fig.* 12.), and as a certain mark by which it may be found with the greateſt eaſe: and laſtly, two pieces of ſpun-yarn muſt be faſtened, one to each ear of the mole-pot 11, *fig.* 4, by which it muſt be tied on the trap in ſuch a manner, that any weight put upon the fall D at 11 may be thrown to the bottom; the carpenter having previouſly taken care that the weight of the fall from F to G ſhall more than counterbalance that from G to H, ſo that no ſooner ſhall a mole be thrown into the pot than it will ſpontaneouſly reſume its former ſituation, and be on a level with the reſt of the bottom."

After "the trap with the fall has been faſtened up by the clout-nail at *n*, the fine earth ſtrewn over the bottom, the turf covered over the top, and the mole-pot properly ſuſpended, by being tied over the whole; nothing further will be required to be done to it for three or four days, (for the moles muſt be allowed to paſs freely along it for that time, as it will induce them to uſe their run without fear, and be the means of taking them with the greater certainty). The workman muſt now carefully examine his trap, and on gently lifting up the turf will plainly perceive their marks, (taking care, however, not to leave any opening for the light to enter), and pulling out the clout-nail at *n*, the trap will then be ſet fit for working, and the fall will throw them into the mole-pot, out of which it is impoſſible for them ever to eſcape." And farther, "ſhould the farmer have ſtrictly followed the above inſtructions, and notwithſtanding the moles ſtill continue to work about his land, he may be certain they have forſaken the run on which he has ſet his trap, and he muſt therefore ſearch for their new one." It is concluded that "the advantages ariſing from uſing traps of the above conſtruction are, that the materials are to be procured every where; they can be made by any common mechanic at a very ſmall expence, (the wood being uſed rough as it comes from the ſaw,) are very durable if made of oak; are not liable to get out of repair, and if they ſhould, can be mended moſt probably by a labourer; they catch the whole year, and do not require looking after more than three or four times in that period, and that will comparatively require ſo ſhort a time, that a workman may with eaſe look over all the traps on a very large farm; and ſuppoſing the fields to lie contiguous to each other, one trap for each ten acres would, on an average, be fully ſufficient."

It is ſtated, by the firſt writer noticed above, that mole-traps are either ſimple or complex. The ſimple mole-trap is a hollow cylinder of wood, white-iron, or pottery, thirteen or fourteen inches long, and in diameter a little larger than the tunnels of the mole. This cylinder is cloſed at one end, and has at the other a ſucker or valve preſſing againſt an exterior edging. When the mole comes to the extremity covered by the ſucker or valve, ſhe preſſes this back in order to continue her progreſs through the cylinder, and can return no more. Two of the traps may be united ſo as to form a double trap, having a valve at each end. By this the mole may be taken as ſhe enters, whatever ſide ſhe approach. It is added, that "the moſt remarkable of the complex traps uſed in Normandy, is a ſmall piece of board fixed in the ground by four iron pins with croſs points extending from them; and on theſe points the mole transfixes itſelf. It is very ſeldom that thoſe ſucceed who make uſe of theſe and other mole-traps: for they do not uſe the fit means to entice the creature to the ſnare. That method is, nevertheleſs, very ſimple. Nothing more is neceſſary than to make a few holes by which the air may enter the tunnel of the mole, and give her notice of the injury done to her work. It will be eaſy to him who has read the preceding information and directions, to employ ſuch mole-traps, in certain caſes, with infallible ſucceſs. He ſuppoſes, for inſtance, the two mole-hills A, B, (*fig.* 2.) and makes the aperture *de*. If the mole ſtir the earth at *d*, he there preſents the valve of either the ſimple or the double mole-trap; and he is ſure of taking it. If, on the contrary, it preſents itſelf at *e*, he muſt there uſe the trap. He acts in the ſame way in every one of the caſes mentioned above. It may be eaſily believed, that there are ſome of thoſe caſes in which it will be convenient to uſe mole-traps. They are exceedingly uſeful when the mole-hills happen to be at conſiderable diſtances one from another, as in the end of winter. But, in the time of drought, and when the weather is very cold, the hillocks are ſo very near to one another, that the traps can be of little uſe.

But the common method of deſtroying moles is, however, by traps, made in the following manner: take a ſmall board, about three inches and a half broad and five inches long; on one ſide thereof raiſe two ſmall round hoops or arches, one at each end, like the two hoops or bails of a carrier's waggon, capacious enough for a mole to creep through eaſily: in the middle of the board make a hole about the bigneſs of a gooſe-quill, and have in readineſs to put into it a ſtick about two inches and a half long, fitted at one end to the hole and a little forked at the other. Cut alſo a hazel or other ſtick, about a yard or a yard and a half long, which will riſe with pretty ſtrong elaſticity when it is ſtuck into the ground; and to the end of this ſtick faſten a very ſtrong nooſe of ſtring or horſe-hair, made ſo as to ſlip eaſily. Have likewiſe in readineſs four ſmall hooked ſticks; then go to the furrow or paſſage of the mole, and after you have opened it fit in the little board with the bended hoops downward, ſo that when the mole paſſes that way it may go directly through the two ſemicircular hoops. But before you fix the board in this manner, put the hair ſtring through the hole in the middle of it; place the nooſe in a circular form, ſo as to make it anſwer to the two hoops; put the ſmall ſtick before mentioned gently into the hole in the middle of the board, ſo as juſt to ſtop the knot of the hair ſpring, without entering ſo far as abſolutely to tighten it. Then faſten the board down with four hooked ſticks, and cover it with earth. When the mole, paſſing in its furrow, comes into this trap, it will diſplace the ſmall ſtick that hangs perpendicularly downward, the knot will then be drawn through the hole, and the nooſe inſtantly ſtraightened by the riſing of the end of the hazel ſtick to which it is faſtened, will catch the mole round the neck or body and hold it faſt.

MOLES, *Fumigating of*. This is a mode adopted in order "to ſuffocate the mole in its retreat, for which ſome adviſe to take a ſmall nut-ſhell, or any little vaſe, ſolid and of ſmall capacity, and in it to burn cedar root, or wax and ſulphur, with a portion of ſtraw, then to ſtop up every hole by which the ſmoke might iſſue out. The ſucceſs of theſe methods is very uncertain, and indeed none at all in the hands of any perſon not well acquainted with the artifices and haunts of the mole. Sometimes all the mole-hills in a garden or a meadow, whether freſh or dry, communicate by many different paſſages with one another, as has been ſhewn. In this caſe all theſe mole-hills muſt be preſſed down and cloſed up. But in doing this you will yourſelf preſerve the mole from the threatened ſuffocation. Suppoſe, for inſtance, that the mole which made the hillocks (*fig.* 4.) is to be ſuffocated, and that you put the combuſtible matters in at H. If the mole be at I or L, the ſmoke will be hindered from penetrating beyond I, by your ſhutting up the paſſage there; and your precaution to enſure the death of the mole will prove the very means of its eſcape. It is only by cuts in the paſſages that fumigation can be made effectual. To ſuffocate the mole of the hillocks (*fig.* 4.), make the breach *l k*: cloſe up its extremities; put in your combuſtible matters between *k* and F, and between *l* and L, after levelling the hillocks L, F. But you muſt firſt aſcertain whether the mole-hill, H, (*fig.* 4.) has any communication with thoſe of *fig.* 6, and if it has, cut off that communication by other breaches,” in the manner already deſcribed.

There are ſome other modes propoſed for the deſtruction of this animal, but they are much leſs certain than thoſe which have been juſt detailed.

MOLES, *Poiſoning of.* It may be noticed, that for this purpoſe there are ſeveral recipes; ſome propoſe to throw into their retreats nuts, which have been pierced on one ſide and boiled in a ſtrong lixivium. Others boil ſuch nuts in water, with a handful of hemlock, and uſe them as above. In ſome countries people take the root of white hellebore, with the bark of dog's colewort pulverized and ſifted; mix this with barley-meal: ſteep the mixture in wine and milk; cut it in ſmall pieces, then throw it into the mole hills. In other countries it is uſual to take the green of a leek, or to put arſenic on the white, and bury this in the freſheſt mole-hill that can be diſcovered. Theſe poiſons, it is obſerved, are in general uſed injudiciouſly. The mole rarely ſeeks its food at the ſurface where its hillocks are placed. It puſhes back the earth, as it works, to the extremity of its tunnel. That earth raiſes the layer next above it; and by the continual repetition of this proceſs, the mole-hill is at laſt formed. The mole, while undiſturbed, keeps always within its tunnel; and it is into the tunnel, therefore, that the poiſoned bait ought always to be caſt, inſtead of being left in the hillock. In order to deſtroy the mole which formed the mole-hills A, B, (*fig.* 2.) make a cut, *d e*, in the tunnel which communicates between them. Put the poiſoned bait then into it, at either *d* or *e*, or even between them. The animal will come of courſe to repair the breach, will find the ſubſtance, eat it, and be deſtroyed.

MOLE-*Hill*, a term applied to a ſmall mouldy heap of earth, thrown up by the mole on graſs or other lands. It has been obſerved by a late writer, that “in the more rich and fertile ſoils, hills of this ſort are frequently thrown up in great numbers, from their abounding more with the food of the ſubterraneous animals that produce them. Meadows are often extenſively and ſeriouſly injured by them, on account of their depth of ſoft humid ſoil. Moles uſually reſide, deſtroy, and render uſeleſs the graſs, not only of the very ſpot where the hills are raiſed, but likewiſe to ſome extent immediately around them, as well as impeding the free courſe of the ſcythe: for theſe reaſons, the extermination of moles becomes an object of great conſequence to graſs huſbandry. In the early ſpring months, when ſuch hills are in a tolerably dry and powdery ſtate, no time ſhould be loſt in ſpreading them out, and diſperſing them, in as even and regular a manner as poſſible, over the ſurface of the ſward that adjoins them; as, when they remain long without being ſcaled, they do conſiderable injury to the graſs plants underneath them, by blanching and rendering them tender. This buſineſs may be very conveniently performed by a common iron-toothed garden rake. But it is invariably the beſt method never to ſuffer the animals to remain in the land, but to procure an expert mole-catcher to deſtroy them, and thus wholly prevent the hills being thrown up.” As ſoon as the hills have been diſperſed over the land in the manner directed above, the operator ſhould be careful in raking up all the ſmall ſtones, that may have been thrown out with the mould; as when left upon the ground, eſpecially where it is to be mown, they prove a very diſagreeable impediment to the ſcythe. But before this is done, it is beneficial to make uſe of a buſh-harrow.

MOLE-*Plough*, an implement intended for the purpoſe of draining land, by forming a ſort of pipe in it.

This plough was long ago invented by Mr. Adam Scott, and as ſince improved, and made uſe of in the midland counties, is an implement which, in ſuitable ſoils and ſituations, as in parks, pleaſure-grounds, and where much regard is had to the ſurface-appearance of the land, may be of conſiderable benefit in forming temporary drains. It makes a drain, without opening the ſurface any more than merely for the paſſage of a thin coulter, the mark of which ſoon diſappears. This inſtrument is chiefly employed in ſuch graſs-lands as have a declination of ſurface, and where there are not many obſtructions to contend with: but it may be uſed in other kinds of land, as on turnip grounds that are too wet for the ſheep to feed them off, or where, on account of the wetneſs, the feed cannot be put into the earth. With this plough the drains ſhould be made at the diſtance of ten or fifteen feet, in ſtraight lines, and alſo contrived ſo as to diſcharge themſelves into one large open furrow, or grip, at the bottom of the field. As it requires great ſtrength to draw this implement, it can only be uſed where a good team is kept. It is ſuggeſted by an intelligent farmer, that in deep clayey ſoils it may be highly uſeful; but that, where there are beds of gravel or ſand intervening, it cannot be employed with advantage. And it has been found uſeful in thin peaty ſoils.

This ſort of plough is repreſented at *fig* 1, in *Plate Agriculture* (*Ploughs*), in which *a* is the beam; *b*, the coulter; and *c*, the cone which forms the drain. It has been lately improved, ſo as to require much leſs force of draught, by having wheels placed before, and a roller behind. But a greater and more important improvement has been made on this tool by Mr. Lumbert. Mr. A. Young ſtates, that “in a communication from his ſon, inſerted in the 36th volume of the Annals of Agriculture, mention is made of this plough having been greatly altered by Mr. Lumbert of Rilington Wick, near Stow, on the Wolds of Glouceſterſhire, who worked it by eight men turning windlaſſes. This he takes to be the firſt public notice of any ſuch invention. Thomas Eſtecourt, eſq. M. P. for Cricklade, and a member of the Board of Agriculture, had, ſince that period, ſeveral times mentioned the ſame object to him. In March 1804, he had the goodneſs to inform him, that the plough was then working at Cricklade; and, upon his expreſſing a wiſh to ſee it, obligingly propoſed to write to Mr. Wells, ſurgeon at Cricklade, informing him of his intention, and requeſting his writing to Mr. Lumbert, the inventor, to deſire his preſence at the ſame time. Theſe neceſſary previous ſteps being taken, he arrived at Cricklade, March 21ſt, and had the ſatisfaction to find that the plough was then at work within a mile of the town, whither he repaired with Mr. Wells and Mr. Lumbert. The field in which the machine was working belongs to Mr. Champernoun of Cricklade; the ſoil a very rich ſurface loam upon a clay bottom, which made it wet, and demanded the operation of draining. The ſtate of the ſurface (though graſs) was ſuch as would have been very materially injured, by ſo many horſes as muſt have been neceſſary to draw the mole at the depth he found it working, which was from 17 to 18 inches. Eight women work it: and in reſpect to the labour exerted, it is ſufficient to note that Mr. Lumbert contracts for the work at three halfpence *per* perch, lug, or rod, of 5½ yards; his foreman contracting with him for doing it at three farthings, the machine being found by the maſter, the man paying himſelf and the women out of that ſum. The plough does, according to ſoil and circumſtances, from 150 to 200 perches a-day: 300 have been done. At 200, three farthings a perch are 12*s.* 6*d. per diem*; the eight women at 8*d.* are 5*s.* 4*d.*, leaving

ing 7*s.* 2*d.* for the foreman's pay, and the reparation of the chain, the chief object in the repairs, as it breaks often, and wants the addition of a falſe link whenever that accident happens. He timed the motion of the plough for ſome rods, and found the average five yards in a minute. At this ſpeed, 490 perches would be done in nine hours; but the time of moving the windlaſs, frame, and anchor, is a large deduction, though he ſhould have conceived not ſufficient to reduce the performance to 200 perches. He could not but much admire the efficacy of the anchor and *ſcorts*, in quickly fixing and preſerving the ſteadineſs of the machinery, in reſiſtance of ſo great a force as is neceſſary to move the mole deep buried in clay."

And it is added, that "the preſent conſtruction of the machine was the reſult of many experiments, in making them under divers variations. Mr. Lumbert ſpeaks of two circumſtances particularly, which coſt him much attention and many trials: the line of traction, and the due elevation of the beam. He has not comprehended why the beam ſhould be elevated (other circumſtances remaining the ſame); why any elevation further than parallel to the horizon ſhould be neceſſary, the parts connected forming one piece in either caſe. This queſtion, which is intimately connected with the ſtructure of all wheel-ploughs, and is found under great variations, from the elevated beam of the Norfolk plough to the very depreſſed poſition of the beam of the Hertford one, deſerves more attention than it has commonly met with. The line of ſurface being 1 : 2, and the tendency of the ſhare into the ground 1 : 3, ſhould the elevation of the beam be proportioned as 1 : 4? The line of traction, in Mr. Lumbert's plough, being to a little above 1, ſuppoſe his mole working at 5, he ſeems to have proportioned the elevation of his beam ſomewhat to the ſame angle above ground at 6, that is, at 22½ degrees. He found it neceſſary that the line of traction ſhould cut the centre of the front roller, but not drawing by it. If a line be drawn from the horſe's ſhoulder, while drawing, to the heel of the Norfolk plough, he has often found, when the ploughs *are ſaid* to go well, that ſuch line paſſes by the centre of the wheels; but the Norfolk plough is truly a wheel machine, the draught being to the carriage, and not to the plough itſelf: whereas Mr. Lumbert draws from the heel of his beam. The line of traction, however, in Mr. Lumbert's machine, is always varying: the angle is very acute, when the women begin to turn; but neceſſarily becomes leſs and leſs ſo, till the mole arrives at the windlaſs frame. The elevation of his beam throws a great weight on it, by counteracting the tendency of the mole into the ground. Quære, if this line of traction be not to the centre of the compound reſiſtance? If ſo, it explains the reaſon for his greater eaſe of draught; but it does not explain why he ſhould not have availed himſelf of high wheels in front, inſtead of a low roller, converting his machine into a true wheel-plough, and drawing from the carriage; the chain from the plough heel being fixed to the carriage, as that from the coulter (or near it) is in the common wheel-plough."

The ſame writer further ſtates, that "Mr. Lumbert has made this great improvement of the mole-plough about ſeven or eight years, and the ſucceſs attending it has been conſiderable. Mr. Poulton of Cricklade and Mr. Wells have uſed it, as well as Mr. Champernoun. Mr. Coxe at Water Eaton has drained, as he was informed, ſome hundreds of acres with it. Many have uſed it at Perton; nor had Mr. Adams heard of any failures. All known here have been on clay; but they have heard of its anſwering on leſs ſtiff bottoms. The drains run well after three years."

It is added, that "Mr. Lumbert, in their examination of the machine, deſired him to obſerve that the bottom of the mole was not at all bright, there being no wear there, while the upper parts were worn quite bright; and from this circumſtance he concludes, that any attention to keep froſts out of the ſlit made by the coulter and ſtandard is unneceſſary. He conceives that the force of preſſure, and conſequent plaſtering, is all on the upper ſide of the pipe, inſomuch that he is firmly perſuaded that the operation is chiefly at the bottom of the pipe, where the ſoil is left porous, on compariſon with the top of it: and he is ſo much of this opinion, that he conceives the water, which runs down by the ſlit, is more likely to be conducted over the pipe than to get into it." Mr. Young ſtates, that "he merely reports his remarks without a comment."

It is hinted, that "the improver goes to any part of the kingdom with his machine for draining of 1½*d. per* rod; but if to a diſtance, muſt have inſured work, in the proportion of 200 rods for every mile he travels going out. At any conſiderable diſtance, this amounts to ſo large a quantity, that, in many caſes, it would be adviſable for ſeveral neighbours to join for providing ſufficient employment. He ſells the tool complete at 50 guineas, having a patent. He can go 24 inches deep; and he has, on his own farm, drains that have ſtood well ſeven years. When the ditch of a field is not in ſuch a direction as ſuits for the conveyance of the water from the pipes made by the mole, or other circumſtances render it neceſſary to have a bottom main drain to take the water, his mode of making theſe *clay-drains*, as he calls them, is by digging to a certain depth with common ſpades; and at the bottom of the trench ſo opened he takes a ſpit, with a narrow ſpade that has a cutting edge. This tool opens a trench, which juſt receives a jointed wooden frame, with a chain at the end, by which it is drawn on by the application of a lever. This frame, fitting the ſpace left by the narrow ſpade, is covered with clay, rammed cloſe and firmly to it, being firſt wetted, that it may ſlide from this clay vault when drawn on by the lever: and from much experience he finds theſe drains perfectly ſafe and durable. Over the rammed clay mould, enough to fill to the ſurface is thrown in."

The writer alſo mentions, that in diſcourſing "with him on other applications of the power he exerts in drawing the mole, he informed him that Mr. Barker of Fairford has a water, that was ſo choked up with mud and weeds, that a duck could ſcarcely ſwim in it. He applied the windlaſs, frame, and chain, to drag out all; and with ſuch ſucceſs, that no other method would have cleanſed the water at ſo cheap a rate: ſome drag, ſcraper, or other contrivance, muſt of courſe be neceſſary for taking and retaining the mud," &c. And Mr. Young ſuppoſes, that "a very uſeful application of this power would be to the purpoſe of drawing turnips or cabbages from off wet land, which, by common carting, is attended with ſo much miſchief. He has ſeen temporary ſheds roughly erected, on the borders of turnip-fields in Suffolk, for ſtall-feeding beaſts: the addition of the windlaſs, to draw the turnips to ſuch ſheds, would be extremely important. Another application of this force, well deſerving attention, is, for drawing the machine which he has ſeen in the maritime part of Eſſex, wherewith croſs-roads are levelled. Where ruts are deep, and combs and quarters high, with other inequalities, this tool, a ſort of harrow, might be very cheaply uſed for effectually ſmoothing the whole, and improving the roads at a very ſmall expence." And as "much the moſt economical ſyſtem in which the thraſhing-mill can be applied is, that of a circular iron rail-way, whereon to draw the ſtacks to the mill, as he has fully explained in the 33d volume of the Annals: inſtead

ſtead of the application of the power of the wind or horſes to draw the ſtacks, the windlaſs and anchor of the mole-plough might be moſt cheaply applied. Another application of this power which he ſhall mention is, for the draught of ploughs and other machines, when comparatively tried: the force exerted would be more regular and ſteady than that of horſes, or even oxen; and the only attention particularly demanded would be to keep the chain parallel to the furrow, and at the right diſtance from it."

But Mr. Young ſuggeſts, that "in the operation of hollow draining itſelf, a moſt important deſideratum yet remains, and that is the drawing a plough that ſhall cut an open trench, for filling up with ſtraw, wood, or ſtone. Two ſuch ploughs have been invented: Mr. Arbuthnot's, a plate and explanation of which are to be ſeen in his "Eaſtern Tour;" and Mr. Makin's, which is kept in the Society's repoſitory in the Adelphi buildings. The trampling of ſo many horſes as theſe ploughs required, was the great objection to their uſe. This ſerious evil is done away in the windlaſs ſcheme; and he cannot but recommend to Mr. Lumbert's attention the improvement of one of thoſe ploughs, or the invention of another, for executing theſe drains by means of his windlaſs. He ſtates, that "in all ſorts of hollow draining, Mr. Lumbert is decidedly of opinion that the cuts ſhould be in the direction of, and with the ſlope of the land: not diagonally acroſs it, which is the common practice. In the latter method, the drains operate but on one ſide: cutting off the courſe of the water, as it deſcends, it drains the land only below the cuts; but if made with the ſlope, they operate equally on either ſide; and as he ſuppoſes the veins or pores of the ſoil, which conduct the water to act in every direction, provided the water itſelf is taken away, his cuts in the direction of the ſlope receive it laterally from every portion of the land between the drains, the deſcent from which to the bottom of the drain is greater than the angle of the deſcent of the natural ſurface of the field. It would not be eaſy to bring this opinion to the teſt of exact experiment; but a very ingenious farmer in Suffolk, Mr. Simpſon of Witneſham, near Ipſwich, has the ſame conviction, and has drained ſome hundreds of acres very ſucceſsfully upon this plan."

But the nature, uſe, and application of this implement may, however, be better underſtood from *fig.* 2, in *Plate Agriculture* (*Ploughs*), in which,

1. The beam.
2. The mole, to which ſegments for lengthening it ſcrew on at 3.
4. The roller at heel, on which it preſſes.
5. The chain, 50 to 60 yards long, which winds on to the two cylinders, 7, 7.
6. A pulley, around which the chain, 5, plays.
8, 8, 8, 8. Windlaſſes turned each by two women.
9. Stays, which entering the ground, aſſiſt in keeping the machine ſteady.
10. The anchor.

And the proportion and reſpective angles of all the parts may be meaſured by the ſcale which is given in the plate. See Plough.

Mole-*Traps*, the name of ſuch traps as are contrived for the purpoſe of taking and deſtroying moles. They are of ſeveral different kinds. See Mole-*Catching*.

Mole, *Mola*, or *Mola Carnea*, in *Phyſiology*, a miſ-ſhapen maſs of hard fleſh, ſometimes generated in the wombs of women, inſtead of a fœtus; called alſo a *falſe conception*. It is, however, a very rare production; what is called a mole by women being generally found on examination to be nothing more than coagulated blood. The following approaches neareſt to what the ancients conceived to be a mole, of any thing that has occurred to the writer of this article. A woman, about twenty-ſeven years of age, was delivered of a female fœtus, and its placenta, in which nothing uncommon was obſerved; and although the uterus remained of an unuſual ſize, yet the pains not recommencing, there was no ſuſpicion entertained but that its bulk was occaſioned by coagulated blood. On the third day the pains became violent, and this monſter was born. Its ſhape was ſpherical, but ſomewhat flattened. It meaſured in its largeſt diameter eight inches, and weighed about eighteen ounces. It received its nouriſhment by an umbilical cord, to which was attached a portion of membranes, and although no placenta was found, it is probable it had a ſmall one, and that it was incloſed in its own involucrum. It was completely covered with a cuticula, and a little above the part where the navel-ſtring terminated, there was a hairy ſcalp covering a bony prominence, ſomewhat reſembling the arch of the cranium. On diſſection it was found to be plentifully ſupplied with blood-veſſels, proceeding from the navel-ſtring, and branching through every part of it. It had a ſmall brain, and nerves paſſing from thence through the foramina of the bones; but no reſemblance of any thoracic or abdominal viſcera. The reſt of its bulk was made up of fat. This was inſerted, with the plate of the external appearance of the object, in the ſeventy-firſt volume of the Philoſophical Tranſactions.

Mole, *Moles*, a maſſive work formed of large ſtones laid in the ſea by means of coffer-dams, extended either in a right line, or an arch of a circle, before a port; which it ſerves to cloſe; to defend the veſſels in it from the impetuoſity of the waves, and to prevent the paſſage of ſhips without leave.

Thus we ſay the mole of the harbour of Meſſina, &c.

Mole is ſometimes alſo uſed to ſignify the harbour itſelf.

Mole, *Moles*, among the Romans, was alſo uſed for a kind of mauſoleum, built in manner of a round tower on a ſquare baſe, inſulate, encompaſſed with columns, and covered with a dome.

The mole of the emperor Adrian, now the caſtle of St. Angelo, was the greateſt, and moſt ſtately of all the moles. It was crowned with a brazen pine-apple, in which was a golden urn containing the aſhes of the emperor.

Mole, in *Zoology*. See Talpa, and the article Mole, *ſupra*.

Mole-*Cricket*, *Gryllotalpa*, in *Entomology*. See Gryllus.

MOLECULE, Molecula, in *Phyſics*, a little maſs or portion of any body.

The air, by reſpiration, inſinuating itſelf into the veins and arteries, endeavours by its elaſtic power to divide and break the molecules of the blood, which on their part reſiſt ſuch diviſion.

MOLEEAH, in *Geography*, a town of Bengal; 54 miles W.N.W. of Midnapour.

MOLENE, a ſmall iſland in the Engliſh channel, near the W. coaſt of France; ſix miles S.E. of Uſhant. N. lat. 48° 24′. W. long. 4° 52′.

MOLENES, a ſmall iſland in the Engliſh channel, near the coaſt of France; 13 miles W. of the iſland of Bas. N. lat. 48° 47′. E. long. 3° 33′.

MOLENPURG, a town of Auſtria; 16 miles S.W. of Crems.

MOLES Carnea, in *Anatomy*, a name given by Veſalius, and others, to a muſcle called by Winſlow, Albinus, and others, the *complexus*. Spigelius calls it the *carnea moles trigemino adjuncta*.

Moles *Carnea labia formans*, a name given by Fallopius to the muſcle called by Albinus *orbicularis oris*, and by Cowper *conſtrictor labiorum*.

MOLESTANDO. See Non *Moleſtando*.

MOLESWORTH, Robert, in *Biography*, viſcount Moleſworth of Ireland, deſcended from an ancient Engliſh family, was born at Dublin in 1656. Having received the elements of a good education, he was ſent to complete his ſtudies at Dublin college. He married, at an early age, the ſiſter of the earl of Bellamont. When the prince of Orange came to England in 1688, Mr. Moleſworth rendered himſelf conſpicuous as a friend to liberty and the Proteſtant religion, for which he was afterwards attainted and his eſtate ſequeſtered by king James's Iriſh parliament. The ſucceſs of the Popiſh king, even in Ireland, was very ſhort lived, and Mr. Moleſworth was immediately noticed by king William, who raiſed him to the rank of privy-counſellor. In 1692 he was ſent out envoy-extraordinary to the court of Denmark, where he reſided three years. He had not, however, been very long in his ſituation before he found reaſon to be diſguſted with the manners and habits of that newly enſlaved country, and his eagerneſs to inſiſt upon privileges which he conceived were his due in the high character of ambaſſador, gave offence, and he was forbidden to enter the court. Without the ceremony of taking leave, he withdrew to Flanders, on pretence of buſineſs, and thence returned to England, where he ſet about writing "An Account of Denmark." This work, written probably in reſentment for the ill treatment he had met with, gave ſuch an unfavourable account of the government and nation, that it was noticed by prince George of Denmark, conſort to the princeſs Anne, afterwards queen of England, and a memorial was preſented to king William, by the Daniſh envoy, complaining of the inſult. It was undoubtedly one of the publications of that period which was moſt hoſtile to arbitrary power, and which expoſed with the greateſt freedom the arts by which public liberty was overthrown. Dr. King was employed to anſwer this work, in the performance of which, being furniſhed with facts by the Daniſh reſident, he was enabled to detect ſome miſtakes and miſrepreſentations: the book was however well received, and was tranſlated into ſeveral foreign languages. For the author it procured the eſteem and friendſhip of lord Shafteſbury, in uniſon with whoſe political principles he always acted. Mr. Moleſworth was continued a member of the privy council till the latter part of the reign of queen Anne, when he was removed on account of a complaint from the clergy in convocation, to whoſe increaſing influence he was always inimical. On the acceſſion of George I. he was taken again into favour, and in 1716 was called to the houſe of lords in Ireland, by the title of viſcount Moleſworth. After this he ſpent his time chiefly in a literary retirement, connected with and much eſteemed by ſeveral men of learning and liberal principles, among whom were Locke, Molyneux, and Toland. To the latter he was a warm friend and benefactor, though his own circumſtances were narrow. Lord Moleſworth died in 1725, at his ſeat near Dublin, in the ſixty-ninth year of his age. Beſides the work already referred to, he wrote an addreſs to the houſe of commons for the encouragement of agriculture; and to his pen were aſcribed ſeveral temporary publications in favour of the Engliſh conſtitution, and the general principles of liberty. One of his daughters, Mary, the wife of George Monk, eſq. at her death, in 1715, left a collection of poems, which her father publiſhed, and dedicated to the princeſs of Wales, afterwards queen Caroline. Biog. Britan.

MOLEVETO, in *Geography*, a town of the iſland of Ceylon.

MOLFETTA, a town of Naples, in the province of Bari, on the coaſt of the Adriatic, the ſee of a biſhop; eight miles E.S.E. of Trani. N. lat. 41° 18'. E. long. 16° 39'.

MOLIERE, John-Baptist Poquelin de, in *Biography*, the moſt celebrated of modern writers in comedy, was born at Paris in 1620. His father, who was valet de chambre upholſterer to the king, and kept a broker's ſhop, deſigned to bring him up to his own employment, and gave him a conformable education. The youth, without any advantages of education beyond thoſe of mere reading and writing, imbibed a taſte for literature, and was ſent to the Jeſuits' college as a day-ſcholar. His aſſiduity was ſoon obſerved; he became connected with Chapelle and Bernier, with whom he attended lectures in philoſophy, under Gaſſendi. His father, with increaſing years, became very infirm, and the buſineſs of the royal houſhold was devolved on the ſon, and he attended Louis XIII. to Narbonne in 1641. On his return to Paris he reſolved to devote himſelf to theatrical employments. He connected himſelf with a company of young perſons, who acted in the ſuburbs of St. Germain, and aſſuming the name of Moliere, compoſed ſeveral little pieces of the comic kind, and performed his part on the ſtage. At length he joined La Bejart, a provincial actreſs, and they formed a company, which, in 1653, repreſented at Lyons his firſt regular comedy in verſe, "L'Etourdi." This was followed by "Le Depit Amoureux," and "Les Precieuſes ridicules," exhibited at Beziers, where Moliere was favourably received by the prince of Conti, who was chief of the ſtates of Languedoc. He next viſited Grenoble and Rouen, and from the latter came to Paris, under the protection of Gaſton, duke of Orleans, who introduced him to Lewis XIV. He ſoon obtained permiſſion to open a theatre in the metropolis, which was firſt in the old Louvre, and afterwards in the Palais Royal, and in the year 1665 he was placed in the ſervice of the king, with a penſion. He roſe in reputation as a writer by the new pieces which he preſented to the public, and became more and more perfect as he advanced in experience and obſervation. At mature age he married the daughter of the actreſs Bejart, who alſo followed the ſame profeſſion, and he is ſaid to have incurred very deſervedly the ſame ſort of ridicule as that which he beſtows plentifully upon the poor huſbands in his comedies. In friendſhip he was more happy, and he numbered among his intimates not only men of wit, but ſome of the greateſt perſons about the court. He died in conſequence of his exertions in acting a principal part in his play, "Le Malade Imaginaire." He was labouring under a ſlight pulmonary complaint, and was ſtrongly urged to poſtpone the repreſentation: "What," ſays he, "will become of ſo many poor people who depend on it for the very means of ſubſiſtence. I ſhould reproach myſelf for having neglected a ſingle day to ſupply them with that of which they ſtand in need." He exerted himſelf with unuſual ſpirit, and his efforts brought on the rupture of a blood-veſſel, by which he was ſuffocated. This event happened in February, 1653, when he was only in the fifty-third year of his age. By almoſt the general conſent of Europe, he is placed at the head of that genuine comedy which has for its ſubject the ridiculous in character and manners; and it is agreed that no one ever united more pleaſantry in dialogue and incident, with more good ſenſe and penetration in ſelecting juſt objects for comic ſatire. He is alſo regarded as the great reformer of the French theatre in reſpect to comedy, as Corneille was in reſpect to tragedy. His more ſerious compoſitions, and thoſe written in verſe, are by his countrymen eſteemed his maſter-pieces, eſpecially the "Miſanthrope" and the "Tartuffe." The latter, touching upon religious hypocriſy, excited a great clamour againſt him from the pretended devotees, who had intereſt to procure a prohibition of its ſecond repreſentation from the parliament. This temporary attack has not prevented the "Tartuffe" from retaining its place as one of the great ornaments of the French ſtage. Moliere had always a large portion of the philoſophy of good ſenſe, and rarely failed to diſcern the weak part of what he choſe for the topic of his farcaſm. He had alſo a juſt ſenſe of propriety in the conduct of life, and in ſerious humour he is always the friend of honour and integrity. His own character was, in many reſpects, eſtimable. He was kind, obliging, and generous. Nevertheleſs, after his death, the archbiſhop of Paris, Harlai, a man of looſe morals, without, probably, half the good qualities of the actor, but deſirous of pleaſing the rigoriſts of the Roman church, refuſed him Chriſtian burial, and the king's authority was requiſite to procure him private interment in a chapel belonging to the church of St. Euſtace. The bigotry of the mob, whom the prieſts had kept ignorant to make them engines in their own cauſe, impeded even this obſcure ceremonial, and they could not be diſperſed till money was given them for the purpoſe. "Such," ſays an able biographer, "was the treatment of a man who was an honour to his country, and who will ever rank among the principal ornaments of the age in which he lived! No one was more impreſſed by a ſenſe of his merit than the great Conde, who, in reply to a wretched rhymer, that had brought him an epitaph on Moliere, "Would to heaven he had preſented me with thine!" He is honoured with memorials by Boileau, Voltaire, and the king, who being aſked to name the firſt writer that had appeared in his reign, named Moliere, without the ſmalleſt heſitation. His ſtyle in proſe is perfectly natural and eaſy: in verſe he has been accounted incorrect and careleſs. As an actor he excelled only in comedy: his voice was feeble and indiſtinct, but his ſtrong features, animated by intelligence, rendered him the perfect repreſentative of the characters, in his own pieces, which he took upon himſelf. His works have been a thouſand times reprinted: the beſt edition is ſaid to be that of Bret, at Paris, in ſix volumes, with commentaries. Moreri.

MOLIERES, Joseph-Prival de, a celebrated French prieſt and mathematician, who flouriſhed in the eighteenth century, was born at Taraſcon, in the county of Foix, in the year 1677. Owing to a tender and delicate conſtitution, he choſe for himſelf a life of ſtudy, and became, in a ſhort time, famous for his learning on divers topics, but particularly in the ſeveral branches of belles lettres and mathematics. His elder brother, who had obtained conſiderable rank in the army, having been ſlain in battle in 1695, M. Molieres' parents were deſirous that he ſhould ſettle in the world, but his love of ſtudy rendered their perſuaſions ineffectual. That he might put an end to all importunity on this head, he entered at once into the church, and was ordained prieſt in the year 1701. He afterwards entered in the congregation of the oratory, and taught the claſſics and philoſophy with great ſucceſs in ſeveral of their ſeminaries. Some years after this, having read and greatly admired the works of father Malebranche, he was anxious to become acquainted with their author; and for that purpoſe quitted the oratory and repaired to Paris. Here he attached himſelf cloſely to that philoſopher, and during his ſtay in the metropolis, he preſented ſeveral memoirs to the Academy of Sciences, and in 1721 he was admitted into it as an adjunct to the mechanical claſs. Two years afterwards he obtained the profeſſorſhip of the College-royal, and in 1729 roſe to the rank of aſſociate in the Academy of Sciences. He had already publiſhed a work, entitled "Mathematical Leſſons, &c.," in which the principles of algebra and arithmetical calculations are methodically laid down, and the theorems explained and demonſtrated. After this, which was well received, he publiſhed four volumes of "Lectures on Natural Philoſophy, containing the Elements of Phyſics determined ſolely by the Laws of Mechanics, &c." This was ſaid to be a very whimſical performance, in which he endeavoured to unite the ſyſtem of Deſcartes with the principles of Newton, and he attempted to rectify the ideas of the French, by the experiments of the Engliſh philoſopher. In 1741 he publiſhed the firſt part of his "Elements of Geometry," intended as an introduction to his phyſical lectures. He was a very irritable man, which led him frequently into paſſions, of which one was the cauſe of his death in 1742. In other reſpects he was reckoned a very amiable character, but was apt to be ſo abſent, or abſorbed in his ſtudies, as to appear almoſt wholly inſenſible to ſurrounding objects. His infirmity in this reſpect became known, and he was accordingly made the ſubject of depredations. A ſhoe-black, once finding him profoundly abſorbed in a reverie, contrived to ſteal the ſilver buckles from his ſhoes, replacing them with iron ones. At another time, while at his ſtudies, a villain broke into the room in which he was ſitting, and demanded his money; Molieres, without riſing from his ſtudies, or giving any alarm, coolly ſhewed him where it was, requeſting him, as a great favour, that he would not derange his papers. Moreri.

Molieres, in *Geography*, a town of France, in the department of the Lot, and chief place of a canton, in the diſtrict of Montauban; 10 miles N. of it. The place contains 2493, and the canton 6870 inhabitants, on a territory of 132½ kiliometres, in ſeven communes.

MOLIETTA, a town of Naples, in Bari; eight miles E.S.E. of Trani.

MOLILLA, a town of Hindooſtan, in Bednore; 10 miles E. of Bednore.

MOLIN, a town of Perſia, in Khoraſan; 16 miles N.W. of Zeuzan.

MOLINA, in *Biography*. See Molinists.

Molina, in *Geography*, a ſmall town of Spain, in the province of Murcia, pleaſantly ſituated on the borders of a valley, which is watered by the Sagara. It is ſurrounded by conſiderable plantations of all kinds of trees, and fertile rich gardens, embelliſhed with oranges, lemons, olives, pomegranates, and palms. The ſtreets are large, ſtraight, airy, and pleaſant: the number of inhabitants is about 3000. The pariſh church is a handſome ſtructure, but deformed by bad paintings; eight miles N. of Murcia.

Molina, a town of Spain, and capital of a lordſhip in New Caſtile, ſituated on a river of the ſame name, which runs into the Tagus, 15 miles S.W. of it; 100 miles N.E. of Madrid. N. lat. 41° 8'. W. long. 2° 1'.

Molina, in *Botany*, Lamarck Dict. v. 4. 227. Cavan. Monadelph. 435. t. 263, ſo called by the writer laſt mentioned, in honour of John Ignatius Molina, author of a natural and civil hiſtory of Chili, from which Juſſieu has adopted ſeveral genera, with moſt uncouth names. See Gærtnera.

MOLINÆA, ſo denominated by Commerſon, according to Juſſieu, in memory of Johannes Molinæus (Jean des Moulins,) to whoſe aſſiſtance Dalechamp had recourſe in the compoſition of his laborious work, after John Bauhin had been driven away from Lyons by the bigotry of the Papiſts; his learning and excellent character having made him too conſpicuous there for a Proteſtant, like his father at Paris.

(See Bauhin.) Commerſon, it ſeems, intended at the ſame time to commemorate his friend Deſmoulins, author of an arrangement of the plants about Clugni, publiſhed in Durande's Flore de Bourgogne.—Juſſ. 248. Willd. Sp. Pl. v. 2. 329. Lamarck Illuſtr. t. 305. (Trigonis ; Jacq. Amer. 102 ? Juſſ. 248 ?)—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Trihilatæ*, Linn. *Sapindi*, Juſſ. See Cupania, to which *Molinæa* and *Trigonis* are there referred by our excellent predeceſſor, the Rev. Mr. Wood, on the authority of Mr. Dryander, or rather of Lamarck. From an examination of Commerſon's ſpecimens, we have no doubt of the propriety of this meaſure. We find an evident ſtyle in *Molinæa*, though perhaps it may not be protruded till after impregnation ; but this removes one of Willdenow's objections. As to the *arillus*, or tunic of the ſeed, Lamarck's plate, fig. *i*, ſeems to indicate one, though not perhaps ſo remarkable as that in Plumier's Nov. Gen. t. 19. *Cupania*, being the oldeſt name and unexceptionable, is neceſſarily preferred to the above.

MOLINE', in *Heraldry*. A croſs moliné is that which turns round both ways at all extremities, though not ſo wide or ſharp as that ſaid to be anchored.

MOLINET, Claude du, in *Biography*, a learned French eccleſiaſtic and antiquary in the ſeventeenth century, was born at Chalons, in Champagne, in the year 1620. Having been inſtructed in the rudiments of learning at his native place, he was ſent to Paris to go through his courſe of philoſophy. Here he entered among the canons-regular of St. Genevieve of the order of St. Auguſtine, and afterwards became attorney-general of that congregation. He might have been raiſed to higher dignities, but his love of ſtudy and retirement induced him to decline them. Medals and antiquities of various kinds were his favourite ſubjects of purſuit, and having been attached to them from almoſt his earlieſt years, he had collected a conſiderable cabinet, which he annexed to the library of St. Genevieve, together with other rarities and curioſities. He was employed by Lewis XIV. to arrange his cabinet of medals, and augment their numbers, as well as to purchaſe agates and other precious ſtones, of which father Molinet was reckoned an excellent judge. He added more than 800 medals to the royal collection, and was amply and nobly remunerated by his ſovereign's liberality, of which the library at St. Genevieve ſupplied abundant evidence ; for the improvement of that inſtitution was the prime object to which all the fruits of his labours were devoted. He died in 1687, at the age of ſixty-ſeven. He is known as an author by learned notes to an edition of the letters of Stephen, biſhop of Tournay ; "Hiſtoria Summorum Pontificum a Martino V. ad Innocentium XI. per eorum Numiſmata ;" "The Cabinet of the Library of St. Genevieve ;" "Reflections on the Origin of Secular Canons, and on the Antiquity of Canons-Regular ;" and other works which diſplay much learning, and will afford gratification to antiquarians. Moreri.

MOLINEUX's Harbour, in *Geography*, a bay on the S.E. coaſt of Tavai-Poenammoo, the ſouthern iſland of New Zealand. S. lat. 46° 24'. W. long. 189° 50'.

MOLINISTS, in *Eccleſiaſtical Hiſtory*, a ſect in the Romiſh church who followed the doctrine and ſentiments of the Jeſuit Molina, relating to ſufficient and efficacious grace. Lewis Molina, after whoſe name this ſect was called, was a Spaniſh Jeſuit, and profeſſor of divinity in the univerſity of Ebora, in Portugal. In the year 1588, he publiſhed a book, to ſhew that the operations of divine grace were entirely conſiſtent with the freedom of human will ; and he introduced a new kind of hypotheſis to remove the difficulties attending the doctrines of predeſtination and liberty, and to reconcile the jarring opinions of Auguſtinians, Thomiſts, Semi-Pelagians, and other contentious divines. Molina affirmed, that the decree of predeſtination to eternal glory was founded upon a previous knowledge and conſideration of the merits of the elect ; that the grace from whoſe operation theſe merits are derived, is not efficacious by its own intrinſic power only, but alſo by the conſent of our own will, and becauſe it is adminiſtered in thoſe circumſtances, in which the Deity, by that branch of his knowledge, which is called *ſcientia media*, foreſees that it will be efficacious. The kind of preſcience, denominated in the ſchools *ſcientia media*, is that foreknowledge of future contingents, that ariſes from an acquaintance with the nature and faculties of rational beings, of the circumſtances in which they ſhall be placed, of the objects that ſhall be preſented to them, and of the influence which theſe circumſtances and objects muſt have on their actions.

The great antagoniſts of the Moliniſts were the Janſeniſts.

MOLINO, in *Geography*, a town of Naples, in Abruzzo Ultra ; 13 miles S.S.E. of Aquila.

MOLINOS, in *Biography*. See Quietists.

MOLINOSISTS, in *Eccleſiaſtical Hiſtory*, a ſect among the Romaniſts, who adhere to the doctrines of Molinos. Theſe are the ſame with what are otherwiſe called Quietiſts.

MOLISE, in *Geography*, a city of Naples, which, though not the capital, gives name to the county or diſtrict to which it belongs ; 48 miles N.N.E. from Naples. N. lat. 41° 39'. E. long. 14° 25'.

Molise, *County of*, a province of Naples, having N. Abruzzo Citra, E. Capitanata, S. Lavora, and W. thoſe which were denominated the ſtates of the church. Of all the provinces of Naples, this is the ſmalleſt, being about 30 miles long, and 24 wide. It is fertile in corn, wine, and ſaffron, and affords plenty of game and ſilk. The capital is Campo-baſſo.

MOLIVO, a ſea-port town on the N.W. coaſt of the iſland of Metelin, or Mitylene, built on rocks of baſaltes, preciſely on the ſpot formerly occupied by Methymna : it is commanded by a caſtle almoſt in ruins : its population may be eſtimated at 2 or 3000 inhabitants, as well Turks as Greeks ; its territory is formed of a plain of moderate extent, very fertile, and ſurrounded by volcanic mountains : its productions conſiſt principally of oil, corn, and barley ; it furniſhes a little wine and various fruits ; and alſo cotton and ſeveral kitchen-garden plants ; 20 miles N.N.W. of Caſtro.

MOLL, a town of France, in the department of the Two Nethes, and chief place of a canton, in the diſtrict of Turnhoul ; 10 miles from Harenthals. The place contains 3694, and the canton 15,679 inhabitants, on a territory of 265 kiliometres, in five communes.

MOLLARU, a town of Hindooſtan, in the circar of Rajamundry ; 45 miles N.E. of Rajamundry.

MOLLE, in *Botany*, Cluſ. Exot. 322. Tourn. Inſt. 661, a barbarous name, of Peruvian origin. See Schinus.

Molle, in *Geography*, a town of Norway, in the province of Drontheim. N. lat. 62° 48'. E. long. 7° 36'.

Molle, in *Ichthyology*, the name of a ſmall ſpecies of whiting, common in the Mediterranean, and in the markets of Rome, Venice, &c. and called by authors the *aſellus omnium minimus*, and the *merlangus*. It is a ſpecies of *Gadus* ; which ſee.

Molle, Ital., *Mol*, Fr., *Mollis*, Lat. In the primitive ſcale of Guido, the ſound B, when flat in the hexachord of F, was called B *molle*, ſweet, ſoft, compared with B in the hexachord of G, when it was called B-*durum*, harſh, and B-*quadro*, ſquare, from the form of the ♮, which was made like a Gothic B, or rather ♮ for half; a character ſtill retained by the Germans for B natural. In ſolmiſation, B-*durum* implies more than B ♮, and B *molle*, B ♭.

MOLLER, Henry, in *Biography*, a learned German Lutheran divine in the ſixteenth century, was born at Hamburgh in the year 1530. He officiated ſome time as paſtor to a church in the landgraviate of Heſſe with great reputation, and was honoured with the degree of doctor of divinity. He was much celebrated for his ſkill in biblical literature, and he particularly excelled in the knowledge of the Hebrew and Chaldee languages. During fourteen years he filled the chair of profeſſor of the Greek and the Oriental languages in the univerſity of Wirtemberg, of which he was probably deprived for refuſing ſubmiſſion to the famous "Form of Concord." He died at Hamburgh in 1589, in the ſixtieth year of his age. He was author of "Commentaries" on the book of Pſalms, and the prophecy of Iſaiah. He was likewiſe known as a poet. Moreri.

MOLLERUSA, in *Geography*, a town of Spain, in Catalonia; 10 miles E.N.E. of Lerida.

MOLLIDON, a town of Hindooſtan, on the Dooab; 18 miles N.N.W. of Etaya.

MOLLIENS-Vidame, a town of France, in the department of the Somme, and chief place of a canton, in the diſtrict of Amiens. The place contains 836, and the canton 12,456 inhabitants, on a territory of 232½ kiliometres, in 29 communes.

MOLLINARI, Simone, in *Biography*, was maeſtro di capella del Duomo at Genoa, and publiſhed, in 1605, "Concerti Eccleſiaſtici," as they are called; but theſe, which are in Dr. Aldrich's Collection of Muſic in Chriſt-church, Oxon, were only maſſes and motets, accompanied by inſtruments, which, about this time, became very common in Italy.

MOLLIS Portio. See Portio.

MOLLITIES Ossium. This curious and extraordinary diſeaſe may be defined to be a morbid ſoftneſs and flexibility of the bones, ariſing from a deficiency of the phoſphat of lime in their ſtructure. Whether their firmneſs and ſtability are loſt, in conſequence of this matter being too abundantly abſorbed, or of its not being duly and ſufficiently ſecreted, is a queſtion which we cannot undertake to reſolve. Some writers treat of the mollities oſſium with rickets; but although it is true, that, in both theſe diſeaſes, the bones loſe their natural ſolidity and proper ſhape, it appears to us that the two affections deſerve a marked diſtinction, inaſmuch as rachitis is an affection peculiar to childhood, and the bones only change their ſhape gradually; whereas the mollities oſſium has frequently been obſerved to afflict adults, and occaſion ſuch a ſoftneſs of the bones, that, in the extreme ſtage of the diſeaſe, they may be at once bent in any direction whatſoever.

The following caſe, drawn up by Mr. Gooch, will ſerve to impreſs the reader with an idea of the diſorder: "Mary Hayes, of Stoke-Holy-Croſs, near Norwich, in Norfolk, was born January 11, 1718, had never been married, and always lived a regular, temperate life. Her father was unhealthy, but it is not known to what diſeaſe he was ſubject; her mother was healthy, and ſhe herſelf was always looked upon as a ſtrong healthy girl, till about fifteen years of age, when ſhe fell into the green ſickneſs, and took various medicines to no purpoſe. She had no other complaints till October, 1748, when ſhe was ſeized with pains, univerſally attended with feveriſh ſymptoms; and thus ſhe continued ſome weeks, after which the pain was chiefly confined to her legs and thighs, but not increaſed by external preſſure.

"She broke her leg in June, 1749, as ſhe was walking from her bed to her chair, without falling down, and heard the bones ſnap. The fracture was properly treated by one of the ableſt ſurgeons, and due regard had to her indiſpoſition. No callus was generated; but in a few months the bones grew flexible, from the knee to the ankle. Thoſe of the other leg and thigh were viſibly affected ſoon afterwards, in the like manner; and both legs and thighs then became œdematous, and ſubject to be excoriated, diſcharging a thin yellow ichor. About this time," ſays Mr. Gooch, "I firſt ſaw her with the ſurgeon who had the care of her.

"The winter after breaking her leg ſhe had ſymptoms of the ſcurvy, and bled much at the gums.

"Many eminent phyſicians preſcribed for her, but without any effect, unleſs the regularity of her menſtruation, for the laſt eighteen months, be aſcribed to chalybeate medicines, which were part of their preſcriptions; though the ſame kind of medicines were formerly preſcribed, and long continued, without having that effect, even when ſhe was in a condition to take exerciſe.

"About a year before her death ſhe was removed to the pariſh ſhe belonged to, where I had an opportunity of viſiting her often, and obſerving the progreſs of her diſeaſe. She told me ſhe had found but little alteration of her complaints in general, for ſome time paſt, and thought her appetite and digeſtion rather mended. She breathed with difficulty, and her thorax appeared ſo much ſtraightened, as neceſſarily impeded the expanſion of the lungs. Her ſpine was much diſtorted, and any motion of the vertebræ of the loins excited extreme pain. Her legs and thighs being quite uſeleſs, ſhe was confined to her bed in a ſitting poſture. The bones ſhe reſted upon, having loſt their ſolidity, were much ſpread, and the ends of her fingers and thumbs, by frequent efforts to raiſe herſelf, were become very broad, with a curvature of their phalanges. *She now meaſured but four feet, though before this diſeaſe ſhe was five feet and a half high, and well ſhaped.*

"From this time," ſays Mr. Gooch, "I obſerved the flexibility of her bones became gradually more general, and the difficulty of breathing increaſed, with a waſting of her fleſh. For the laſt four months of her life ſhe had a total ſuppreſſion of the menſtrual diſcharge, and a great tendency in her legs to mortify, which had long been anaſarcous, and excoriated almoſt all over. She retained her ſenſes perfectly to the laſt, and but a few minutes before ſhe died, talked concerning her miſerable condition and approaching end, in a very rational and compoſed manner, with her nurſe, who perceived no ſigns of the change which was juſt at hand; then reclined her head, and expired inſtantly without a groan.

"Two days after her death, which happened on Feb. 6, 1753, her limbs being firſt well ſtretched out, ſhe was meaſured, *and found wanting, in her natural ſtature, two feet and two inches!* I opened the abdomen and thorax, removing the ſternum entirely, with ſome portion of the ribs, in order to gain at once a full view of thoſe cavities, and to obſerve how the viſcera contained in them had obſtructed each other in their reſpective functions, as well as to inſpect the ſtate of them. The heart and lungs were ſound, but flaccid, and much confined in their motion, to which the enormous ſize of the liver contributed in ſome meaſure, extending quite acroſs the abdomen, and bearing hard againſt the diaphragm, &c. The lungs did not adhere to the pleura, nor was the liver ſcirrhous; it was faulty only in its bulk. The meſentery was ſound, except one large ſcirrhous gland in it. The ſpleen was extremely ſmall. Nothing elſe was found obſervable in theſe cavities.

“ All her bones, except her teeth, were more or leſs affected, and ſcarcely any would reſiſt the knife. Thoſe of the head, thorax, ſpine, and pelvis, were nearly of the ſame degree of ſoftneſs. Thoſe of the lower extremities were much more diſſolved than thoſe of the upper, or of any other part. They were changed into a *parenchymous* ſubſtance, like ſoft dark-coloured liver, without the leaſt offenſive ſmell. I cut through the whole length, without turning the edge of the knife, and found leſs reſiſtance than firm muſcular fleſh would have made, meeting only here and there with bony laminæ, as thin as any egg-ſhell.

“ Thoſe bones were moſt diſſolved, which, in their natural ſtate, are moſt compact, and contain moſt marrow in their cavities, &c.”

Mr. Gooch further acquaints us, that the perioſteum was rather thicker than ordinary; the cartilages thinner, but no where in a ſtate of diſſolution like the bones. He ſhewed ſpecimens of the diſſolved bones to ſir John Pringle, in London, and then ſent them to Dr. Hunter, who occaſionally exhibited them in his anatomical lectures.

Mr. Gooch alſo ſent ſome of the ſame ſubſtance to an ingenious chemiſt, deſiring him to analyſe it; the latter “ could diſcover neither acid nor alkali prevailing in it; but that it contained near ſeven-eighths of an oleaginous ſubſtance, with a ſmall portion of earth.”

July 1753, Mr. Gooch ſaw a ſimilar caſe to this in a woman, aged twenty-five, in the workhouſe at Norwich, under the care of Mr. Swift, an ingenious man, and a very able ſurgeon. In this example, the ribs, having become exceedingly ſoft, “ fell (to uſe Mr. Gooch's words) with the ſternum flat upon the lungs,” and obſtructed reſpiration to ſuch a degree, that when this gentleman ſaw her, ſhe lay panting for life. In the other caſe, of which the narrative is given above, the ribs and ſternum turned outwards, and the reſpiration was not quite ſo much obſtructed.

Caſes of the mollities oſſium are recorded in the Philoſophical Tranſactions; Mém. de l'Acad. Royale des Sciences; Act. Hafniens; German. Ephem. Foreſtus and Saviard have alſo detailed caſes of the ſame diſeaſe; and a moſt remarkable example was publiſhed by Morand, at Paris, in 1752.

The cauſes of this ſingular diſorder have hitherto baffled inveſtigation. In the famous caſe of Madame Supiot, the patient had been in the habit of eating an extraordinary quantity of ſalt, and this circumſtance was immediately ſuſpected as the cauſe of the diſeaſe; yet, in other caſes, the immoderate uſe of ſalt could not fall into ſuſpicion, and Madame Supiot herſelf certainly continued to grow worſe and worſe, long after ſhe had relinquiſhed the cuſtom of taking ſo much ſalt with her victuals. We are, therefore, juſtified in concluding that the eating of this ſubſtance had nothing to do with the production of the diſeaſe. Were ſalt capable of having this effect, ſailors and others, who live ſo much on ſalted proviſions, ought frequently to be afflicted with mollities oſſium; yet this does not appear to be the fact.

With regard to the treatment, it does not appear that any ſucceſsful method has been diſcovered. The deficiency of the phoſphat of lime in the ſtructure of the affected bones, has led to the ſuggeſtion of exhibiting this ſubſtance as a medicine. This may eaſily be done; but how to make the ſecerning arteries depoſit it in the bones is a more baffling conſideration. We know of no caſes, in ſhort, exemplifying the efficacy of this plan, though it is both rational and free from danger.

Madder, from its known property of tinging the bones red, has been ſuppoſed to have a particular action on the oſſeous ſyſtem; but, ſays Boyer, it is now well aſcertained, that it has no greater effect in rickets (which is a diſeaſe at all events analogous to mollities) than any other bitter plant. Malad. des Os, tom. ii.

MOLLUGO, in *Botany*, a name in Pliny, book xxvi. chap. 10, which he indicates as belonging to a plant rough both in foliage and flavour. Linnæus retains it for a genus of a ſmooth and tender habit, to which, if derived from *mollis*, it would be moſt ſuitable.—Linn. Gen. 42. Schreb. 58. Willd. Sp. Pl. v. 1. 491. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 184. Juſſ. 300. Lamarck Illuſtr. t. 52. Michaux Boreali-Amer. v. 1. 77. Gærtn. t. 130.—Claſs and order, *Triandria Trigynia*. Nat. Ord. *Caryophylleæ*, Linn. Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five oblong, ſlightly ſpreading, permanent leaves, internally coloured. *Cor.* none. *Stam.* Filaments three, briſtle-ſhaped, ſhorter than the calyx, approaching the piſtil; anthers vertical, oblong, cloven at the baſe. *Piſt.* Germen ſuperior, ovate, with three furrows; ſtyles three, very ſhort; ſtigmas obtuſe. *Peric.* Capſule ovate, corrugated, of three membranous pellucid valves, and three cells; the partitions from the middle of each valve. *Seeds* numerous, roundiſh-kidney-ſhaped, poliſhed.

Eſſ. Ch. Calyx of five leaves. Corolla none. Capſule of three cells and three valves. Seeds numerous.

1. M. *oppoſitifolia*. Oppoſite-leaved Mollugo. Linn. Sp. Pl. 131. (M. n. 52; Linn. Zeyl. 21. Jeonpala; Herm. Zeyl. 4. Alſine ſpergulæ facie Bengalenſis, foliis anguſtis ad genicula binis, floſculis autem plurimis ad caulem radiatis, ſemine minutiſſimo fulvo; Pluk. Phyt t. 75. f. 6.) – Leaves oppoſite, lanceolate. Branches alternate. Flower-ſtalks lateral, ſeveral together, ſingle-flowered. Native of Ceylon. Linnæus deſcribes it as “ an annual *herb*, with long, diffuſe, ſmooth, alternate *branches*. *Leaves* oppoſite, lanceolate, ſmooth, running down into *footſtalks* *Flower-ſtalks* ſeveral, axillary, equal, capillary, ſingle-flowered. *Calyx* of five leaves.”—Plukenet's figure, quoted at the ſuggeſtion of Burmann, anſwers pretty well to this deſcription; and though it has the aſpect of an *Hedyotis*, the inferior calyx, proper to *Mollugo*, is ſufficiently indicated. According to Hermann this herb is eaten in ſallads by the vulgar.

2. M. *ſtricta*. Cloſe-leaved Mollugo. Linn. Sp. Pl. 131. Burm. Ind. 31. t. 5. f. 3. (Alſine multifolia floribunda glabra, ex ſinu Bengalenſi, foliis ſubrotundis, flore majore; Pluk. Almageſt. 21. t. 257. f. 2.)—Leaves about four together, lanceolate. Flowers in panicled cluſters, drooping. Stem erect, angular.—Native of Java and Bengal. *Root* fibrous, annual. *Stems* ſeveral, from two to twelve inches high, erect, ſlender, angular, ſmooth, bent at the lower joints, leafy. *Leaves* three, four, or more, at each joint, lanceolate, entire, ſmooth, of a pale glaucous green, tapering at the baſe into a ſort of footſtalk; in ſtarved plants broader and ſhorter. *Stipulas* in pairs, ſmall, membranous, roundiſh. *Flowers* very ſmall, whitiſh, in long, ſlender, almoſt capillary, ſmooth cluſters, collected into ſlight panicles; the partial ſtalks bent downward. *Capſule* roundiſh, very thin and membranous. *Seeds* almoſt black.

3. M. *hirta*. Hairy Mollugo. Thunb. Prodr. 24.—Decumbent. Leaves four together, obovate, hairy. Native of the Cape of Good Hope. Annual. Of this we have no further knowledge.

4. M. *pentaphylla*. Five-leaved Mollugo. Linn. Sp. Pl. 131. (Alſine ramoſa procumbens quadrifolia, ad radicem polyphylla; Burm. Zeyl. 13. t. 8. f. 1.)—Leaves obovate; thoſe of the ſtem four or five at a joint. Panicles cymoſe, ſomewhat racemoſe.—Native of various parts of the Eaſt Indies. This differs from *M. ſtricta* in having numerous

ſtems ſpreading circularly, nearly proſtrate, and obovate *leaves*. The *flowers* are twice as large, with a tawny hue, at leaſt when dried, and compoſe more denſe, level-topped, forked or cymoſe *panicles*, whoſe branches are ſcarcely racemoſe, and by no means elongated.

5. M. *nudicaulis*. Naked-leaved Mollugo. (Alſine foliis ad radicem poſitis; Burm. Zeyl. 14, t. 8. f. 2.)—Leaves obovate, all radical. Stems panicled, forked, naked. Flowers four-cleft. Native of Ceylon; *Burmann;* of Sierra Leone; *Afzelius*. Linnæus confounded this with the laſt, not perceiving that Burmann had figured two very different plants in his *tab.* 8, without numbering them; and he cites t. 8. f. 1, 2. This by an error of the preſs is become 12, which Willdenow copies. Burmann refers to a wrong ſynonym in Sloane, but he deſcribes the preſent ſpecies very well, as having all the *leaves* at the root, with very long, radical, *flower-ſtalks*, and four-cleft *flowers*, all which circumſtances diſtinguiſh it from the laſt.

6. M. *Spergula*. Spurrey Mollugo. Linn. Sp. Pl. 131. Burm. Ind. 31. t. 5. f. 4. (Pharnaceum Mollugo; Linn. Mant. 561. Willd. Sp. Pl. v. 1. 1508; but not Linn. Sp. Pl. 389, which is well figured in Herm. Lugd.-Bat. t. 21, and from which it appears, by his Mant. 562, Linnæus meant to diſtinguiſh the preſent ſpecies, intending probably to have called it *P. Spergula*, *P. Mollugo* being an error of the pen in p. 561.)—Leaves obovate, rough-edged, four or five together. Branches alternate, hairy at one ſide. Stalks axillary, ſingle-flowered.—Native of the Eaſt Indies. *Stems* procumbent, alternately branched, leafy, round, ſmooth, except a hairy lateral line. *Leaves* four or five at each joint, obovate, ſpreading, from two lines to half an inch long, rough or toothed at the edge; on ſhort, often woolly, *footſtalks*. *Flower-ſtalks* axillary, ſolitary to each leaf, ſimple, ſingle-flowered, the length of the leaf. Linnæus deſcribes minute, linear, cloven *petals*, and five barren filaments, alternate with the five fertile ones, all which is hoſtile to the character of *Mollugo;* and removes this ſpecies to *Pharnaceum* at leaſt, if not elſewhere. We merely deſcribe it here to correct the above errors, and as being what he really meant for *M. Spergula*.

7. M. *verticillata*. Whorled Mollugo. Linn. Sp. Pl. 131. Willd. n. 5. (M. Spergula; Linn. Syſt. Nat. ed. 10. v. 2. 881. Alſine ſpergula mariana, latiori folio, floribus ad nodos, pediculis curtis circa caulem inſidentibus, calyculis eleganter punctatis; Pluk. Mant. 9. t. 332. f. 4. A. erecta pentaphylla, flore albo; Burm. Zeyl. 13. t. 7. A. procumbens, gallii facie; Ehret. Pict. t. 6. f. 3.)—Leaves whorled, ſpatulate, unequal. Branches alternate, ſmooth. Flower-ſtalks ſhorter than the leaves, ſingle-flowered.—Native of Virginia. Cultivated in the Engliſh gardens in 1748, when Ehret delineated it. This ſpecies is a hardy annual, flowering from June to Auguſt. The *ſtems* are proſtrate, ſmooth, much branched, and widely ſpreading. *Leaves* obovate, acute, entire, ſmooth, tapering into a footſtalk; their length from half to one and a half inch. *Flower-ſtalks* ſeveral together, lateral, not axillary, capillary, deflexed, much ſhorter than the leaves. *Seeds* very prominent through the capſule, marked with dorſal furrows.

The botanical hiſtory of this genus is ſo confuſed, that though we have cleared it up in ſome degree, with the neceſſary aſſiſtance of the Linnæan herbarium, we are by no means certain that nothing more remains to be done. The ſpecies require to be confronted throughout with thoſe of *Pharnaceum*, a genus ſcarcely differing but in number of ſtamens, the moſt trivial of all poſſible characters in this tribe. See Pharnaceum. S.

MOLLUSCA, in *Natural Hiſtory*, the name of the ſecond order of the Linnæan claſs of Vermes; and it includes animals that are naked; and furniſhed with tentacula or arms: for the moſt part they are inhabitants of the ſea; and by their phoſphoreſcent quality illuminate the dark abyſs of the waters. (See Luminous *Animals*.) This order, which compriſes ſimple animals furniſhed with limbs, is ſeparated into diſtinct diviſions, claſſed according to the ſituation of the mouth, and the ſtructure of the body; thus:

In diviſion A the mouth is placed *above;* this diviſion includes the following genera:

Actinia,
Aſcidia,
Clava,
Dagyſia,
Mammaria,
Pedicellaria,
Salpa.

In diviſion B the mouth is placed *before;* and in this are the

Derris and Pterotrachea.

In diviſion C the mouth is placed *before;* and the body has a lateral perforation. In this there are four genera, *viz.* the

Doris,
Laplyſia,
Limax,
Tethys.

In diviſion D the mouth is *before;* but the body is ſurrounded with feelers on the fore-part. There are two genera only, *viz.*

Itolothuria Terebella.

In diviſion E the mouth is *before;* and the body furniſhed with arms. Of theſe there are ſeven genera, *viz.*

Clio,
Lernæa,
Lobaria,
Onchidium,
Scyllæa,
Sepia,
Triton.

In diviſion F the mouth is *before;* and the body furniſhed with peduncles or feet. In this there are the following five genera:

Amphitrite,
Aphrodite,
Nais,
Nereis,
Spio.

In the laſt diviſion G, the mouth is placed *beneath;* and generally central. There are five genera in this, *viz.*

Aſterias,
Echinus,
Lucernaria,
Meduſa,
Phyſſophora.

See Vermes.

MOLLUSCUM, in *Medicine*, an appellation applied by Dr. Willan to a ſingular cutaneous diſeaſe, of which there are not many caſes recorded. It conſiſts of numerous ſoft tubercles, containing an atheromatous matter, which are of various ſizes, from that of a vetch to that of a pigeon's egg, and of different forms, ſome being ſeſſile, and ſome attached by a neck. It is not uncommon to meet with one or two of theſe molluſca; but the ſingularity above alluded to is, that they ſometimes grow all over the ſurface of the body, and that without any diſorder of the general habit. They have no tendency to ulceration or ſuppuration, but continue permanent through life, having apparently no natural termination. The knife or ligature might be employed for the removal of thoſe which are attached by a peduncle; but the great number of theſe, independently of thoſe which are ſeſſile, deters from the attempt.

MOLMAN, in our *Old Writers*, a man ſubject to do ſervice. It is applied to the ſervants in a monaſtery.

MOLMASECA, in *Geography*, a town of Spain, in the province of Leon; 20 miles W. of Aſtorga.

MOLMUTIN, or MOLMUTIAN *laws*, the laws of Dunwallo Molmutius XVI. king of the Britons, who is ſaid to have begun his reign four hundred and forty years before the incarnation.

He was the firſt who publiſhed any laws in this land; and they continued famous therein till the time of William the Conqueror.

MOLNPATTY, in *Geography*, a town of the iſland of Ceylon; 18 miles N.W. of Trincomalee.

MOLOCH, in *Mythology*, the chief and peculiar deity of the Ammonites, who are ſaid, by Voſſius and others, to have worſhipped the ſun under this appellation, and to have ſacrificed their children to him. In the ſcripture it is frequently aſſerted that the "Ammonites paſſed their ſeed through fire unto Moloch." As to the meaning of this expreſſion there is a conſiderable diſagreement among ancient and modern authors. The Jewiſh writers very generally maintain, that the children were merely carried or led between two fires, by way of purification; whereas the Chriſtian writers have been of opinion, that they actually burnt their children by way of ſacrifice to this grim idol. Near Jeruſalem there was a place in which this horrid cuſtom was obſerved; it was called the valley of the ſons of Hinnom, ſo named, as it is ſaid, from the ſhrieks of the children that were ſacrificed; and alſo Topheth, from a Hebrew word "toph," ſignifying a drum or tabret, which they uſed, among other inſtruments, to drown the dreadful outcries of the unhappy victims. The Canaanites in general were, in the days of Moſes, become incorrigible idolaters, and they are accuſed of offering human ſacrifices to Moloch. See the paſſage above cited from Levit. xviii. 21. From them this deteſtable worſhip was tranſmitted to their deſcendants the Phœnicians; and as the Carthaginians were a colony that came from Phœnicia, the firſt gods of Carthage were the ſame as thoſe who were adored at Tyre and Sidon. The latter people are known to have worſhipped Saturn, and Saturn was the ſame with Moloch, to whom they ſacrificed their children. Moloch was repreſented among the Ammonites under the monſtrous figure of a man and a calf. About the feet of the ſtatue were conſtructed ſeveral furnaces, into which they threw the children whom they offered up to that god, and their cries were drowned, as we have already obſerved, by drums and other muſical inſtruments. Who this Moloch was, has been a ſubject of various conjectures. Some ſay that he was the ſame as Priapus; others aſſert that he was the ſun; but the moſt common opinion has been, that he was the ſame with Saturn; and as Saturn is thought to have been Abraham, it has been concluded that the worſhip of Moloch was formed upon the imperfect accounts which the pagans had collected concerning that ancient patriarch; and that all the circumſtances of the ſacrifices offered to Moloch were expreſſive of Abraham's adventures.

MOLOCHATH, in *Ancient Geography*. See MULUCHA.

MOLOCHI, in *Geography*, a town of Naples, in Calabria Ultra; three miles N.E. of Oppido.

MOLOCHITES, in *Natural Hiſtory*. See MALACHITES.

MOLODIVE, in *Geography*, a town of the iſland of Ceylon, on a tongue of land ſeparated by a narrow channel from the E. coaſt; 46 miles N. of Trincomalee.

MOLOGA, a town of Ruſſia, in the government of Jaroſlavl, at the union of the river Mologa with the Volga; 60 miles N.W. of Jaroſlavl. N. lat. 58°. E. long. 38° 22'.

MOLOPS, a word uſed by ſome medical writers to expreſs the purple ſpots which appear upon the ſkin in malignant fevers.

MOLOS, in *Geography*, a town of Arabia, in the province of Yemen; 16 miles N.N.E. of Jerim.

MOLOSSES, MOLASSES, or *Melaſſes*, that groſs, yet fluid matter remaining of ſugar, after refining, and which no boiling will bring to a conſiſtence more ſolid than that of ſyrup; hence alſo called *ſyrup of ſugar*.

In the manufacture of ſugar in the Weſt Indies, the moloſſes, not improperly called the treacle of ſugar, is obtained by the following proceſs. The curing-houſe, which is a large airy building, is provided with a capacious moloſſes ciſtern, the ſides of which are ſloped and lined with tarras or boards. Over this ciſtern there is a frame of maſſy joiſt work without boarding. On the joiſts of this frame empty hogſheads without headings are ranged. In the bottoms of theſe hogſheads eight or ten holes are bored, through each of which the ſtalk of a plantain leaf is thruſt, ſix or eight inches below the joiſts, and which is long enough to ſtand upright above the top of the hogſhead. Into theſe hogſheads, the maſs from the cooler is put, which is called *potting*; and the moloſſes drains through the ſpongy ſtalk and drops into the ciſtern, from which it is occaſionally taken for diſtillation. For other particulars, ſee the article SUGAR; and particularly the method of *claying* ſugar.

The term *molaſſes* has been uſed to denote the ſediment of one kind of ſugar called *chypre*, or brown ſugar, which is the refuſe of other ſugars not to be whitened, or reduced into loaves. (See SUGAR.) Moloſſes have been much uſed in Holland among poor people, for the preparation of tobacco, and alſo inſtead of ſugar.

MOLOSSES, *Artificial*. There has been found a method of making moloſſes from apples, without the addition of ſugar. The apple that ſucceeds beſt in this operation is the ſummer-ſweeting of a middle ſize, pleaſant to the taſte, and ſo full of juice, that ſeven buſhels will yield a barrel of cyder. The manner of making it is this: the apples are to be ground and preſſed, then the juice is to be boiled in a large copper till three quarters of it be evaporated: this will be done with a moderate fire in about ſix hours, with the quantity of juice above mentioned; by this time it will be of the conſiſtence and taſte as well as the colour of moloſſes.

This new moloſſes ſerves to all the purpoſes of the common kind, and is of great uſe in preſerving cyder. Two quarts of it put into a barrel of racked cyder, will preſerve it, and give it an agreeable colour.

The invention of this kind of moloſſes was owing to Mr. Chandler, of Woodſtock, in New England, who living at a diſtance from the ſea, and where the common moloſſes was very dear and ſcarce, provided this for the ſupply of his own family, and ſoon made the practice general among the people of the neighbourhood. It is to be obſerved, that this ſort of apple, the ſweeting, is of great uſe in making cyder, one of the very beſt kinds we know being made of it. The people in New England alſo feed their hogs with the fallings of their orchards of theſe apples; and the conſequence of this is, that their pork is the fineſt in the world. Phil. Tranſ. N° 374. p. 230.

MOLOSSES *Spirit*, a very clean and pure ſpirit, much uſed in England, and made from moloſſes or common treacle diſſolved in water, and fermented in the ſame manner as malt or the common malt-ſpirit. If ſome particular art is not uſed in the making of this, it will not prove ſo vinous as the malt-ſpirit, but more flat and leſs pungent and acid, though otherwiſe much cleaner taſted, as its eſſential oil is of a leſs nauſeous flavour. Whence if good freſh wine leys, abounding in tartar, be duly fermented in the ſolution made thin for that purpoſe, the ſpirit will by that means become much more vinous and briſk, and approach more to the nature of the foreign ſpirits.

After the firſt diſtilling of moloſſes ſpirits from the waſh into low wines, it is to be rectified, and in the ſucceeding rectifications proper additions are to be made. Alkaline ſalts, ſo common in the rectifying of the malt-ſpirits, muſt be avoided in this caſe, as not at all ſuiting this ſpirit, and the neutral ones only muſt be uſed, ſuch as ſandiver, common decrepitated ſalt, ſal enixum Paracelſi, and the like; but upon the whole nothing ſo conſiderable is to be expected from theſe ſalts, as from a careful rectification in balneo Mariæ, without any other admixture; by this alone repeated two or three times with freſh water each time, the ſpirit will at once be made fit for the niceſt uſes.

Where the moloſſes ſpirit is brought to the common proof-ſtrength, if it be found not to have enough of the vinoſity in it, it will be very proper to add to it ſome good ſpiritus nitri dulcis; and if the ſpirit be clean worked, it may by this addition alone be made to paſs on ordinary judgments for French brandy.

When newly diſtilled, this ſpirit, like all others, is colourleſs, and limpid as water; but our diſtillers always give it the ſame ſort of yellow tinge, which the foreign ſpirits are found to obtain from the caſks in which they are ſent over. They have many ways of giving this colour extempore; but the two moſt in uſe are, either by an extract of oak-wood, or by burnt ſugar.

Moloſſes ſpirit being occaſionally dearer than that of malt, it is frequently met with baſely adulterated with a mixture of that ſpirit, and indeed ſeldom is to be bought without ſome daſh of it. Many have a way of mixing malt in the fermenting liquor; by this the yield of the whole is greatly increaſed, and the maker may aſſure the buyer that the ſpirit is pure as it ran from the worm.

England is the principal place where this ſpirit is made at this time: it was at one time prepared in great quantities in France, eſpecially on the river Loire; but it has been forbidden there under a ſevere penalty. In Holland alſo they have it not, on account of the high duty laid upon treacle in favour of their own ſugar-bakers.

We meet with very little of moloſſes ſpirit reduced to the ſtrength of alcohol or ſpirit of wine, though, when rectified to this ſtate in a proper manner, it is very little inferior to the real alcohol of wine, the name of which is ſo well known among us, though the thing itſelf is perhaps never ſeen here. All that we call ſpirit of wine being no other than malt ſpirit reduced to an imperfect alcohol, or a ſpirit almoſt totally inflammable.

Great quantities of moloſſes ſpirit are uſed in the adulterating of brandy, rum, and arrack; and great quantities are uſed alone in the making of cherry-brandy and other drams by infuſion, in all which many prefer it even to the foreign ſpirits.

In moſt of the nice caſes in our compound diſtillery, the moloſſes ſpirit ſupplies the place of a pure and clean malt-ſpirit, which we have not yet the way of producing in the large way to advantage. Our cinnamon, citron, and other fine cordial waters, are made with it; for the malt ſpirit would give theſe a very diſagreeable flavour.

There is alſo another uſe to which this ſpirit ſerves extremely well, and in which even a foreign ſpirit that has any remarkable flavour will not do ſo well; this is the making of the extemporaneous wine, which ſome people are ſo fond of. See *Extemporaneous* Wine.

It gives a yellow ſtain to the hands, or other ſubſtances dipped into it: and may therefore be of uſe in dyeing. It is poſſible alſo, that the vinegar-makers may find uſe for it in their way; but the moſt advantageous of all its uſes is to the diſtiller himſelf, a quantity of it added to new treacle intended for fermentation will be of great uſe in the proceſs, and increaſe very conſiderably the quantity of ſpirit; but the proportion in regard to the new matter muſt not be too great. Shaw's Eſſay on Diſtillery.

For the method of extracting ſpirits from moloſſes in the Weſt Indies, ſee the article Rum.

MOLOSSIS, in *Ancient Geography*, an inland province of the ancient kingdom of Epirus; which, according to Scylax, was only 40 ſtadia, or furlongs, in compaſs. It derived its name from Moloſſus, the ſon of Pyrrhus and Andromache, and contained the following cities, *viz.* Dodona, (which ſee,) Paſſaron, Tecmon, Phylace, and Horreum. See Epirus.

MOLOSSUS, in the *Greek* and *Latin Poetry*, a foot conſiſting of three long ſyllables, as *audiri*, *cantabant*, *virtutem*. It takes its name either from a dance in uſe among the people called Moloſſi, or Epirotæ; or from the temple of Jupiter Moloſſus, where odes were ſung in which this foot had a great ſhare; or elſe becauſe the march of the Moloſſi, when they went to the combat, was compoſed of theſe feet, or had their cadence. The ſame foot was alſo called among the ancients, *Vertumnus*, *extenſipes*, *hippius*, *&* *canius*. Dion. iii. p. 475.

MOLRAUZEPOLLAM, in *Geography*, a town of Hindooſtan, in the Carnatic; 10 miles N.W. of Madras.

MÖLSEN, or *Hohen* Mölsen, a town of Saxony, in Thuringia; 28 miles N.E. of Weimar. N. lat. 51° 10′. E. long. 12° 5′.

MOLSHEIM, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the diſtrict of Straſburg; 10 miles W.S.W. of Straſburg. The place contains 2534, and the canton 16,072 inhabitants, on a territory of 167½ kiliometres, in 18 communes. N. lat. 48° 32′. E. long. 7 34′.

MOLTA, or Moltura, a duty or toll paid by vaſſals to the lord for grinding their corn at his mill.

MOLTCHANA Piatskia, in *Geography*, a town of Ruſſia, in the government of Tobolſk, on the Oby; 80 miles S.S.E. of Narim.

MOLTCHANOVKA, a town of Ruſſia, in the government of Tobolſk, on the Oby; 92 miles S.S.E. of Narim.

MOLTEN Grease, in the *Manege*. See Grease.

MOLTER, in *Rural Economy*, the toll taken at a mill. See Moulter.

MOLTIFAO, in *Geography*, a town of Corſica; 15 miles N. of Corte.

MOLTING, or Moulting, the falling off or change of hair, feathers, ſkins, horns, or other parts of animals, happening in ſome annually, in others only at certain ſtages of their life. See Moulting.

The generality of beaſts molt in the ſpring.

The molting of a hawk is called *mewing*.

The molting of a deer is the quitting of his horns in February or March.

The molting of a ſerpent is putting off his ſkin. See Exuviæ.

MOLTON, South, in *Geography*, an ancient market and borough town in the hundred of the ſame name, and county of Devon, England, is ſituated on an eminence near the weſtern banks of the river Moule, at the diſtance of 29 miles from Exeter, and 182 from London. Previouſly to the Norman conqueſt it formed part of the royal demeſnes. It then came into the poſſeſſion of private perſons; and in the reign of Richard II. reverted to the crown. It was afterwards purchaſed by the burgeſſes: and the civil government is now veſted in a mayor, eighteen capital burgeſſes, a recorder, town clerk, and two ſerjeants at mace. The town was repreſented in parliament in the thirtieth year of Edward I.; but no return has been made ſince that period. It is alſo remarkable for having been conſtituted an epiſcopal ſee, by an act paſſed the twenty-ſixth of Henry VIII.; but it does not appear that any biſhop was ordained. The pariſh church is a ſpacious ſtructure, and contains ſeveral monuments. The guildhall is a convenient fabric; and the market place is extenſive and well built. The number of houſes was, in the year 1801, returned to parliament as 572, occupied by 2753 perſons: of theſe many derive employment from the manufacture of ſerges, ſhalloons, and felts; and in obtaining lime from the various kilns in the neighbourhood. Proviſion is made for the education of the children of the more reſpectable natives, by a well-regulated free-ſchool, founded in 1614, and of thoſe of an inferior claſs by a charity-ſchool: in the former the late judge Buller acquired the rudiments of that extenſive legal knowledge, by which he afterwards became ſo diſtinguiſhed. The town has the privilege of ſix annual fairs, and a weekly market on Saturday.

South Molton was the birth-place of the late Rev. Samuel Badcock, who acquired conſiderable literary reputation by his critiques on the authenticity of Chatterton's poems, and on other publications. He died in 1788, aged 41.

Between the towns of South Molton and Chumleigh, the Roman ſtation Termolus is ſuppoſed to have been ſituated. It has been conjectured to have been near the junction of the rivers Taw and Mole; but antiquaries have not been able to identify the preciſe ſpot. The vicinity affords many remnants of Roman antiquity. Beauties of England and Wales, vol. iv.

MOLUCCA Balm, in *Botany*. See Moluccella.

Molucca *Bean*. See Bean.

Molucca *Nuts*. See Guilandina and Bean.

Molucca *Iſlands*, in *Geography*, iſlands in the Eaſt Indian ſea, firſt diſcovered by the Portugueſe in the year 1510. Strictly ſpeaking, this appellation comprehends only the five following iſlands, *viz.* Ternat, Tidore, Motir, Makian, and Bakian or Batchian; but ſince the kings of the Moluccas have poſſeſſed territory in Gilolo, and other adjacent iſles, and as the term *Molucca* iſlands is conſidered as ſynonimous with that of *Spice* iſlands, the appellation has been extended. (See Spice *Iſlands.*) The Moluccas, properly ſo called, having been diſcovered by the Portugueſe, afforded to the Spaniards an inducement to make their firſt circumnavigation under the conduct of Magellan, a Portugueſe commander. Theſe two nations for ſome time conteſted the right of poſſeſſing theſe iſlands, till at length they were ſurrendered to the Portugueſe, and from them they were wreſted in 1607 by the Dutch. The opulent commerce in theſe ſeas was alſo claimed by the Engliſh; and in 1619 a treaty was ſigned, which declared the Moluccas, as well as Amboyna and Banda, common to both, ſo that the Engliſh were to have $\frac{1}{3}$d of the produce and the Dutch $\frac{2}{3}$ds: whilſt each of theſe powers contributed its reſpective proportion for defending the iſlands from invaders. But a moſt atrocious plot was ſoon framed and carried into execution by the Dutch for rendering themſelves independent of all competitors. As each of the iſlands will be deſcribed under its proper appellation, we ſhall not enlarge here.

MOLUCCELLA, in *Botany*, called *Molucca* by Tournefort, becauſe it was ſuppoſed to grow in the Molucca iſlands. The name, as Linnæus has altered it, may be tolerated, but it is none of his beſt.—Linn. Gen. 296. Schreb. 392. Willd. Sp. Pl. v. 3. 128. Mart. Mill. Dict. v. 3. Sm. Prod. Fl. Græc. v. 1. 415. Ait. Hort. Kew. ed. 2. v. 3. 410. Juſſ. 115. Lamarck Illuſtr. t. 510. Gærtn. t. 66. (Molucca; Tournef. t. 88.)—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, very large, turbinate, gradually terminating in a very wide, bell-ſhaped, toothed or ſpinous, incurved, permanent limb. *Cor.* of one petal, ringent, ſmaller than the calyx; tube and throat ſhort; upper lip erect, concave, undivided; lower cloven into three ſegments, of which the middle one is moſt prominent and emarginate. *Stam.* Filaments four, under the upper lip, two of them ſhorter; anthers ſimple. *Piſt.* Germen ſuperior, four-cleft; ſtyle in ſize and ſituation like the ſtamens; ſtigma cloven. *Peric.* Capſule none. *Fruit* top-ſhaped, truncated, in the bottom of the open calyx. *Seeds* four, convex on one ſide, angulated on the other, broader upwards, truncated.

Obſ. *M. ſpinoſa* has the calyx with ſeven long ſpines; *M lævis* has five ſmall ones; and the calyx of *M. fruteſcens* is furniſhed with twelve ſpreading ſpines. In ſome ſpecies the calyx is longer than the corolla, in others ſhorter.

Eſſ. Ch. Calyx bell-ſhaped, dilated, much wider than the corolla, ſpinous.

1. M *ſpinoſa*. Linn. Sp. Pl. 821. Fl. Græc. t. 567, unpubliſhed. (Molucca ſpinoſa; Ger. em. 691.)—Upper lip of the calyx lanceolate, with a very long point; lower rounded, with ſeven ſpines. Leaves on ſtalks, ovate, palmate and cut.—A native of the Levant, and gathered by Dr. Sibthorp on mount Parnaſſus. It flowers in July and Auguſt.—*Root* annual. *Stem* about four feet high, erect, ſmooth, ſquare, purpliſh, branched at the bottom. *Leaves* oppoſite, on longiſh ſtalks, ſtrongly veined, ſmooth, dark green, palmate and cut. *Flowers* ten or twelve in a whorl, remarkable for the large pyramidal, upper tooth of their calyx, and the many radiating ſpines of the lower border. *Corolla* white, its upper lip hairy; palate ſtreaked with purple.

2. M. *lævis*. Linn. Sp. Pl. 821. Fl. Græc. t. 566, unpubliſhed. (Meliſſa Molucca lævis; Ger. em. 691.)—Calyx bell-ſhaped, ſlightly five-toothed; teeth equal, minutely ſpinous. Leaves on longiſh ſtalks, roundiſh or ovate, toothed.—Native of Syria, and found by Dr. Sibthorp between Smyrna and Burſa. Time of flowering like the laſt. *Root* annual. *Stems* about three feet high, branched, ſmooth, ſquare, variegated with purple. *Branches* oppoſite, ſmooth. *Leaves* on long ſtalks, roundiſh, deeply notched or toothed, ſmooth, light green. *Flowers* axillary, about ſix in a whorl, the numerous whorls crowded together into a long ſpike, conſpicuous for the rounded, reticulated calyxes which become tawny by age.. *Corolla* white with a lilac tinge, ſhorter than the calyx.

3. M. *tuberoſa*. Willd. n. 3. Pallas. It. v. 3. app. n. 101. t. T.—Calyx funnel-ſhaped, five-toothed; teeth equal, pointed. Stem-leaves nearly ſeſſile, oblong wedge-ſhaped, toothed.—Native of muddy places, on hills in the ſouth of Tartary, flowering in May and fruiting in July.—*Root* perennial, large, compoſed of two or three ovate knobs, accaſionally ſimple, like a radiſh, and ſomewhat bitter. *Stem* erect, branched, jointed, divaricated, ſquare, ſmooth, hairy at the joints. *Radical-leaves* on long rough ſtalks, ovate, deeply notched; thoſe of the ſtem almoſt ſeſſile, wedge-ſhaped, veined, nearly ſmooth. *Flowers* about three or

four in a whorl, forming a looſe ſpike. *Corolla* bright yellow, twice as long as the calyx.

4. M. *perſica*. Willd. n. 4. Burm. Ind. 128. t. 38. f. 2.—Calyx funnel-ſhaped, five-toothed. Leaves ſeſſile, wedge-ſhaped, ſerrated and ſpinous.—A native of Perſia. Willdenow ſays that Linnæus confounded this ſpecies very erroneouſly with the following, *M. fruteſcens*, with which however it by no means agrees, except in habit. *Stem* ſimple, erect, very ſmooth, hoary, jointed, furniſhed with ſimple, long, unequal ſpines at each joint, generally from five to twelve in number. *Leaves* wedge-ſhaped, entire at the baſe, ſerrated at the end; the ſerratures terminating in downy ſpines. *Flowers* in denſe whorls. Spinous teeth of the *calyx* minute. *Corolla* twice the length of the calyx. From Burmann's figure.

5. M. *fruteſcens*. Linn. Sp. Pl. 821. Fl. Græc. t. 568, unpubliſhed. Allion. Pedem. n. 122. t. 2. f. 2.—Calyx funnel-ſhaped, five-toothed; teeth ſpinous. Leaves on ſhort ſtalks, elliptical, obtuſe, ſlightly five-toothed.—Found by Sherard in Italy, and by Dr. Sibthorp in the iſle of Cyprus. *Stem* ſhrubby, much branched, round or nearly ſo, with downy branches. Spines at each joint four, awl-ſhaped, recurved. *Leaves* ovate, downy, on ſhort ſtalks. *Flowers* axillary, ſolitary, their ſtalks about as long as the leaf-ſtalks. *Calyx* tubular, with five, broad, ſpinous teeth, nearly equal. *Corolla* ſcarcely exceeding the calyx, white, with purple ſtreaks on the lower lip. We have ſeparated the laſt ſpecies, which grows in Perſia, from this, although profeſſor Martyn is of opinion that they are the ſame plant; compariſon, however, of Dr. Sibthorp's drawing with Burmann's figure ſhews them to be ſufficiently diſtinct.

6. M. *grandiflora*. Willd. n. 6. (M. diacanthophylla; Pallas. Nov. Act. Petrop. v. 10. 380. t. 11.—"Calyx funnel-ſhaped, five-cleft, its ſegments pointed. Leaves ſeſſile, in three, deep, cut ſegments."—Native of Tartary. We have ſeen neither ſpecimen nor figure of this. Willdenow deſcribes the *corolla* as longer than the *calyx*, its upper lip hairy and cloven.

Moluccella, in *Gardening*, comprehends plants of the herbaceous annual exotic kind, of which the ſpecies cultivated are; the ſmooth Molucca balm (M. lævis); and the prickly Molucca balm (M. ſpinoſa).

Method of Culture.—Theſe plants may be increaſed by ſowing the ſeeds in the early autumn on a mild hot-bed, or in pots plunged into it, and when the plants have attained a little growth be planted in ſmall pots, and placed under a hot-bed frame in winter, where they may have free air in mild weather by taking off the glaſſes, being carefully covered in froſty weather, keeping them pretty dry, otherwiſe they are apt to rot. In the ſpring the plants may be turned out of the pots, with the earth about their roots, and planted in a warm border, defended from ſtrong winds, giving them a little water to ſettle the earth to their roots; after which they require no other care but to be kept clean from weeds, and be ſupported with ſtakes as there may be occaſion.

Theſe plants afford ornament and variety in the borders among other tender annual kinds.

MOLUCHES, in *Geography*, a tribe of Patagonians inhabiting the weſtern part of the country. The dead among them are buried in ſquare pits, in a ſitting poſture, with their weapons and drinking utenſils; and an old matron annually opens the grave to cleanſe and clothe the ſkeletons. Around are thoſe of the ſlain horſes, ſupported with props. The language of the Moluches is more copious and elegant than could have been expected, the verbs having three numbers, and as many tenſes as the Greek. See PATAGONIA.

MOLUTA ARMA. See ARMA.

MOLWITZ, in *Geography*, a town of Sileſia, in the principality of Brieg; three miles from Brieg.

MOLY, in *Botany*. See ALLIUM.

This plant is ſuppoſed to have been wild rue, whoſe root is black, and the flower white, whence Ovid (Met. l. 14.) ſays:

> "Pacifer huic dederat florem Cyllenius album,
> Moly vocant ſuperi, nigra radice tenetur."

According to Homer, Mercury gave this plant to Ulyſſes, by which he had evaded Circe's charms, the meaning of which is ſaid to be, that he was thus taught to recover himſelf from his remiſsneſs, and to give counſel to his companions to quit ſo dangerous an abode. This plant, ſo difficult to be found, according to Homer, is the prudence which Ulyſſes exerted in extricating his ſoldiers from the ſeat of voluptuouſneſs; and it may be ſuppoſed that all the transformations which Homer, Ovid, and the other poets ſay this princeſs wrought, were rather the effects of her charms and beauty than of her magic, though Horace (1 Epiſt. 2. 23.) leads us to underſtand, that they were the potions which ſhe adminiſtered that produced theſe wonderful effects.

MOLYBDÆNA, LEADWORT, a name given by ſome authors to the great toothwort, or dentillaria of Rondeletius. See TOOTHWORT.

MOLYBDENUM, in *Chemiſtry*, a ſimple oxydable body and a metal. It is obtained from a blueiſh-black ſubſtance, which, till the experiments of Scheele, was confounded with plumbago. Like the latter ſubſtance, it has conſiderable luſtre, feels as if it were greaſy, and ſoils the fingers, but not to the ſame degree with plumbago.

Scheele found this ſubſtance to conſiſt of ſulphur and a white powder, which poſſeſſed acid properties, and which he denominated the *acid of molybdena*.

Bergman was the firſt who ſuſpected this acid to be the oxyd of a metal. He accordingly requeſted Hielm in the year 1782 to make ſome experiments with a view to determine this fact. This experimentaliſt mixed the acid of this metal with linſeed oil into the form of paſte. This was expoſed in a cloſe crucible, lined with charcoal, to a very ſtrong heat. By this means he ſucceeded in reducing the metal.

In order to obtain it in greater purity, he firſt roaſted the ore to expel the ſulphur, which reduced it to the ſtate of powder. This powder being made very fine, he next diſſolved it in ammonia, filtered the ſolution, and then evaporated it to dryneſs. By boiling this reſiduum with nitric acid he obtained a white powder, which was the molybdic acid. This being mixed with oil, and treated as before, afforded the metal in ſmall grains.

This metal is ſo very infuſible, that it has hitherto not been obtained but in ſmall granulated bits. On this account we know very little of its phyſical properties. Its metallic nature, however, has been clearly made out, by the additional labours of Pelletier, Heyer, and others.

It is ſaid to be of a greyiſh-white colour, poſſeſſing metallic luſtre. Its ſpecific gravity is ſuppoſed to be about ſeven.

We are indebted to Mr. Hatchett for ſome experiments upon the oxyds of this metal. He found it capable of four ſtages of oxydation; namely, the black, the blue, and the green oxyds, beſides the white, which is the acid. Theſe different oxyds, it appears, have been obtained by abſtracting oxygen from the acid. The black is procured by heating the acid in contact with carbon, and the blue by a longer continuation of the ſame proceſs. The latter is alſo obtained

tained by immerſing a plate of tin into a ſolution of the acid.

The acid is obtained by diſtilling nitric acid two or three times from any of the oxyds of this metal. The proportions of oxygen in molybdenum have not been aſcertained, and till then we cannot, with much certainty, rely upon the number of its oxyds.

Molybdenum combines with ſulphur. Indeed its native ore is a ſulphuret. It is ſingular that we have no accurate analyſis of the native ſulphuret, as it might lead to ſome knowledge of its other compounds. It readily combines with ſulphur, and forms a ſubſtance ſimilar to the native ſulphuret.

If the acid be heated with ſulphur in a cloſe veſſel, ſuch as a retort, part of the ſulphur combines with the oxygen and forms ſulphurous acid; the remainder combines either with a leſſer oxyd, or with the metal forming a ſulphuret. Molybdenum combines with phoſphorus, but the compound has not been examined.

Hielm, who firſt reduced this metal, has ſucceeded in alloying it with many of the other metals. He combined it with gold, platinium, ſilver, copper, iron, tin, nickel, zinc, lead, and ſome others. None of theſe alloys, however, appear to be important, they are almoſt all of them brittle.

MOLYBDIA, in *Natural Hiſtory*, the name of a genus of cryſtals. The word is derived from the Greek μολυϐδος, *lead;* and expreſſes cryſtals altered in their figure by particles of that metal. The cryſtals of this genus are of a cubic form, or compoſed of ſix ſides, at right angles, like a dye. Of this genus there are three known ſpecies.

MOLYBDIC Acid, in *Chemiſtry*. This ſubſtance, to which we have already alluded, is arranged among the reſt of the acids. Scheele, as has appeared under the account of the metal, was the diſcoverer of this acid. We are indebted for additional facts relative to this ſubſtance, to Hatchett and Bucholz. It may be prepared by boiling nitro-muriatic acid upon the ſulphuret for ſome time; or, by diſtilling this acid repeatedly from it, a white powder will be formed, mixed with ſulphuric acid. This latter, being waſhed away, will leave the molybdic acid tolerably pure. Another method has been given by Bucholz. He directs the ore to be reduced to fine powder, and roaſted at a red heat, gradually lowering the temperature, and ſtirring it frequently, to keep the powder from adhering. This powder is of a grey colour, and contains a conſiderable portion of the acid oxyd. This is digeſted with ſoda or ammonia, which takes up the molybdic acid. It is remarkable, that molybdats of potaſh and ſoda are colourleſs. May not the colour above-mentioned ariſe from abſtraction of oxygen? For theſe facts we are indebted to Mr. Hatchett.

This acid forms inſoluble ſalts with many of the metals. Hence it precipitates mercury, copper, lead, &c. from their ſolutions.

Tin filings change this acid into the blue oxyd, by abſtracting ſome of its oxygen.

Bucholz has attempted the analyſis of this acid. He digeſted 100 grains of molybdenum with nitric acid, till the whole was converted into molybdic acid, which weighed 140 grains. He, therefore, concluded that the acid conſiſts of 100 of the metals, and 40 of oxygen, which gives in the 100, 67.1 of metal, and 32.9 oxygen. If the acid be the fourth oxyd of molybdenum, we may form ſome idea of the other oxyds, and the reſt of the compounds of molybdenum. If we take the acid at 33 *per cent.* of oxygen, and put the weight of the atom of molybdenum equal x, then $\frac{x}{4 \times 7} = \frac{67}{33}$, and $x = 57$ nearly.

Hence for the protoxyd $\frac{57 + 7}{14} = \frac{100}{11}$, or 11 *per cent.* nearly. The ſecond oxyd $\frac{57 + 2 \times 7}{14} = \frac{100}{20}$, or nearly 20 *per cent.* From theſe data, the third will contain 27 *per cent.* of oxygen. From the ſame reaſoning, taking the atom of ſulphur at 13, the firſt ſulphuret will contain from 18 to 19 *per cent.* of ſulphur.

MOLYBDOMANTIA, Μολυϐδομαντεια, in *Antiquity*, a ſpecies of divination, by obſerving the motions, figures, &c. of melted lead.

MOLYN, Peter, in *Biography*. See Tempesta.

MOLYNEUX, William, an excellent mathematician and aſtronomer, was born at Dublin in the year 1656. As his conſtitution was naturally very tender, he was not ſent to ſchool, but inſtructed in the elementary parts of learning by a private tutor at home. At the age of fifteen he was entered at Trinity college, in his native city, where he diſtinguiſhed himſelf for the vigour of his abilities, and the exemplarineſs of his manners; and having made a remarkable progreſs in academical learning, he was admitted to the degree of B. A. From Dublin college he went to London, and was entered a ſtudent of the Middle Temple in 1675. Here he ſpent three years, and obtained as much law as was neceſſary for a gentleman who did not intend to follow it as a profeſſion. The bent of his genius led him to devote much of his time to mathematical and philoſophical purſuits, and he returned to his native country in 1678, where he married, and continued to proſecute ſuch branches of natural and experimental philoſophy as were moſt agreeable to his taſte. Being much attached to the principles of aſtronomy, he began, in 1681, to make obſervations, and commenced a literary correſpondence with Mr. Flamſtead, the aſtronomer-royal of London. Shortly after this, he projected the deſign of eſtabliſhing a Philoſophical Society in Dublin, in imitation of the Royal Society, that had been but a few years eſtabliſhed in London under the auſpices of the king. Sir William Petty accepted the office of preſident, and our author was appointed the firſt ſecretary. The meetings of the ſociety were held weekly, and by means of them Mr. Molyneux's ſcientific reputation became widely extended, and procured him the eſteem of perſons of the higheſt rank, and, among others, of the duke of Ormond, then lord-lieutenant of Ireland, to whoſe influence he was chiefly indebted for his appointment, jointly with ſir William Robinſon, to the offices of ſurveyor-general of the king's buildings and works, and chief engineer. In 1685, he was elected fellow of the Royal Society at London, and in the ſame year, for the purpoſe of improving himſelf in the art of engineering, he obtained an appointment to view the moſt conſiderable fortreſſes in Flanders. In the courſe of his tour he was introduced to Caſſini, and the other celebrated aſtronomers, in the places through which he paſſed. Upon his return, in 1686, he publiſhed his "Sciothericum Teleſcopium, or A new Contrivance of adapting a Teleſcope to an horizontal Dial, for obſerving the Moment of Time by Day or Night." In 1687, when ſir Iſaac Newton's "Principia" firſt appeared, he expreſſed his aſtoniſhment at ſuch an effort of human intellect, at the ſame time modeſtly doubting if he ſhould be able to comprehend all its parts. He was, perhaps, one of the firſt who was anxious to apply the principles, diſcovered in the book, to the practical purpoſes of religion: "One obſervation," ſays he, "is truly to be wondered at, and that is, the *ſeſquialtera ratio* between the periods and diſtances of the planets, and that not only among the primary erratics, but even among the leſſer ſets of dancers.—It is, in my opinion, an amazing thought to conſider how univerſally this great law runs through the whole frame of nature, and agrees to bodies at ſuch vaſt diſtances, and that ſeem to have no tie or reſpect to each other. It is to me, beyond exception, the ſtrongeſt argument that can be drawn from the frame of the univerſe, for the proof of a God, to ſee one law ſo fixed and inviolable among thoſe vaſt and diſtant *Chori*, who certainly could not therefore be put into this poſture and motion by chance, but by an omnipotent intelligent Being." In 1688, owing to the confuſion that exiſted at that period, the Philoſophical Society of Dublin was broken up and diſperſed; after Mr. Molyneux had diſtinguiſhed himſelf by the communication of ſeveral papers upon curious ſubjects, ſome of which were ſent to the Royal Society at London, and printed in their Tranſactions. During the following year, he, in common with a number of other Proteſtants, withdrew from the diſturbances in Ireland into England. Mr. Molyneux, after a ſhort reſidence in the metropolis, ſettled with his family at Cheſter, where he employed himſelf in arranging and correcting the materials which he had before prepared for his Dioptrics. The work was publiſhed in 1692, under the title of "Dioptrica Nova, A Treatiſe on Dioptrics, in Two Parts, &c." He gave it the title *Nova*, becauſe it was almoſt entirely new, very little being taken from other writers, and becauſe it was the firſt book that had appeared in Engliſh upon the ſubject. It contains ſeveral generally uſeful propoſitions for practice, demonſtrated in a clear and eaſy manner, and the hiſtory of the diſcoveries made by ſeveral optical inſtruments. In the preface, the author notices the "Eſſay on the Human Underſtanding," which, he ſays, "has rectified more received miſtakes, and delivered more profound truths, eſtabliſhed upon experience and obſervation, for the direction of man's mind in the proſecution of knowledge, than are to be met with in all the volumes of the ancients." This compliment proved introductory to an acquaintance between the two philoſophers, and a mutual correſpondence was carried on by them as long as Mr. Molyneux lived, to whom, it is believed, many improvements in the ſecond edition of Mr. Locke's work are to be attributed. When tranquillity was reſtored to Ireland, Mr. Molyneux returned, and was elected one of the repreſentatives for the city of Dublin, in the parliament that was convened in 1692. In the following parliament, in 1695, he was choſen repreſentative for the univerſity, and held that ſeat during the remainder of his life. He was likewiſe nominated by the lord-lieutenant one of the commiſſioners of the forfeited eſtates, with a ſalary of 500*l. per annum*; but he declined the office, conſidering it to be an invidious employment. He was a zealous friend to the linen manufactory, and was at all times an open and avowed advocate for the freedom and independence of his country, and in this character he publiſhed "The Caſe of Ireland, ſtated in relation to its being bound by Acts of Parliament made in England," which is ſaid to contain the ſubſtance of all that can be advanced on this very intereſting ſubject, written with great clearneſs and ſtrength of reaſoning. The book was drawn up with great caution; nevertheleſs, a complaint was preferred againſt it to the houſe of commons, who thought proper to addreſs his majeſty on the occaſion, aſſerting the dependency and ſubordination of Ireland to the kingdom of England. Mr. Molyneux, previouſly to the publication, had aſked the opinion of Mr. Locke concerning the fundamental principle upon which his argument was founded; but this excellent man, inſtead of anſwering the letter of his friend, urged him to come to England, that they might talk over the ſubject together. To this he aſſented, and ſpent five of the happieſt weeks in his life with Mr. Locke. When they ſeparated, it was with an intention to renew the meeting in the following ſpring; but ere that arrived, death had deprived the world of Mr. Molyneux, who died in October, 1698, in the forty-third year of his age. He wrote ſeveral papers, that are inſerted in the Philoſophical Tranſactions, from vol. xiv. to xxix. Many of his letters are preſerved in the collection of "Familiar Letters between Mr. Locke and ſeveral of his Friends." Biog. Brit.

Molyneux, Samuel, the only deſcendant of the preceding, was born at Cheſter in the year 1689. He was educated according to the plan laid down by the friend of his father, Mr. Locke. The progreſs of the child was very rapid, ſo that he knew more at the age of ſix or ſeven, than moſt children do at double that age. On the death of his father, the care of his education devolved upon an uncle, Dr. Thomas Molyneux, an eminent phyſician at Dublin, and a friend alſo of Mr. Locke, who executed the truſt repoſed on him with honour and fidelity. The young man, improving all the advantages beſtowed upon him, became one of the moſt poliſhed and accompliſhed gentlemen of his age, and was appointed ſecretary to the prince of Wales, afterwards king George II. As he was poſſeſſed of an ample fortune, he purſued, with great ardour, the ſciences of aſtronomy and optics, and projected many ſchemes for their advancement. He applied himſelf to find out a convenient method of manufacturing ſpecula for ſir Iſaac Newton's reflecting teleſcope, in which his chief deſign was to reduce the method of making theſe inſtruments to a ſort of certainty, in order that the difficulty in conſtructing them, and the danger of miſcarrying, might no longer diſcourage any workman from attempting to make them for public ſale. With the aſſiſtance of Mr. Bradley, the Savilian profeſſor of aſtronomy at Oxford, he ſucceeded ſo well, that the whole proceſs, being communicated to a ſkilful optician, the conſtruction of theſe teleſcopes was, afterwards, executed with great readineſs and diſpatch. His zeal for the improvement of his favourite ſciences, induced Mr. Molyneux not only to collect and conſider what had been written and practiſed by others, but alſo to procure a complete apparatus for the purpoſe of making new experiments. In the midſt of theſe avocations, which were honourable to him as a philoſopher, he was appointed one of the lords commiſſioners of the admiralty, by which means he became ſo involved in public affairs, that he had no leiſure to promote the intereſts of philoſophy and ſcience. He accordingly gave all his papers to Dr. Robert Smith, profeſſor of aſtronomy at Cambridge, whom he invited to make uſe of his houſe and inſtruments, in order to finiſh what he had left incomplete. By the death of Mr. Molyneux, which happened ſoon after this, the profeſſor was precluded from the benefit of this invitation: he, however, ſupplied what was unfiniſhed by our ingenious author from Huygens and others, and publiſhed the whole in his "Complete Treatiſe on Optics." Mr. Molyneux married lady Elizabeth, ſiſter to the earl of Eſſex, but had no children. Biog. Brit.

MOLZA, Francisco Maria, a diſtinguiſhed character among the Italian literati, was born in 1489, at Modena.

From a very early age he was conſpicuous for the readineſs and avidity with which he imbibed claſſical literature: to his knowledge of the Greek and Roman languages, he added that of Hebrew. At the age of ſixteen, he was ſent to Rome to purſue his ſtudies, but unfortunately he met with bad company, and entered upon a licentious courſe, which influenced the fortunes of the remainder of his life. To reclaim him, he was married to a Modeneſe young lady of noble deſcent, when he had ſcarcely attained to man's eſtate, with whom he lived till ſhe had borne him four children. In 1576, he returned to Rome, where he ſpent almoſt all the remainder of his life. Study and pleaſure ſeem alternately to have occupied all his thoughts. Among the many objects of his tranſitory attachments, is mentioned Furnia, a Roman courtezan, of whom he was ſo much enamoured, that it has been ſaid he aſſumed the ſurname of Furnius on her account; but as his own mother's family name was De Forni, he probably derived the additional appellation from that. By theſe amours, he did ſerious injury to his reputation, and was once brought into the moſt imminent danger from the hand of an aſſaſſin; and he finally contracted a diſeaſe, the conſequence of illicit connections, which brought him, as it has thouſands, and tens of thouſands of the votaries to pleaſure, to a miſerable end. From the year 1529 to 1535, Molza was at Rome in the court of cardinal Ippolito de Medici; after whoſe death, and the elevation of Paul to the popedom, he removed to that of cardinal Farneſe. The profligacy of his conduct was no obſtacle to an intimacy with many men of letters, ſuch as Bembo, Sadoleto, Colocci, &c., and he was regarded as one of the principal ornaments of the literary academies then flouriſhing in that capital. His compoſitions were chiefly poems both in Italian and Latin, and on topics of all kinds, moral and ſerious, ſportive and amorous, in all which he excelled. His elegies are excellent imitations of Tibullus. He was reckoned a powerful orator, and his epiſtles are graceful and elegant. He died, as we have already hinted, under the moſt excruciating ſufferings, in 1544. Of his works, many were publiſhed ſeparately, but no edition of the whole collectively appeared till that of Bergamo, in 1749, to which an account of his life is prefixed by Seraſſi.

Molza, Tarquinia, daughter of Camillo, the eldeſt ſon of the ſubject of the foregoing article, was born at Modena in 1542. She was inſtructed in the claſſics, in Hebrew, and in the belles lettres, and made great progreſs in every thing which ſhe undertook: ſhe became an adept in ſome of the abſtruſer branches of ſcience, and was a proficient in muſic; but with all theſe, ſhe was diſtinguiſhed by the graces and amiable qualities of her ſex. She was married, in 1560, to Paul Porrino, but never had any children; and after his death, in 1578, ſhe paſſed her life in literary retirement at Modena, where ſhe died in 1617. She diſtinguiſhed herſelf by her writings, conſiſting of Latin and Italian poems, and tranſlations from Plato, and other claſſics. Her remains were printed in the Bergamo edition of her grandfather's works. This lady was the ſubject of numerous eulogies from contemporary writers; but the moſt extraordinary honour that ſhe received, was that of being preſented with the citizenſhip of Rome, by the ſenate and people of that city, in a patent reciting her ſingular merits, and conferring upon her the title of *Unica*. The honour is extended to the whole noble family of Molza.

MOM, in *Geography*, a town of Arabia, in the province of Hedjas; 5 miles N. of Mecca.

MOMAPANE Lake, a lake of Canada; 160 miles N. of Quebec. N. lat. 49° 40′. W. long. 71°.

MOMARACKPOUR, a town of Hindooſtan, in Bahar; 21 miles N.W. of Chuprah. N. lat. 25° 59′. E. long. 84° 38′.—Alſo, a town of Hindooſtan, in Allahabad; 30 miles N. of Gazypour.

MOMBAÇA, or **Mombaza**, a kingdom of Africa, near the coaſt of the Indian ſea, ſouth of Melinda, of unknown extent. The ſoil is very fertile, and produces rice, millet, and other grain, fruit-trees, and vegetables of various kinds: great numbers of cattle and of poultry are bred in this country; and it abounds with excellent ſprings of freſh water. The climate is temperate, and the air is healthy. The capital, formerly on a peninſula, has been inſulated by cutting a canal acroſs the iſthmus. The houſes are ſtone, cemented with mortar, and covered with paintings and other ornaments; the ſtreets, though narrow, are ſtraight, and the houſes are contiguous, and terraced on the tops. The city is defended by a citadel, which ſerved the Portugueſe for a place of retreat, from which, however, they were expelled by an Arabian ſcheick in 1631; but they regained their poſſeſſions in 1729. Before the city is a commodious bay, being both ſpacious and affording deep water. From this port a conſiderable commerce is carried on with the neighbouring countries. The inhabitants are various in their complexion; but their dreſs is after the Arabian faſhion. They differ alſo with regard to religion, as Chriſtians, Mahometans and idolaters, are intermixed; but they are ſaid to be more civil and hoſpitable to ſtrangers than any others on the ſame coaſt. S. lat. 3° 30′.

MOMBEIRA, a river of Africa, in Benguela, which runs into the Atlantic, S. lat. 15° 15′.

MOMBEL, a town of France, in the department of Mont Blanc; 10 miles W.N.W. of Chambery.

MOMBELTRAN, a town of Spain, in Old Caſtile; 27 miles S.S.W. of Avila.

MOMBRIZO, Bonini, in *Biography*, an Italian man of letters in the 15th century, was born at Milan, and became profeſſor of eloquence in that city. He was author of ſeveral works, which were well received, and among others ſome Latin poems, particularly one "On the Sufferings of Jeſus Chriſt." His chief performance is entitled "Sanctuarium, ſive acta vitæ Sanctorum," in two volumes. For this, it is generally admitted, that eccleſiaſtical hiſtorians are under great obligations to him, as he has drawn from obſcurity many important and valuable facts, which, without his reſearches, would have been loſt to the world. Of this work, ſubſequent writers have availed themſelves; but a perfect copy of it is now exceedingly rare, and greatly ſought for by curious collectors. Moreri.

MOMDSONA, in *Geography*, a town of Thibet; 9 miles S. of Laſſa.

MOMEGASTRO, a town of Spain, in Aragon; 12 miles E. of Balbaſtro.

MOMELSDORF, a town of the duchy of Wurzburg; 9 miles N.W. of Ebern.

MOMENT, in *Time*, the moſt minute and indiviſible part of duration; or what we otherwiſe call an *inſtant*.

A moment ought not to be conceived as the leaſt part of time, but as a termination or limit of time. Maclaurin's Fluxions, vol. i. p. 245.

Moments, in the new doctrine of infinites, denote the infinitely ſmall parts of quantity.

Moments are the ſame with what we otherwiſe call *infiniteſimals*, and *differences*; being the momentary increments, or decrements of quantity, conſidered as in a continual flux. Moments are the generative principles of magnitude: they have no determined magnitude of their own; but are only inceptive of it.

Hence, as it is the ſame thing, if, in lieu of theſe moments, the velocities of their increaſes and decreaſes be made uſe of, or the finite quantities proportionable to ſuch velocities; the method of proceeding, which conſiders the motions, changes, or fluxions of quantities, is denominated, by ſir Iſaac Newton, the method of fluxions.

Leibnitz, and moſt foreigners, conſidering theſe infinitely ſmall parts, or infiniteſimals, as the differences of two quantities; and thereby endeavouring to find the differences of quantities, *i. e.* ſome moments, or quantities infinitely ſmall, which being taken an infinite number of times, ſhall equal given quantities; call theſe moments, *differences;* and the method of procedure the *differential calculus.* See CALCULUS *Differentialis.*

MOMENT, *Momentum,* in *Mechanics,* is the ſame with *impetus;* or the quantity of motion in a moving body. See FORCE.

MOMENTUM is ſometimes alſo uſed ſimply for the motion itſelf. Moment is frequently defined by the *vis inſita,* or the power by which moving bodies continually change place. In comparing the motion of bodies, the ratio of their momenta is always compounded of the quantity of matter, and the celerity of the moving body; ſo that the moment of any ſuch body may be conſidered as a rectangle under the quantity of matter, and the celerity.

And ſince it is certain, that all equal rectangles have their ſides reciprocally proportionable; therefore, if the moments of any moving bodies be equal, the quantity of matter in one to that of the other, will be reciprocally as the celerity of the latter to the celerity of the former; and, on the contrary, if the quantities of matter be reciprocally proportionable to the celerities, the moments or quantities in each will be equal.

The moment, alſo, of any moving body may be conſidered as the aggregate or ſum of all the moments of the parts of that body; and, therefore, where the magnitudes and number of particles are the ſame, and where they are moved with the ſame celerity, there will be the ſame moments of the wholes.

MOMENTARY MOTION. See QUANTITY.

MOMFLOT, in *Geography.* See MONFALOUT.

MOMORDICA, in *Botany,* a name of whoſe derivation we find no ſatisfactory account. Linnæus deduces it from *mordeo,* to bite, becauſe, he ſays, "the ſeeds ſeem to have been bitten." But this applies rather to the pulpy fruit, which, in the original ſpecies, cracks and flies aſunder irregularly, ſo as to have that appearance. The name was firſt given to this plant by Caſtor Durante, and appears to be Italian, having originally belonged to ſome ſort of *Geranium.* —Linn. Gen. 506. Schreb. 662. Willd. Sp. Pl. v. 4. 601. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 3. 380. Juſſ. 395. Tourn. t. 29, 30. Lamarck Illuſtr. t. 794. Gærtn. t. 88.—Claſs and order, *Monoecia Syngeneſia;* or rather *Monoecia Polyadelphia;* ſee Sm. Intr. to Botany, 478. Nat. Ord. *Cucurbitaceæ,* Linn. Juſſ.

Gen. Ch. Male, *Cal.* Perianth of one leaf, concave, in five lanceolate ſpreading ſegments. *Cor.* in five deep diviſions, united to the calyx, but larger and more ſpreading, veiny and rugoſe. *Stam.* Filaments three, awl-ſhaped, ſhort; anthers on two of the filaments double, or cloven, with two appendages at each ſide; on the third filament ſimple, with appendages on one ſide only, and conſiſting of a compreſſed body, with a pollen-bearing line once reflexed.

Female on the ſame plant. *Cal.* Perianth like that of the male, ſuperior, deciduous. *Cor.* as in the male. *Stam.* Filaments three, very ſhort, without anthers. *Piſt.* Germen inferior, large; ſtyle one, cylindrical, columnar, three-cleft; ſtigmas three, tumid, oblong, directed outwards. *Peric.* Berry ſpongy, oblong, ſeparating elaſtically, of three cells, with ſoft, membranous, diſtant partitions. *Seeds* ſeveral, compreſſed.

Eſſ. Ch. Male, Calyx five-cleft. Corolla deeply five-cleft. Filaments three.

Female, Calyx five-cleft. Corolla deeply five-cleft. Style three-cleft. Berry ſeparating elaſtically.

1. M. *Balſamina.* Common, or Male, Balſam-apple. Linn. Sp. Pl. 1433. Lamarck Dict. v. 4. 237. Zorn Pl. Med. t. 45. (Balſamina mas; Ger. em. 362. B. mas, fructu puniceo, and Momordica fructu luteo-rubeſcente; Beſl. Eyſt. autumn. ord. 1. t. 4. f. 2, 3.)—Fruit roundiſh-ovate, pointed, angulated and tubercular. Bractea heart-ſhaped, toothed, above the middle of the flower-ſtalk. Leaves ſmooth, five-lobed, palmate, deeply toothed.—Native of the Eaſt Indies. A very tender annual in our gardens, kept occaſionally for curioſity merely, notwithſtanding its reputed vulnerary or balſamic virtues, from whence the ſpecific name aroſe. The ripe fruit, infuſed in olive oil, ſaid to poſſeſs a tonic and healing quality, is now out of uſe. The *ſtems* are long, weak, ſlender, ſmooth, leafy, ſupported by long, ſimple, ſpiral, capillary *tendrils,* oppoſite to each leaf-ſtalk. *Leaves* alternate, ſtalked, about two inches wide, of a bright ſhining green, naked, finely dotted, cut half way down into five, ſcarcely ſeven, broad, ſpreading lobes, with broad, ſharp capillary-pointed teeth. *Flowers* large, yellow, on axillary, ſolitary, ſimple ſtalks, twice the length of the leaf-ſtalks, and bearing at the top a rounded *bractea.* *Fruit* about two inches long and one broad, orange-coloured, or almoſt ſcarlet, ſplitting at one ſide when ripe, and diſcharging its ſeeds with ſome force through the cleft, by means of the elaſticity of its coat.

2. M. *Charantia.* Hairy Balſam-apple. Linn. Sp. Pl. 1433. I. Mill. Illuſtr. t. 83. (Balſamina cucumerina indica, fructu majore flaveſcente; Comm. Hort. v. 1. 103. t. 54. Amara indica; Rumph. Amb. book 10. 410. t. 151.)—Fruit oblong, taper-pointed, angulated and tubercular. Bractea heart-ſhaped, entire, below the middle of the flower-ſtalk. Leaves ſeven-lobed, palmate, bluntly toothed, ſomewhat hairy.—Native of the Eaſt Indies. Cultivated by Miller in 1731. It differs from the former in having a much longer *fruit,* more pointed at each end; *leaves* uſually more deeply palmate, with broader more ſhallow teeth, their veins very hairy beneath; *flower-ſtalks* elongated, rather hairy, bearing their *bractea,* which is entire, in their lower part.

3. M. *muricata.* Muricated Balſam-apple. Willd. n. 3. (M. Charantia β; Linn. Sp. Pl. 1433. Lamarck Dict. v. 4. 239. M. zeylanica; Mill. Dict. ed. 8. n. 3. Pavel; Rheede Malab. v. 8. 18. t. 10.)—"Fruit oblong, muricated, taper-pointed. Bractea heart-ſhaped, nearly entire, below the middle of the flower-ſtalk. Leaves ſeven-lobed, palmate, toothed, pointed."—Native of the Eaſt Indies. The *leaves* of this are nearly ſmooth, leſs deeply lobed and toothed, with taper points. *Fruit* only an inch and half long, not furrowed, but beſet with numerous ſharp prominent points.

4. M. *ſenegalenſis.* African Balſam-apple. Lamarck Dict. v. 4. 239. Willd. n. 4.—"Fruit ovate, acute, tubercular. Bractea heart ſhaped, entire, near the baſe of the flower-ſtalk. Leaves ſeven-lobed, deeply palmate, ſomewhat toothed, and rather hairy.—Gathered by M. Rouſſillon in Senegal. *Lamarck.* More hairy or downy than *M. Charantia,* the *leaves* ſmaller, more deeply lobed; *flower-ſtalks* generally longer; *fruit* ſhorter, being oval, and not above an inch long, warty; *flowers* ſmall. *Lamarck.*

5. M. *operculata.* Covered Balſam-apple. Linn. Sp. Pl. 1433. Ait. Hort. Kew. ed. 1. v. 3. 499. Willd. n. 5.

(M. americana, fructu reticulato ſicco; Comm. Rar. 22. t. 22.)—Fruit elliptical, angular, ſharply tuberculated, with a beaked lid. Leaves five-lobed, toothed.—Native of the Weſt Indies. Sent to Kew, in 1787, by Mr. Alex. Anderſon. It is annual like the reſt, and flowers from June to September in the ſtove. The *leaves* are finely downy, with five ſhallow ſpreading lobes. *Tendrils* divided. *Fruit* ovate, or obovate, an inch and half long, its angles armed with pointed tubercles, its top a taper deciduous lid, leaving a ſmall orifice, through which the ſeeds eſcape, the reſt of the fruit when old becoming dry and reticulated.

6. M. *Luffa*. Egyptian Balſam-apple. Linn. Sp. Pl. 1433. (Cucumis ægyptius reticulatus, ſeu Luffa arabum; Veſling. Ægypt. 48. t. 50, 51. Petola; Rumph. Amb. book 10. 405. t. 147.)—Fruit oblong, ſomewhat cylindrical, furrowed, ſmooth; reticulated within. Male flowers corymboſe. Bractea heart-ſhaped entire, at the baſe of each partial ſtalk. Leaves rough, five-lobed, toothed.—Native of the Eaſt Indies. Cultivated near Cairo by the Arabs, (who call it *Luffa*,) rather, as it appears, for curioſity than uſe, the fruit not being eatable. This has the herbage more like ſome ſort of Melon than the reſt of the ſpecies. The *leaves* are rough with minute tubercles. *Tendrils* many-cleft. *Male flowers* numerous, pale yellow with orange ſtreaks, in a downy corymbus, with ſmall ſmooth *bracteas*. At the bottom of their long common ſtalk ſtands a ſolitary ſtalked *female flower*, whoſe long germen is clothed with denſe down. The *ſtamens* are truly polyadelphous, with large ſinuous anthers. *Fruit* a ſpan long, ſwelling upwards, ſmooth, diſplaying, when the ſkin is removed, a moſt elegant reticulated ſtructure, in which the ſeeds are lodged.—*Luffa fœtida*, Cav. Ic. v. 1. 7. t. 9, 10, is evidently nearly allied to this plant, but its ſtamens are ſaid to be all ſeparate. The angles of the fruit moreover ſeem to be ſharper, and its coat thicker, opening by a lid, as in the laſt. The tendrils and infloreſcence agree with *M. Luffa*, but, as Cavanilles obſerves, the two plants require to be compared in a living ſtate, eſpecially their ſtamens. See LUFFA.

7. M. *cylindrica*. Cylindrical Balſam-apple. Linn. Sp. Pl. 1433. Willd. n. 7.—Fruit cylindrical, very long. Bractea heart-ſhaped, entire, at the baſe of the flower-ſtalk. Leaves heart-ſhaped, angular, toothed.—Native of Ceylon and China. Of this we find no figure. The Linnæan ſpecimen has an angular *ſtem*. *Tendrils* ſimple, very long. *Leaves* heart-ſhaped, finely toothed, rough, angular rather than lobed, on rough ſtalks. *Flowers* ſmall, with very hairy ſtalks and calyx. *Fruit*, according to Linnæus, a foot long, rather hairy. *Seeds* black. *Flowers* yellow.—This ſeems by Willdenow to be cultivated in Germany, but we have it not.

8. M. *trifoliata*. Three-leaved Balſam-apple. Linn. Sp. Pl. 1434. Willd. n. 8. (Poppya ſylveſtris; Rumph. Amb. book 9. 414 t. 152. f. 2.)—Fruit ovate, prickly. Leaves ternate, toothed.—Native of the Eaſt Indies. Diſtinguiſhed by its ternate *leaves*, which are ſmooth on the upper ſide; the leaflets all equally ſtalked. *Fruit* red, the ſize and ſhape of a hen's egg, rough with ſmall prickly protuberances.

9. M. *pedata*. Pedate Balſam-apple. Linn. Sp. Pl. 1434. (M. fructu ſtriato lævi, vulgò Caigua; Feuill. Peruv. v. 1. 754. t. 41.)—Fruit ovate, ſtriated. Leaves pedate, ſerrated.—Native of Peru. We have never ſeen this but in the garden of the Marquis Hippolito Durazzo, at Genoa, in 1787. Feuillée ſays the Peruvians eat the fruit in their ſoups, its cooling qualities being peculiarly welcome in that hot climate. The *leaves* are dark green, rough with callous tubercles, and remarkable for being pedate; their lobes are pinnatifid, rather than ſerrated, in our ſpecimen. *Flowers* ſmall, greeniſh-yellow; the *male* ones umbellate; *female* ſolitary, at the baſe of their common ſtalk. *Calyx* with long, narrow, acute ſegments. *Germen* rough. *Fruit*, according to Feuillée, about four inches long, greeniſh-white, ſpongy, with a ſharpiſh taſte. He repreſents the *tendrils* as of two or three branches; in our's they are ſimple. This, with the deeply cut *leaves*, and their callous roughneſs, not mentioned in his prolix deſcription, makes us ſuſpect our's may be a diſtinct ſpecies. There is no ſpecimen in the herbarium of Linnæus, as he merely copied Feuillée.

10. M. *lanata*. Woolly Balſam-apple. Thunb. Prodr. 13. Willd. n. 10.—"Leaves ternate, pinnatifid, rough. Fruit woolly."—Native of the Cape of Good Hope.

11. M. *echinata*. Briſtly Balſam-apple. Muhlenb. MSS. Willd. n. 11. (Sicyos lobata; Michaux. Boreal-Amer. v. 2. 217.)—Fruit with four ſeeds, roundiſh, beſet with long briſtles. Leaves heart-ſhaped, roughiſh, with five ſharp angular lobes, obſcurely toothed.—Native of Pennſylvania, towards the river Ohio. We have ſpecimens from the Rev. Dr. Muhlenberg. The *ſtem* is deeply furrowed, ſmooth. *Tendrils* long, divided, not many-cleft. *Leaves* on long ſtalks, oppoſite to each tendril, of a pentagonal figure, with five divaricated, pointed, diſtantly toothed lobes; heart-ſhaped at the baſe, where there is alſo a ſmall additional lobe, or dilatation, at each ſide. Both ſurfaces of the *leaves* are rough with extremely minute prickles, eſpecially on the ribs and veins, in our ſpecimens, though Michaux and Willdenow deſcribe them as ſmooth. *Flowers* ſmall; the males very numerous, in axillary downy panicles, from two to ſix inches long: females ſolitary, ſtalked, at the baſe of the ſtalk of the panicle. *Germen* globoſe, beſet with long weak prickles. *Fruit* roundiſh, the ſize of a gooſeberry, likewiſe prickly, with only four ſeeds.

12. M. *dioica*. Dioecious Balſam-apple. Roxb. in Willd. n. 12.—"Fruit elliptical, muricated. Flowers dioecious. Leaves heart-ſhaped, pointed, toothed."—Native of the Eaſt Indies.—*Stem* angular, climbing. *Leaves* heart-ſhaped, undivided, pointed, toothed, ſmooth on both ſides, two inches long. *Tendrils* ſimple. *Flowers* dioecious; the female ones axillary, ſolitary. *Fruit* the ſize of the firſt ſpecies, elliptical, very thickly beſet with ſharp tubercles. *Willdenow*.

13. M. *ſpicata*. Spiked Balſam-apple. Linn. MSS.—Leaves heart-ſhaped, ſlightly three-lobed, wavy, rough. Male flowers in long looſe ſpikes, with fan-ſhaped, rough, toothed bracteas; female axillary ſolitary. Germen elliptical, rough.—Of this we find a ſpecimen in the herbarium of the younger Linnæus, under the above name, but without any indication of its native country. The *ſtem* is furrowed, ſlightly prickly. *Tendrils*, as far as we can judge, ſimple. *Leaves* on long rough ſtalks, oppoſite to the tendrils, heart-ſhaped, with three or five ſlight angular lobes, wavy, rough with minute callous tubercles, the veins hiſpid. *Male flowers* in lax, ſimple, ſolitary, axillary, long-ſtalked ſpikes, each flower accompanied by a large, ſeſſile, fan-ſhaped, rough *bractea*, toothed at the ſummit; *female* ſolitary, on a ſhort axillary ſtalk; its *germen* elliptical, furrowed, hiſpid; *calyx* with a very long tube.—The male inflореſcence marks this as a very diſtinct ſpecies, that ſeems not to be any where deſcribed.

14. M. *Elaterium*. Squirting Balſam-apple or Squirting Cucumber. Linn. Sp. Pl. 1434. Bulliard t. 81. (Cucumis ſylveſtris; Camer. Epit. 946. C. aſininus; Ger. em. 912.)—Fruit elliptical, hiſpid, elaſtic at the baſe. Leaves heart-ſhaped, wavy, rough. Tendrils none.—Native of waſte ground in the ſouth of Europe. It is a hardy

annual, now and then allowed a place in curious gardens for the ſake of its fruit, which, to the ſurpriſe of thoſe who touch it unawares, ſtarts from its ſtalk with a violent ſpring, ſquirting out the ſeeds by the orifice. The *herb* is a rank, ſpreading, rough and hairy, rather glaucous, weed, with round thick branches, deſtitute of tendrils. *Flowers* dull yellow; the males but few together in an axillary cluſter, accompanied at the bottom by one female bloſſom. *Fruit* pendulous, elliptical, blunt at each end, about two inches long, green, rough with innumerable ſmall briſtles, of a thick coriaceous texture, without valves.—The extract of this fruit, known by the name of ELATERIUM, (ſee that article,) is a violent and dangerous purge.

MOMORDICA, in *Gardening*, contains plants of the annual trailing and perennial kinds, of which the ſpecies cultivated are, the common momordica, or male balſam apple (M. balſamina); the hairy momordica (M. charantia); the Egyptian momordica (M. luffa); and the elaſtic momordica (M. elaterium).

Method of Culture.—All theſe plants may be increaſed by ſowing the ſeeds of the firſt three ſorts upon a moderate hot-bed, in the early ſpring months, as about March; and when the plants have had a little growth, let them be pricked out into another hot-bed, freſh air being given in fine weather, and water occaſionally; or they may be let remain in the firſt hot-bed till they have acquired ſufficient growth, and have four or five leaves, when they ſhould be removed into the hot-bed where they are to remain, one or two plants being put into each light, due ſhade and water being given till freſh rooted. They afterwards demand the ſame management as the cucumber kind, the branches being ſuffered to extend themſelves in the ſame manner. When thus managed, and properly treated, in reſpect to air and water, they produce fruit and ripe ſeeds in the latter end of ſummer, when it muſt be immediately gathered, to prevent its being diſperſed. The plants may likewiſe be ſet in pots, and placed in the hot-houſe, their vines or ſtems being ſupported by ſticks, in which mode they have a much better appearance and effect.

The fourth ſort may be ſown or ſuffered to ſcatter, where the plants are to remain, or on beds of fine mould in the autumn, the plants being afterwards thinned out, or removed into rows in an open ſituation, three or four feet apart, and as many diſtant in them, requiring only the further culture of being kept clean from weeds. Where the ſoil is dry, they often continue three or four years.

All the ſorts afford ornament, the firſt three ſorts in the ſtove, and the laſt in the open borders. The fruit of the laſt alſo affords a medicinal ſubſtance by inſpiſſation.

MOMORDICA, *Stinking*. See BRYONIA.

MOMOT, in *Ornithology*. See RAMPHASTOS *Momota*, and MOMOTUS.

MOMOT *Pheaſant* of Latham. See PHASIANUS *Motmot*.

MOMOTUS, in *Natural Hiſtory*, a genus of birds of the order Picæ, of which there is but a ſingle ſpecies: the generic character is, bill ſtrong, ſlightly curved, ſerrate at the edges; noſtrils feathered; tail wedged; feet greſſorial.

Species.

BRASILIENSIS, or Braſilian Momot. Green; front blueiſh-green; hind-head violet; crown black. This bird, remarkable for the beauty of its plumage, is a native of South America, and ſeems to be chiefly found in Braſil, whence it derives its name. It was firſt deſcribed by Hernandez, in his Hiſtory of Mexico; who ſays, "It is the ſize of a dove, and has ſcarlet eyes, with a black pupil; a crooked blackiſh bill, almoſt three inches long, ſharp-pointed, with the lower mandible ſhorteſt, and the upper ſerrated; the head is blue like that of the peacock; the legs and feet brown, and the reſt of the bird green; and what is extraordinary, is, that the tail has one quill longer than the reſt, and feathered only at the end." This deſcription was regarded by Ray as very inaccurate, and in his edition of Willoughby's Ornithology, he ſays, "This is, I dare ſay, more ſtrange than true, for the tails of all birds, I ever yet ſaw, have their feathers growing by pairs, that is, two of a ſort, on each ſide." Edwards, about half a century ago, deſcribed it as a ſpecies of Roller, and named it the "Saw-billed Roller." According to this naturaliſt, "It is ſhort-legged in proportion, and not long-winged; the bill is pretty ſtraight, moderately bending downwards at the point, toothed on the edges like a ſaw; the upper mandible duſky, the lower fleſh-coloured towards its baſis; the noſtrils are covered with ſmall black feathers, and ſome black briſtles pointing forward round the upper mandible; the upper part, and the ſides of the bill are encompaſſed with black, from which run black lines through the eyes, and broader black liſts, mixed with a little blue, from the corners of the mouth down the ſides of the neck; the top of the head is of an ultramarine blue, though next the bill inclining to ſea-green; in the middle of this blue ſpace, on the crown of the head, is a black ſpot; it has alſo a ſpot of black feathers, edged with blue, on the fore part of the neck, a little below the throat; otherwiſe the whole underſide, from the bill to the covert-feathers beneath the tail, is of an olive or greeniſh buff colour." Other naturaliſts have given deſcriptions rather different. Linnæus conſidered it as a ſpecies of the Ramphaſtos, or Toucan genus, and denominated it "RAMPHASTOS *Momota*;" but Dr. Latham inſtituted for it a ſeparate genus, the ſtructure of the feet forbidding it to be aſſociated with the Toucans, which have ſcanſorial or climbing feet, having the toes placed two forwards and two backwards, as the parrot genus. Edwards had noticed as a great ſingularity in this bird, that the two long tail-feathers ſeem as if they were ſtripped of their webs on each ſide for an inch ſpace, a little within their tips; but Latham ſays, "That though the tail, in many ſpecimens, exhibited the very remarkable particularity deſcribed by Edwards, yet in its truly natural, or perfectly complete ſtate, the two middle feathers are entirely webbed throughout their whole length." The momotus is nearly equal in ſize to a magpie, meaſuring about eighteen inches in length. It is ſaid to be a bird of ſolitary habits, frequenting thick woods, and is ſeen ſingly. It makes its neſt on the ground, ſometimes in the deſerted hole of an armadillo, or other quadruped; it is compoſed of dry graſs and ſtalks, and it lays commonly two eggs.

In Gmelin's laſt edition of Linnæus, there is a variety mentioned, and deſcribed as variegated with green, tawny, blue, and cinereous. The body above olive green, beneath ruſty; head large; crown blue, black in the middle; bill black, ſcarcely two inches long; the legs are black, and the claws hooked.

This bird feeds on inſects and raw fleſh, the fragments of which it macerates in water; when taken it ſtrikes violently with the bill; the voice is harſh, weak, and tremulous. Shaw, Latham. Gmelin's edit. of Linnæus.

MOMPOX, or *Santa Cruz de Mompox*, in *Geography*, a town of South America, in the province of Carthagena, on the left bank of the Magdalena; 110 miles S.S.E. of Carthagena. Mompox, which is a very commercial port, has a royal cuſtom-houſe, and a handſome quay of conſiderable height, as the river riſes regularly 12 or 13 feet in the beginning of December. N. lat. 9° 19'. W. long. 74° 11'.

MOMUS, in *Mythology*, was, according to Heſiod, the ſon of Night and Sleep, and was ſuppoſed both by the Greeks and Romans to be the god of buffoonery and jeſts. Satirical to exceſs, he made even the gods, and Jupiter himſelf, the objects of his moſt pungent raillery. None of the ancients have exhibited him in his true and lively colours more appropriately than Lucian. Momus is ſaid to have derived his name from the free and bold manner in which he cenſured the vices and defects of others; Μωμος in Greek implying cenſure. It was he who found fault with the gods, becauſe, in the formation of man, they had not made a little hole or window in his breaſt, that one might have ſeen into his heart what were his thoughts: though Vitruvius aſcribes this reflection to Socrates.

MONA, in *Geography*, or LA GUENON, a ſmall iſland in the Weſt Indies, between Hiſpaniola and Porto Rico. N. lat. 18° 10'. W. long. 68° 28'.

MONA, in *Ancient Geography*, an iſland of Great Britain, now called Angleſea, the ancient ſeat of the Druids; which was firſt attempted by Suetonius Paulinus, and afterwards reduced by Agricola. In the Britiſh tongue it was called Môn, and when conquered by the Engliſh, Angleſey, that is, Engliſh iſland. See ANGLESEY.

MONACHUS, in *Zoology*, a ſpecies of *Phoca;* which ſee.

MONACHUS, in *Ornithology*, a ſpecies of *Vultur;* which ſee.

MONACO, in *Geography*, was, before the French revolution, a ſmall principality of Italy, ſituated on the coaſt of the Mediterranean, between the county of Nice and the Genoeſe territory, and about four or five Italian miles in circuit. The chief line of the Grimaldi, who had governed this principality for 800 years ſucceſſively, failed in 1731; but the eldeſt daughter of Antony Grimaldi, having been, in 1715, declared heireſs of the principality, was married to Francis Leonorus, count de Torrigny; and the fruit of this marriage was Honoratus Camillus Leonorus, who adopted the name and arms of Grimaldi. Monaco is now united to France.

MONACO, a town of France, and principal place of a diſtrict, in the department of the Maritime Alps, late capital of the principality above-mentioned, and the reſidence of the duke. It is a ſmall town, with narrow ſtreets, ſituated on a rock near the ſea: it is fortified and has a garriſon and a good harbour, and poſſeſſes a right of compelling all ſhips that paſs by to put in and pay toll; 6 miles N.E. of Nice. The place contains 1130, and the canton 3730 inhabitants, on a territory of 37½ kiliometres, in 4 communes. N. lat. 43° 43'. E. long. 7° 22'.

MONACONDA, a town of Hindooſtan, in Tellingana; 8 miles W.S.W. of Warangole.

MONAD, in the *Philoſophy* of Leibnitz, is a ſimple ſubſtance without parts. The exiſtence of monads muſt be admitted, ſince without theſe no compound or aggregate of ſimple ſubſtances could exiſt. Theſe ſimple ſubſtances are properly called monads, becauſe, as unity is the fountain and origin of numbers, and comprehends all their powers, ſo ſimple ſubſtances are the matter of which all corporeal maſſes are formed. Since monads have no parts, they have neither extenſion, figure, nor diviſibility. They are the true atoms of nature, and elements of things, incapable of deſtruction, except by the power of God. Each monad differs from every other; for it is impoſſible that any two things ſhould be found in nature perfectly alike. Monads have an internal principle of variation, by which they are continually varying in a certain manner; and hence ariſes a plurality of properties and relations. This perpetually varying ſtate, which involves and repreſents multitude in unity, is perception, which is not, however, to be confounded with conſciouſneſs. The action of the eternal principle of monads, by which a tranſition is made from one perception to another, may be called appetite. The perception and appetite of monads are not to be explained mechanically by figure and motion, becauſe they are affections of a ſimple ſubſtance without parts. In monads, therefore, nothing is found but perception and appetite; and in this reſpect all monads may be ſaid to partake of the nature of ſoul; although that term is more properly applied to thoſe living beings, which have diſtinct perception united with memory. The preſent ſtate of monads ariſes from the paſt, and perception from perception, as motion from motion. Monads are, in a ſtate of perception, ſimilar to that of a mind in a ſtupor, which has a perpetual ſucceſſion of minute and indiſtinct perceptions. God alone, ſays Leibnitz, is primitive unity, or ſimple original ſubſtance, from whom are produced all created or derived monads. Theſe owe their exiſtence to the effuſion of the rays of divinity, limited in their effects by the finite capacity of the creatures who receive them. Creatures have not proceeded neceſſarily from the divine eſſence, but have been created, according to the plan of the divine underſtanding, by the energy of the divine will and power; and their continued preſervation is a continual creation.

Monads have univerſally an influence on each other, and are reciprocally active and paſſive. They are active, in proportion as their perceptions are diſtinct; paſſive, as they are confuſed. In ſimple ſubſtances, the influence of one monad upon another is not mechanical, but ideal, and is not effected without the intervention of the Deity, who directs them according to the ideas of his own intellect. From the univerſal influence of all creatures upon each individual, and of each upon all, it follows, that every ſimple ſubſtance receives an impreſſion or image of all the reſt, and becomes, as it were, a perpetual living mirror of the univerſe. As the ſame city viewed from different places appears different, and is optically multiplied; ſo it happens, that in conſequence of the infinite multitude of ſimple ſubſtances in nature, pictures of the univerſe are multiplied without end, according to the different points of ſight of different monads. By theſe means, all poſſible variety, and, conſequently, all poſſible perfection, is produced in the univerſe. Since there is in nature a univerſal *plenum*, the motion of any body or compoſition of monads muſt affect every other body by means of intervening bodies; and every preſent motion will have a neceſſary connection with every other future motion; whence he who ſees all things can read in the preſent whatever will happen in any future time or diſtant place. Although each created monad reflects the whole univerſe, that monad which is the animating principle of any body, affects that body more diſtinctly than all others. As the whole body reflects the whole univerſe by the connection of all matter *in pleno*, ſo alſo the ſoul reflects the whole univerſe, while it reflects that organized body, by which it is in a peculiar manner perceived, and with which it ſeems a living animal. Since matter is not only infinitely diviſible, but is actually divided without limit, every portion of matter may be conceived to be a world of living creatures; and every part of a living body to be itſelf full of all other living bodies. All bodies are like rivers, perpetually flowing; ſome parts entering, and others paſſing away. The ſoul changes its body, not inſtantaneouſly, but by degrees, ſo that, ſtrictly ſpeaking, there is no ſuch thing as death, or a ſtate in which the ſoul is ſeparated from the body. In conception, no new animal is produced; but a pre-exiſting animal is diſpoſed to a transformation, by which it paſſes into another ſpecies. In death, though the machine in part periſhes, the animal itſelf remains indeſtructible.

From this conciſe ſtatement of Leibnitz's ſyſtem, as it reſpects monads, it will be eaſily perceived, that his monads approach nearer to the permanent intelligent natures, called by Pythagoras numbers, and by Plato ideas, than to the ſolid and indiviſible atoms of Epicurus. Brucker's Philoſ. by Enfield, vol. ii. See LEIBNITZIAN *Philoſophy*.

MONADELPHIA, in *Botany*, from μονος, *one*, and αδελφος, *a brother*, the 16th claſs of the Linnæan artificial, or ſexual, ſyſtem, conſiſting of plants whoſe filaments are united into one parcel, or ſet. This union is more or leſs complete. In the Mallow tribe, the combined filaments make a long tube, crowned at its ſummit by the anthers, which, from its reſemblance to a column, has obtained the name of *columniferæ* for ſuch flowers. In the Geranium family the union is much more ſlight; while in ſome genera, as *Oxalis*, it is but partial, or confined to certain ſpecies only. The late profeſſor Cavanilles, of Madrid, undertook an illuſtration of the claſs *Monadelphia*, in ſeveral quarto diſſertations, with plates, which make all together two rather thick volumes. In this work he has referred to the claſs in queſtion a vaſt number of genera, never before ſuſpected to belong to it, and which unqueſtionably want its true character. This character conſiſts ~~in~~ an actual union, or immediate coaleſcence, of the filaments ~~themſelves~~ into one body; whereas many of the plants conſidered by Cavanilles as monadelphous, are ſo merely through the medium of a tubular nectary, or of ſome other body, which is no part of the ſtamens. This is totally inadmiſſible, for we might juſt as well refer to this claſs, every plant whoſe filaments are connected by inſertion into a corolla, or calyx, of one piece.

The claſs *Monadelphia* is not in itſelf a natural one, though it embraces ſome tribes that are natural combinations, as the *Columniferæ* and *Gerania*. Its orders are diſtinguiſhed by the number of ſtamens, eaſily determined at their upper part, bearing the anthers, where they are always, for a conſiderable diſtance, ſeparate and diſtinct. Theſe orders are eight, *Triandria*, *Pentandria*, *Heptandria*, *Octandria*, *Decandria*, *Endecandria*, *Dodecandria*, and *Polyandria;* of which the laſt, compriſing the *Columniferæ*, and ſome other noble plants, is the moſt numerous and important.

MONADELPHIA is alſo the name of an order of the 21ſt and 22d claſſes (*Monoecia* and *Dioecia*) of the Linnæan ſyſtem, founded on the ſame character as the claſs ſo denominated. This order in the 21ſt claſs is chiefly formed of the Fir, or coniferous, tribe, and of ſome of the natural order of *Euphorbiæ* of Juſſieu; in the 22d alſo it contains ſome of the allies of the Fir, with a very few genera beſides. Profeſſor Willdenow has removed the Gourd or Cucumber tribe to the *Monoecia Monadelphia*, juſtly perceiving that they were inaccurately referred to *Monadelphia Syngeneſia* by Linnæus; an order which, as far as is hitherto known, has no exiſtence in nature. Their anthers in fact are quite diſtinct, their filaments only being more or leſs combined. But this combination is not into one ſet, except perhaps in *Sicyos* and *Sechium*. The reſt of this tribe are by no means monadelphous, but polyadelphous, their five ſtamens being united by their filaments into three ſets. See MOMORDICA.

MONADNOCK, GREAT, in *Geography*, a mountain of America, in Cheſhire county, New Hampſhire, between the towns of Jeffrey and Dublin. The foot of the hill is 1395 feet, and its ſummit 3254 feet, above the level of the ſea. Its baſe is five miles in diameter from N. to S., and three from E. to W. On the ſides are ſome appearances of ſubterraneous fires.

MONADNOCK, *Upper Great*, a high mountain in Canaan, in the N.E. corner of the ſtate of Vermont.

MONAGHAN, a county of Ireland, in the province of Ulſter. It is rather of an oblong form, having its greateſt extent from north to ſouth, and being very narrow, except in one part, where it ſtretches between the counties of Fermanagh and Cavan, which form its weſtern boundary. On the north it runs into the county of Tyrone in an angular direction, being ſeparated from it on the north-eaſt by the river Blackwater. The county of Armagh lies on the eaſt of it, that of Louth on the ſouth-eaſt, and that of Meath on the ſouth. The length of this county is 30 miles (38 Engliſh) from north to ſouth; its greateſt breadth is 19 miles (24 Engliſh), but in moſt parts it does not exceed 10, and is not always ſo much. The area is 179,600 Iriſh plantation equal to 288,500 Engliſh acres; and in ſquare miles 280 Iriſh or 450 Engliſh. This is the ſtatement of Dr. Beaufort and ſir Charles Coote. Mr. Wakefield, for what reaſon he does not ſtate, ſays the area is 509 Engliſh miles. The whole is divided into 21 pariſhes, of which 20 had churches when Dr. Beaufort publiſhed, all in the dioceſe of Clogher. The population is ſtated by Dr. Beaufort at 118,000 for 21,523 houſes; but the general increaſe ſince the publication of his work is ſufficient ground for conſidering it too low an eſtimate.

Monaghan has a large proportion of bog, and a great number of ſmall lakes, which, together with its being expoſed to the north-weſterly winds, render it very damp, though it is far from being unwholeſome. On the north-weſt the Sliebh-Baught mountains divide it from Tyrone; and on the eaſt the Fews mountains are the boundary. In moſt parts of the county the ſurface is hilly, but no part is inacceſſible to the plough. The turf bogs, ſupplying abundance of fuel, are of great value, and have been reckoned one cauſe of its great population, in which it is inferior to no county in Ireland, Dublin and Armagh alone excepted. The ſoil is in general deep clay, which is particularly favourable for flax, and this is the principal crop. In 1809 three thouſand two hundred acres were ſown with flax, a greater number in proportion to the extent than in any county except Armagh. Potatoes and oats are ſucceſsfully cultivated, but there is very little wheat; and the ſmall farms into which the land is divided do not anſwer for grazing or dairy huſbandry. The lower claſſes are ſenſible of the value of vegetables, which are raiſed very abundantly in their little gardens; and with ſimilar encouragement to that given by lord Hardwicke on his eſtate in Cambridgeſhire, theſe gardens would contribute in a ſtill greater degree to the comfort of the proprietors. The linen manufacture is the great object of the people, and is productive of its uſual happy effects, though it is not favourable to improved agriculture. The Slieb-Baught mountains, which extend into this county from Tyrone, form an uninterrupted ridge of high land, the higheſt part of which is called Cairnmore. Theſe have, in general, neither a fruitful ſoil, nor any natural beauties to recommend them, being an unintereſting waſte, and almoſt always wet and moory. There are parts, however, which have beds of the richeſt limeſtone, and abundance of marle, particularly on the eaſtern ſide of Cairnmore. This mountain is famous for its millſtone quarry. Thoſe moſt valued conſiſt of a red and very hard grit or ſandſtone, the grain of which is cloſe. There is alſo a ſoft whitiſh ſandſtone, which is more eaſily procured, but which ſoon waſtes away. In this neighbourhood is alſo a fine kind of potters' clay, which is carried to the pottery at Dundalk, and is uſed in making the beſt thin glazed ware. Indications of coal have alſo been obſerved here, and in other parts of the county. Crieve, which is ſouth of the town of Ballibay, is the higheſt ground in Monaghan. The ſtone here is of a very hard quality, of a colour between blue and dark green, and is found to anſwer very well for building. It is called *whinſtone*, and ſeems to be a kind of greenſtone. Crieve abounds with lead ore of the richeſt quality. On the ſummit of this mountain is a lake covering about fifty acres, which is very deep, and is principally ſupplied from ſprings. This lake ſerves as a reſervoir for ſupplying a number of bleach-mills, fourteen of them being worked by the ſtream flowing from it. The conſequence of theſe eſtabliſhments has been the reclaiming of a conſiderable part of the mountain, notwithſtanding the badneſs of the ſoil; ſo that what was regarded a few years ago as a waſte with nothing to recommend it, has, in conſequence of the application of a ſtream of water to the prevailing manufacture, become a moſt thriving and valuable diſtrict. It has been already mentioned, that Monaghan abounds with ſmall lakes which might be turned to the ſupply of a canal extending through it from lough Neagh to lough Erne, which ſeems to be practicable without very great expence, ſhould the improvement of the country render it deſirable. The number of theſe lakes is 184, of which 30 are conſiderable ſheets of water. Lough Barrac, near Caſtle Blayney, and the lake of Kilcrow at Coote Hill, principally deſerve notice for their extent and beauty. The rivers are numerous, but inconſiderable. Of Monaghan, the county town, an account will be given in the next article. Clones, Carrickmacroſs, Caſtle Blayney, and Ballibay, have been noticed in preceding volumes under their reſpective heads. As none of them are boroughs ſince the Union, Monaghan is repreſented in parliament by only two members, who are, according to Mr. Wakefield, returned by no individual prevailing intereſt.

In the hiſtory of Ireland we do not find any matter of moment relating to this county until the reign of James I., when 500,000 acres in Ulſter were eſcheated to the crown under the charge of the proprietors being diſaffected to the king's government, which forfeiture included almoſt the whole of Monaghan. A great part of theſe lands was ſoon after aſſigned to Britiſh adventurers, moſtly Scotch; but conſiderable eſtates were left, according to ſir John Davis's ſtatement, to ſeveral of the name of M'Mahon, which had been the prevailing family in it. Theſe were probably forfeited at a ſubſequent period, as the name of M'Mahon does not occur in the liſt of the preſent proprietors given by ſir Charles Coote. "The rent rolls of large eſtates," ſays the writer laſt named, "will be found from near 20,000*l.* to 1,000*l.* *per annum*, and a very conſiderable part is held in grants from 20*l.* to 500*l.* *per annum*. The large eſtates are in no inſtance reſided on by the immediate proprietors, but the leſſer ones are almoſt uniformly otherwiſe, and are held in grants from the crown, ſince the Scotch colony was introduced here; and alſo a conſiderable ſhare of theſe lands comprehended gifts to Cromwell's ſoldiers, many of whoſe poſterity now enjoy ſo ſmall a tract, as does not yield above 20*l.* annual income. I ſuppoſe taking the large farms in Monaghan they would not average 25 acres; nor could the ſmall ones, which are far more numerous, average ſix acres, ſo that ten may be the mean rate of the whole county." "The largeſt eſtates," according to Mr. Wakefield, "exhibit the moſt wretched cultivation; fields without hedge-rows, and encloſed only by earthen banks or dykes; land running to waſte, which, with great truth, may be compared to its inhabitants, that is, loſing its ſtrength for want of proper nouriſhment, and exiſting in a ſtate of the utmoſt poverty." It would be eaſy to enlarge upon the evils ariſing from non-reſident landlords, rack-rents paid to middle men, and a conſequent wretched ſyſtem of agriculture; but to do ſo in this place would not be likely to contribute to amendment, and the remarks would not belong to this more than to many other counties. Beaufort's Memoir. Sir C. Coote's Statiſtical Survey. Wakefield's Account of Ireland.

MONAGHAN, a market and poſt-town of Ireland, and the ſhire-town of the county of Monaghan, deſcribed in the preceding article. Before the Union it was a borough, but is not now repreſented. It is 62 miles N.N.W. from Dublin. N. lat. 54° 16′. W. long. 6° 49′.

MONAH, a town of Hindooſtan, in Baramaul; eight miles N. of Namacul.

MONAHAN, a townſhip of America, in York county, Pennſylvania.

MONAINCHA, in *Eccleſiaſtical Antiquities*, the name of a celebrated old monaſtery in Ireland, which belonged to the Culdees, and is mentioned by Cambrenſis. It is ſituated in the bog of Monela, in the county of Tipperary; three miles S.E. from Roſcrea. Archdall. Ledwich.

MONAMBASCHAGATT, a town of Africa, on the river Camarones.

MONANDRIA, in *Botany*, from μονος, *one*, and ανηρ, *a man*, the firſt claſs of the Linnæan ſexual, or artificial, ſyſtem, characterized by having one ſtamen only, in the ſame flower with the piſtil. It conſiſts of two orders, diſtinguiſhed by the number of their ſtyles, or ſeſſile ſtigmas; like all the orders of the firſt 13 claſſes of this ſyſtem. Some few ſpecies of *Valeriana*, a naturally triandrous genus, are monandrous.

The character of this claſs is in general eaſy and obvious, but a difference of opinion exiſts among botaniſts, concerning ſome genera which Linnæus has referred to it. Theſe are of the natural order of *Scitamineæ*, in ſeveral of which order the two lobes of the anther are ſeparated by the breadth of the filament, which is in them unuſually great. But that theſe two lobes do really conſtitute one anther only, is evident from other genera of the ſame natural order, in which, the filament being but of the ordinary ſlender dimenſions, the two lobes are brought cloſely together. There are other inſtances of a ſimilar diſtance between the two lobes of an anther, as in *Berberis*.

MONANDRIA is likewiſe the name of an order of the claſs *Gynandria*, as well as of the *Monoecia* and *Dioecia*. Reſpecting the two laſt, every body is agreed, but the firſt has been eſtabliſhed ſince the time of Linnæus, and conſiſts of all the known *Orchideæ*, except *Cypripedium*, which that great botaniſt conſidered as having two anthers, but which prove, on a correct inveſtigation, and eſpecially by the analogy of the *Scitamineæ*, to have really but one. See ORCHIDEÆ and SCITAMINEÆ.

Some ſpecies of *Salix*, conſidered as monandrous, are perhaps more truly monadelphous, their anther being certainly double, and their filaments two, united into one from the bottom to the very ſummit. In other ſpecies this union is but partial, and theſe are univerſally deemed monadelphous.

MONANTHUEIL, HENRY DE, in *Biography*, or, when latinized, *Monantholius*, a French phyſician and mathematician, was born of a noble family, poſſeſſed of an eſtate of the ſame name, in the Vermandois, about the year 1536. His birth place was Rheims; but he received his education in the college of Preſla, at Paris, under the direction of the celebrated Ramus, whoſe doctrines he afterwards defended. He then transferred his ſtudies to the college royal, where he applied with ardour both to mathematics and medicine, and received the degree of doctor in the latter ſcience. He held the office of dean of the faculty of medicine for two ſucceſſive years, 1578 and 1579. His mathematical acquirements had obtained for him the appointment of profeſſor in 1576, which he fulfilled with ſo much diſtinction, as to gain the honour of numbering among his auditors the celebrated James Auguſtus de Thou, the learned Peter de Lamoignon, and other eminent characters. He continued to perform the duties of this profeſſorſhip with undiminiſhed zeal and reputation, for a period of thirty years; while at the ſame time he did not neglect thoſe of his medical office. He was extremely active in maintaining the privileges of the faculty, and ſucceſsfully expoſed the impoſitions of a noted empiric of his day, named La Riviere, who was exiled from Paris by an arrêt of parliament. He was on terms of intimate friendſhip with William du Vair, keeper of the ſeals; and was the Muſæus, on whom that gentleman beſtowed ſo high an eulogium in his diſcourſe "On Conſtancy." He was diſtinguiſhed by his ſteady loyalty during the trouble of the *league*, and pronounced the firſt public panegyric on king Henry IV., when his majeſty obtained the poſſeſſion of Paris from the hands of that faction. He died in the year 1606, highly reſpected for every quality that could adorn the man and the ſcholar. He was author of the following works: "Liber de Angulo Contactus, adverſus Jacobum Peletarium," 1581;—"Oratio, quale eſſe deberet Collegium Profeſſorum Regiorum," 1595;—"Ludus Jatro-mathematicus, Muſis factus," 1597;—"Commentarii in Librum Ariſtotelis de Mechanicis," with the Greek text, and a new Latin verſion, 1599;—"De Puncto, primo Geometriæ principio, Liber," 1600;—"Problematis omnium quæ à 1200 annis inventa ſunt nobiliſſimi Demonſtratio," 1600. And he left in an unfiniſhed ſtate a large mathematical work, entitled "Hepatecnon Mathematicum," on which he had been long occupied. Gen. Biog. Eloy Dict. Hiſt.

MONARCHICI, in *Church Hiſtory*, heretics towards the end of the ſecond century, who allowed but one perſon in the godhead, and maintained that the father, the creator of all things, had united himſelf to the human nature of Chriſt; whence they were called Monarchians; and they alſo taught that the father was crucified; on this account they were denominated Patripaſſians.

MONARCHY, μοναρχια, a large ſtate governed by one; or a ſtate where the ſupreme power is lodged in the hands of a ſingle perſon.

The word comes from the Greek μοναρχης, *one who governs alone;* formed of μονος, *ſolus*, and αρχη, *imperium, government.*

Of the three forms of government, *viz.* democracy, ariſtocracy, and monarchy, the laſt is the moſt powerful, all the ſinews of government being knit together, and united in the hand of the prince; but then there is imminent danger of his employing that ſtrength to improvident or oppreſſive purpoſes. As a democracy is the beſt calculated to direct the end of a law, and an ariſtocracy to invent the means by which that end ſhall be obtained, a monarchy is moſt fit for carrying thoſe means into execution.

Honour, ſays Monteſquieu, which aſpires to preferments and diſtinguiſhing titles, is the prevailing principle in monarchies; this ſets all the parts of the body politic in motion; by its very action it connects them, and thus each individual advances the public good, while he only thinks of promoting his own particular intereſt; this principle gives life, not only to the whole body politic, but to the laws, and even to the virtues themſelves. This principle is altogether unknown in deſpotic governments; of which fear is the principle.

As honour is the principle of a monarchical government, ſyſtems of education and of legiſlation ſhould be formed and conducted with a conſtant regard to this principle. The nobility ſhould be rendered reſpectable and hereditary, and their lands ſhould have privileges annexed to them as well as their perſons. The laws ſhould alſo favour all kinds of commerce, conſiſtent with the conſtitution of the government, that the ſubjects may be able, without ruining themſelves, to ſatiſfy the continual cravings of the prince and his court. Some fixed regulation ſhould alſo be eſtabliſhed, that the manner of collecting the taxes may not be more burdenſome than the taxes themſelves.

Monarchy has a great advantage over a deſpotic government. As it naturally requires there ſhould be ſeveral orders belonging to the conſtitution under the prince, the ſtate is more fixed, the conſtitution more ſteady, and the perſon of him that governs more ſecure. We may alſo add, that as people who live under a good government, are happier than thoſe who, without rule or leaders, wander about the foreſts; ſo monarchs who live under the fundamental laws of their country, are far happier than deſpotic princes, who have nothing to regulate either their own, or their ſubjects' hearts. In monarchies, where honour alone predominates, the prince's rewards would conſiſt only of marks of diſtinction, if the diſtinctions eſtabliſhed by honour were not annexed to a luxury which is neceſſarily attended with wants; the prince therefore is obliged to confer honours that lead to wealth; and it is a general rule, that great rewards, in monarchies and republics, are a ſign of their decline; becauſe they are a proof of their principles being corrupted, and that the idea of honour has no longer the ſame force in monarchy, nor the title of citizen the ſame force in a republic. The very worſt Roman emperors were thoſe who were moſt profuſe in their largeſſes, *viz.* Caligula, Claudius, Nero, Otho, Vitellius, Commodus, Heliogabalus, and Caracalla. The beſt, ſuch as Auguſtus, Veſpaſian, Antoninus Pius, Marcus Aurelius, and Pertinax, were economiſts. Under good emperors the ſtate reſumed its principles; all other treaſures were ſupplied by that of honour. In a republic preſents are odious, becauſe virtue does not need them. In monarchies honour is a much ſtronger incentive than preſents. But in a deſpotic government, where there is neither honour nor virtue, people cannot be determined to act but through hopes of the conveniences of life. In monarchical governments, Monteſquieu is of opinion, that the laws ought not to oblige a ſubject to accept of a public employment; nor ſhould a ſubject be obliged to accept of a poſt in the army inferior to what he held before, becauſe honour, true or falſe, will never bear with what it calls degrading itſelf; nor ſhould civil and military employments be conferred on the ſame perſon; nor is venality of public employments improper, as he thinks, in monarchies. He adds, that in monarchies there ſhould be no cenſors, becauſe being founded on honour, it is in the nature of honour to have the whole univerſe for a cenſor. In monarchies, the adminiſtration of juſtice, which decides not only in regard to life and property, but likewiſe to honour, demands very ſcrupulous inquiries. In monarchies, it is a great inconvenience for the miniſters of the prince to be judges. Our author thinks, that luxury is extremely proper for monarchies, and that under this government there ought to be no ſumptuary laws. Republics, he ſays, end with luxury, and monarchies with poverty. As democracies are deſtroyed when the people deſpoil the ſenate, magiſtrates, and judges of their functions; ſo monarchies are corrupted when the prince inſenſibly deprives ſocieties of their prerogatives, or cities of their privileges. In the firſt caſe the multitude uſurp a deſpotic power; in the ſecond it is uſurped by a ſingle perſon. Monarchy is deſtroyed, when a prince thinks he ſhews a greater exertion of power in changing, than in conforming to the uſes of things; when he deprives ſome of his ſubjects of their hereditary employments, to beſtow them arbitrarily upon others, and when he is fonder of being guided by his fancy than by his judgment. It is deſtroyed, when the prince, directing every thing to himſelf, calls the ſtate to his capital, the capital to his court, and the court to his own perſon. Monarchy is deſtroyed, in fine, when the prince miſtakes his authority, his ſituation, and the love of his people; and when he is not fully perſuaded, that a monarch ought to think himſelf ſecure, as a deſpotic prince ought to think himſelf in danger. Monteſq. Sp. of Laws, vol. i. paſſim.

The moſt ancient monarchy was that of the Aſſyrians, which was founded ſoon after the deluge, in the year 2059 B.C. We uſually reckon four grand or univerſal monarchies; the Aſſyrian, Perſian, Grecian, and Roman: though St. Auguſtine makes them but two, *viz.* thoſe of Babylon and Rome. Belus is placed at the head of the ſeries of Aſſyrian kings who reigned at Babylon, and is by profane authors eſteemed the founder of it, and by ſome the ſame whom the ſcriptures call Nimrod. The principal Aſſyrian kings after Belus were Ninus, who built Nineveh, and removed the ſeat of empire to it; Semiramis, who, diſguiſing her ſex, took poſſeſſion of the kingdom inſtead of her ſon, and was killed and ſucceeded by her ſon Ninyas; and Sardanapalus, the laſt of the Aſſyrian monarchs, and more effeminate than a woman. With him terminated the ancient monarchy of Aſſyria, in the year 820 B.C. After his death, the Aſſyrian empire was ſplit into three ſeparate kingdoms; *viz.* the Median, Aſſyrian, and Babylonian. The firſt king or prefect of the Median kingdom was Arbaces; and this kingdom laſted till the time of Aſtyages, who was ſubdued and diveſted of his kingdom by Cyrus. The firſt king of the new Aſſyrian kingdom was Phul, who began his reign in the year 777 B.C., and this kingdom was united to that of Babylon under Aſſaradinus, 680 B.C. The Babylonian kingdom commenced under Nabonaſſar, 747 B.C., and after being united to that of Aſſyria, was again ſeparated, 667 B.C., Saoſduchinus being its firſt king, and Ninus II. king of Aſſyria. Theſe monarchies continued ſeparate until the year 606 B.C., when Aſſyria was united to Media. The Babylonian kingdom terminated by the conqueſt of Cyrus, 538 B.C. In the time of Cyrus, there aroſe a new and ſecond monarchy, called the Perſian; which ſtood upwards of two hundred years, from Cyrus, whoſe reign began 559 B.C., to Darius Codomannus, who was conquered by Alexander, 331 B.C., and the empire tranſlated to the Greeks. The firſt monarch was Cyrus, founder of the empire; the ſecond Cambyſes, the ſon of Cyrus. 3. Smerdis. 4. Darius, the ſon of Hyſtaſpes, who began his reign 521 B.C. 5. Xerxes, who ſucceeded Darius, 485 B.C. 6 Artaxerxes Longimanus, who commenced his reign 464 B.C. 7. Xerxes II., who began his reign 425 B.C. 8. Ochus, or Darius, called Nothus, 424 B.C. 9. Artaxerxes Mnemon, 404 B.C. 10. Artaxerxes Ochus, 358 B.C. 11. Arſes, 337 B.C. 12. Darius Codomannus, 335 B.C., who was defeated by Alexander the Great, and deprived of his kingdom and life about 331 B.C.; the dominion of Perſia after his death was tranſlated to the Greeks. The third monarchy was the Grecian. As Alexander when he died did not declare who ſhould ſucceed him, there ſtarted up as many kings as there were commanders. At firſt they governed the provinces, that were divided among them, under the title of viceroys; but when the family of Alexander the Great was extinct, they took upon them the name of kings. Hence, in proceſs of time, the whole empire of Alexander produced four diſtinct kingdoms; *viz.* 1. The Macedonian, the kings of which, after Alexander, were Philip, called Aridæus, 323 B.C., Caſſander, 316 B.C., Antipater and Alexander, 298 B.C., Demetrius Poliorcetes, 294 B.C., Pyrrhus, 287 B.C., Lyſimachus, 286 B.C., Ptolemy, called Ceraunus, 280 B.C., Meleager, 279 B.C., Antipater the Eteſian, 278 B.C., Antigonus Gonatas, 277 B.C., Demetrius, 243 B.C., Antigonus Doſon, 232 B.C., Philip, 221 B.C., and Perſeus, 179 B.C., under whom the Macedonian kingdom was reduced to the form of a Roman province. 2. The Aſiatic kingdom, which, upon the death of Alexander, fell to Antigonus, 311 B.C., comprehending that country now called Natolia, together with ſome other regions, beyond Mount Taurus. From this kingdom proceeded three leſſer ones; *viz.* that of Pergamus, whoſe firſt king was Philetærus the Eunuch, 283 B.C., and whoſe laſt king, Attalus, called Philometor, in the year 132 B.C., appointed the Roman people to be his heir: Pontus, reduced by the Romans into the form of a province, when they had ſubdued the laſt king, Mithridates; and the Syrian. 3. The Syrian, to which that of Babylon was united, of whoſe twenty-two kings the moſt celebrated were Seleucus Nicator, founder of the kingdom, 312 B.C., Antiochus Deus, 261 B.C., Antiochus the Great, 223 B.C., Antiochus Epiphanes, 175 B.C., Tigranes, 83 B.C., and Antiochus Aſiaticus, 69 B.C., who was conquered by the Romans under Pompey; and Syria was reduced into the form of a Roman province, 65 B.C. 4. The Egyptian, which was formed by the Greeks in Egypt, and flouriſhed near two hundred and forty years under twelve kings; the principal of whom were Ptolemy Lagus, its founder, 323 B.C., Ptolemy Philadelphus, 284 B.C. founder of the Alexandrian library; and queen Cleopatra, who was overcome by Auguſtus; in conſequence of which Egypt was added to the dominion of the Romans, 30 B.C. The fourth monarchy was the Roman, which laſted two hundred and forty-four years, from the building of the city, until the time when the royal power was abrogated. The kings of Rome were Romulus its founder, Numa Pompilius, Tullus Hoſtilius, Ancus Martius, Tarquinius Priſcus, Servius Tullius, and Tarquin the Proud, who was baniſhed, and with whom terminated the regal power. Holberg's Introd. to Univ. Hiſt. by Dr. Sharp, p. 85, &c.

There ſeems, in reality, no neceſſity to make the Medes, Perſians, and Greeks, ſucceed to the whole power of the Aſſyrians, to multiply the number of the monarchies: it was the ſame empire ſtill, and the ſeveral changes that happened in it, did not conſtitute different monarchies. Thus the Roman empire was ſucceſſively governed by princes of different nations, yet without any new monarchy being formed thereby. Rome, therefore, may be ſaid to have immediately ſucceeded Babylon in the empire of the world. See EMPIRE.

Of monarchies ſome are *abſolute* and *deſpotic*, where the will of the monarch is uncontrollable, as Denmark, &c.; others are *limited*, where the prince's authority is reſtrained by laws, and part of the ſupreme power lodged in other hands; as in England. See GOVERNMENT.

Some monarchies, again, are *hereditary*, where the ſucceſſion devolves immediately from father to ſon; and others are *elective*, where, on the death of the monarch, his ſucceſſor is appointed by election.

According to Hobbes, monarchy, as well as ariſtocracy, derives all its authority from the people, who transfer all their right, *v. gr.* the ſupreme power, by a plurality of ſuffrages, &c. to ſome one perſon called a monarch; ſo that whatever the people could have done before this tranſlation, may be now rightfully done by him to whom the tranſlation is made. This done, the people are no longer to be looked upon as a body, but a diſſolved multitude; becauſe they were only one by virtue of the ſupreme power, which they have now transferred to another.

Nor can the monarch, according to this author, oblige himſelf by any covenants, to any perſon, for the authority he has received; becauſe he receives the power from the people, which, as ſoon as that is done, ceaſes to be a body; and the body ceaſing, the obligation to the body ceaſes of courſe. The people, therefore, are obliged to pay obedience to the monarch, by virtue of thoſe covenants, whereby they mutually oblige themſelves to what the people, as a body, enjoin to be done.

He argues, farther, that as a monarch cannot be obliged by any covenants; ſo neither can he do any injury to his ſubjects; an injury being nothing elſe but a breach of covenant; and where there is no covenant, there can be no breach of one. De Cive, c. 8. See HOBBISM.

Fifth-MONARCHY *Men*, in the *Eccleſiaſtical Hiſtory of England,* were a ſet of wrong-headed and turbulent enthuſiaſts who roſe in the time of Cromwell, and who expected Chriſt's ſudden appearance upon earth to eſtabliſh a new kingdom: and, acting in conſequence of this illuſion, aimed at the ſubverſion of all human government. Burnet's Hiſt. of his Own Times, vol. i. p. 67.

MONARDA, in *Botany*, named in honour of Nicholas Monardes, a Spaniſh phyſician and botaniſt who lived at Seville towards the cloſe of the ſixteenth century, and who publiſhed various treatiſes relating to the natural productions, and eſpecially to the *Materia Medica*, of the new world.—Linn. Gen. 16. Schreb. 22. Willd. Sp. Pl. v. 1. 124. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 50. Vahl. Enum. v. 1. 217. Michaux. Boreal-Amer. v. 1. 16. Juſſ. 111. Lamarck Illuſtr. t. 19. Gærtn. t. 66.—Claſs and order, *Diandria Monogynia.* Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, cylindrical, ſtriated, permanent, with a five-toothed, equal mouth. *Cor.* unequal; tube cylindrical, longer than the calyx; limb ringent: upper lip ſtraight, narrow, linear, undivided; lower reflexed, broader, cloven into three ſegments, of which the middle one is longer, narrower, and emarginate; its ſides obtuſe. *Stam.* Filaments two, briſtle-ſhaped, as long as the upper lip, by which they are embraced; anthers compreſſed, truncated at the top, convex and ſtraight at the lower part. *Piſt.* Germen ſuperior, four-cleft; ſtyle thread-ſhaped, parallel to the ſtamens; ſtigma cloven, acute. *Peric.* none. *Seeds* four, roundiſh, lying at the bottom of the calyx.

Obſ. *M. didyma* has four ſtamens, two of which are abortive.

Eſſ. Ch. Corolla unequal, its upper lip linear, and incloſing the filament. Seeds four.

1. M. *fiſtuloſa.* Purple or Crimſon Canada Monarda. Linn. Sp. Pl. 32. J. Miller. Illuſtr. t. 3. (M. fiſtuloſa, *var;* Curt. Mag. t. 145.)—Leaves oblong-lanceolate, pointed, hairy, flat. Stems obtuſely angular.—Native of Canada as well as other parts of North America, cultivated by Mr. John Tradeſcant in 1656. It flowers from June to Auguſt.—*Root* perennial, ſtrongly fibrous and ſpreading. *Stems* nearly three feet high, obtuſely angular, hairy, branched at the upper part. *Leaves* oppoſite, on ſhort ſtalks, broad at the baſe, but ſharply pointed at the end, hairy and toothed. *Flowers* in one or two terminal, denſe whorls, of a beautiful deep crimſon colour.—The whole herb is remarkable for its fragrance as well as beauty, and is not unfrequently cultivated in our gardens. The variety figured by Curtis, and quoted above, is larger and more ſhowy than the original ſpecies, its bloſſoms far ſurpaſſing that in ſize and brilliancy of colour. The floral leaves alſo are richly tinted with lilac or purple.—Upon comparing Curtis's figure with the Linnæan Herbarium, it appears that this variety of *fiſtuloſa* is what Linnæus has called *M. mollis* in the third volume of the *Amœnitates Academicæ,* p. 399.—It may be propagated by parting its roots.

2. M. *oblongata.* Long-leaved Monarda. Willd. n. 2. Ait. Hort. Kew. ed. 2. v. 1. 51.—Leaves oblong-lanceolate, rounded and ſomewhat contracted at the baſe, hairy, flat.—Native of North America, and cultivated in 1761, by Mr. James Gordon. It flowers from July to September.—There is no figure of this ſpecies, but, from a ſpecimen in Dr. Smith's herbarium, we find that it chiefly differs from the preceding in having its *leaves* more oblong, and more attenuated, though not actually tapering, at the baſe; they are alſo more hairy on the under ſide. The *calyx* is ſhorter and more hairy at the margin. The *flowers* alſo are ſmaller.

3. M. *didyma.* Scarlet Monarda, or Oſwego-Tea. Linn. Sp. Pl. 33. Curt. Mag. t. 546. (M. coccinea; Michaux. Boreal-Amer. v. 1. 16.)—Leaves ovate, ſmooth. Whorls of flowers capitate, with two imperfect, additional ſtamens. Stem acutely angular.—Native of rills on the mountains of North America; introduced into this country by Peter Collinſon, before 1752. It flowers from June to Auguſt.—*Root* perennial. *Stems* about two feet high, ſquare, acutely angular, branched ſo as to become buſhy towards the top. *Leaves* oppoſite, on ſhort ſtalks, toothed and fringed at the edge, when bruiſed, emitting a grateful, refreſhing ſmell, which, independently of the beauty of the plant, would entitle it to a place in every garden. *Flowers* much like thoſe of *M. fiſtuloſa* in habit, but larger, and of a rich ſcarlet hue; moſt of them furniſhed with two additional abortive ſtamens, whence the ſpecific name.—This increaſes greatly by throwing out radical ſhoots, which may be tranſplanted.

4. M. *rugoſa.* White Monarda. Willd. n. 4. Ait. Hort. Kew. ed. 2. v. 1. 51.—Leaves ovato-lanceolate, heart-ſhaped, ſmooth, rugoſe.—Native of North America; cultivated in 1761, by Mr. James Gordon; flowering from July to September.—This ſpecies is adopted by Vahl and Martyn from Aiton, but as we are unacquainted with any ſpecimen or figure, we can only give profeſſor Willdenow's deſcription, who ſays that it is very nearly allied to the following ſpecies, *M. clinopodia,* but that its *leaves* are longer, ſmooth, and ſomewhat rugoſe like thoſe of many ſpecies of *Salvia.* The *flowers* alſo are white.

5. M. *clinopodia.* Wild Baſil-leaved Monarda. Linn. Sp. Pl. 32.—Leaves ovato-lanceolate, ſmooth, rounded and unequal at the baſe.—Native of Virginia; cultivated by Mr. William Malcolm in 1771. It flowers in July.—*Root* creeping. *Stems* about two feet high, ſquare, rather acutely angular, branched. *Leaves* oppoſite, remarkably ſmooth, attenuated, remotely ſerrated; the floral ones narrower, and coloured at the baſe. *Flowers* capitate, terminal, of a pale colour.—The ſpecific name originated from a ſtriking reſemblance in the leaves to thoſe of *Clinopodium incanum,* and was originally written by Linnæus, on the ſpecimen in his herbarium, *clinopodifolia.*

6. M. *punctata.* Spotted Monarda. Linn. Sp. Pl. 32. Andr. Repoſ. t. 546. Sm. Inſects of Georgia, t. 24. (M. lutea; Michaux Boreal-Amer. v. 1. 16.)—Flowers in whorls. Corolla ſpotted. Bracteas large and coloured.—Native of North America; cultivated here in 1714, by Mr. Thomas

Fairchild.—*Root* biennial. *Stems* erect, nearly two feet high, branched, jointed. *Leaves* in ſtalks, lanceolate, in cluſters at each joint, ſerrated from the middle to the end, ſmooth, veined. *Flowers* axillary, in denſe whorls, yellow, ſpotted with purple, accompanied by very handſome, crimſon *bracteas*. Michaux has changed the ſpecific name to *lutea*, becauſe he obſerves, the *corolla* in every ſpecies of *Monarda* is ſpotted. We cannot however accede to this change, as in our preſent plant, the ſpots on the corolla are ſo infinitely more apparent than in any other, as to render the name ſufficiently deſcriptive.

7. M. *allophylla*. Various-leaved Monarda. Vahl. Enum. v. 1. 219. Michaux. Boreal-Amer. v. 1. 16.—Leaves oblong, ſerrated. Calyx bearded at the border. Flowers capitate, terminal.—Found by Michaux in North America, from whom and Vahl all that we know of it is collected. The former ſays, that the ſhape, ſerratures, and pubeſcence of its *leaves* are ſo various as to induce a ſuppoſition that its varieties may conſtitute different ſpecies. *Flowers* fleſh-coloured.

8. M. *ciliata*. Virginian ciliated Monarda. Linn. Sp. Pl. 33. (Clinopodium anguſtifolium non ramoſum, flore cæruleo: labio trifido, atropurpureis maculis ornato; Pluk. Alm. t. 164. f. 3.)—Leaves oblong or oval, gradually pointed. Flowers capitate, whorled. Bracteas ciliated.—Native of Virginia and Carolina. Introduced at Kew by Mr. Francis Maſſon in 1798. It flowers in July.—*Root* creeping. *Stems* a foot or more in height, diſtantly jointed, hairy, eſpecially at the upper part. *Lower leaves* on ſtalks, roundiſh, an inch long, notched; upper ones ſeſſile, narrower. *Flowers* capitate, in whorls, large, blue, elegantly marked, with dark purple ſpots. The habit and appearance of this ſpecies are different to all the reſt, and it has the ſmell of Mint.

MONARDA, in *Gardening*, contains plants of the fibrous-rooted, herbaceous, flowery, biennial, and perennial kinds, of which the ſpecies cultivated are: the purple monarda (M. fiſtuloſa); the long-leaved monarda (M. oblongata); the ſcarlet monarda, or Oſwego tea (M. didyma); the white monarda (M. rugoſa); and the ſpotted monarda (M. punctata).

Method of Culture.—All theſe plants may be increaſed by parting the roots, and ſome of them by ſlips and cuttings as well as ſeeds. But as the firſt ſort does not increaſe faſt by the roots, the ſeeds may be ſown in the autumn on a bed of good earth, and in the following ſummer the plants be removed into nurſery rows half a foot apart, in a rather ſhady ſituation, and in the beginning of the following autumn ſet out where they are to remain and flower. They ſucceed beſt in a ſoft loamy ſoil not too much expoſed.

The roots ſhould be divided either in the autumn or very early ſpring, but the former is the better ſeaſon, being afterwards either planted out in rows till they are ſtrong, or, when ſtrong, at once where they are to remain. And ſtrong ſlips or cuttings of the branches may be taken off in the beginning of ſummer, and planted out in a ſhady border, due ſhade and water being given till well rooted, when in the autumn they may be removed to where they are to remain.

The third ſpecies ſucceeds beſt in a light ſoil in an eaſtern aſpect.

Theſe plants all afford ornament in the borders and clumps of pleaſure-grounds, &c.

MONARDES, NICHOLAS, in *Biography*, a Spaniſh phyſician, was born at Seville in the early part of the ſixteenth century. He received his education at the univerſity of Alcala de Henarez, and ſettled in the practice of his profeſſion in his native city. Little is recorded reſpecting his life, which terminated at the ſame place in the year 1578. He was conſiderably diſtinguiſhed, however, by his writings, the firſt of which related to a controverted queſtion, and was entitled, "De ſecanda vena in Pleuritide inter Græcos et Arabes concordia," Hiſpal. 1539. His next was a tract, "De Roſa et partibus ejus; de ſucci Roſarum temperatura, &c."—But his reputation was chiefly extended by his work, in the Spaniſh language, concerning the medicinal ſubſtances imported from the new world, entitled, "Dos Libros de las coſas que ſe traen de las Indias Occidentales, que ſirven al uſo de Medicina," Sevilla 1565. It was reprinted in 1569 and 1580, and to the latter edition a third book was added. Charles l'Ecluſe, or Cluſius, tranſlated this work into Latin, with the title of "Simplicium Medicamentorum ex novo orbe delatorum, quorum in Medicina uſus eſt, Hiſtoria," Antw. 1574, and improved it by his annotations, and by the addition of figures. This work was alſo tranſlated into Italian and French. The botaniſt will ſeek in vain for accuracy in his deſcriptions, but the work was uſeful, by exciting the public attention to medicines heretofore little known. Monardes alſo publiſhed three works in Spaniſh, which were tranſlated into Latin by l'Ecluſe, with the title of "Nicolai Monardi Libri tres, magna Medicinæ ſecreta et varia Experimenta continentes," Lugd. 1601. The firſt of theſe relates to the lapis bezoardicus; the ſecond, to the uſe and properties of ſteel, which he was the firſt after Rhazes to recommend as a deobſtruent, according to Dr. Freind; and the third, to the efficacy of ſnow. His name is perpetuated by the botanical genus *Monarda*, in the claſs diandria of Linnæus. Eloy Dict. Hiſt. Gen. Biog.

MONAS, in *Natural Hiſtory*, a genus of inſects of the order Infuſoria. The generic character is, worm inviſible to the naked eye, moſt ſimple, pellucid, reſembling a point. This genus includes five ſpecies, of which three are found in our own country. Mr. Adams deſcribes five other ſpecies.

Species.

* ATOMUS. Whitiſh, with a variable point. The animalculum itſelf appears as a white point, which, when highly magnified, is egg-ſhaped: the ſmaller end is generally marked with a black point, of which the ſituation is ſometimes varied, and found at the other end. Sometimes there are two black points ſeen croſſing the middle of the body. Mr. Adams ſays it was found in ſea-water that had been kept the whole winter; it was not fetid, but no other ſpecies of animalcula could be diſcovered in the ſame water.

PUNCTUM. A ſolid opaque black point. The animalcula of this ſpecies are very minute points, ſolid, opaque, and black, round and long. They are diſperſed in the infuſion, and move with a ſlow wavering motion, and were found in a fetid infuſion of pears.

* MICA. This is tranſparent, or rather ſemi-tranſparent, like talc, with an oval moveable circle in the middle. It may be diſcovered ſometimes in very pure waters with the third lens of a ſingle microſcope: when the magnifying power is increaſed, it appears nearly ſpherical, or oval, as it ſeems able to aſſume either of theſe forms at pleaſure. There is a conſiderable variety in its motions: it often turns round for a long time in the ſame place. An appearance has been exhibited like two kidnies in the middle of the body, and the little animal is beautifully encompaſſed with a kind of halo, ariſing, moſt probably, from inviſible and vibrating fibrillæ.

* LENS. This, as its name imports, is tranſparent, with

frequently a greeniſh margin. It is nearly of a round figure, and ſo pellucid, that it is not poſſible to diſcover the leaſt veſtige of inteſtines. The animalcula of this ſpecies are frequently ſeen collected together, forming a kind of veſicular or membranaceous maſs. The motions of the *lens* are in general rapid, and Mr. Adams ſays that two united together may frequently be ſeen ſwimming among the reſt; while in this ſituation they have been miſtaken by obſervers for a different ſpecies, but it is the ſame generating another by diviſion. It is found in almoſt all kinds of water; alſo in infuſions of animal and vegetable ſubſtances, myriads are ſaid to be contained in a ſingle drop.

TERMO. A moſt minute ſimple gelatinous point. Of this Mr. Adams obſerves, "Among the various animalcula which are diſcovered by the microſcope, this is the moſt minute and the moſt ſimple; a ſmall jelly-like point, eluding the powers of the compound microſcope, and being but imperfectly ſeen by the ſingle; theſe and ſome others of the Monas kind are ſo delicate and ſlender, that it is no wonder they often eſcape the ſight of many who have examined infuſions with attention; in a full light they totally diſappear, their thin and tranſparent forms blending as it were with the water in which they ſwim. Small drops of infuſed water are often ſo full of theſe, that it is not eaſy to diſcover the leaſt empty ſpace, ſo that the water itſelf appears changed into another ſubſtance leſs tranſparent, but conſiſting of innumerable globular points, thickly ſown together; which, though full of life, ſeem only a kind of inflated bladder. In this a motion may be perceived, ſomething ſimilar to that which is obſerved when the ſun's rays ſhine on the water, the animalcula being violently agitated, or in commotion like a hive of bees."

Such are the ſpecies deſcribed in Gmelin's edition of Linnæus. Mr. Adams has mentioned five others as follow:

OCELLUS. Traſparent like talc, with a point in the middle. The margin is black; it moves irregularly; is found in ditches covered with conferva, and frequently with the "Cyclidium milium."

TRANQUILLA. Egg-ſhaped, tranſparent, with a black margin. The animalcula of this ſpecies ſeem to be animated points, and nearly fixed to one ſpot, where they have a fluctuating and reeling motion; they are frequently ſurrounded with a halo, like the *mica*, but differ in their figure, being ſometimes ſpherical, and ſometimes quadrangular. They are found in urine kept ſome time. This fluid is, after it has remained any length of time in the veſſel, covered with a dark colonred pellicle, in which the little animals exiſt. In moſt caſes a ſingle drop of urine is fatal to animalcula, but the diſcovery of theſe prove that there are beings of a peculiar kind appropriated to and flouriſhing in it.

LAMELLULA. Flat and tranſparent. Found chiefly in ſea-water. Its colour is whitiſh, twice as long as it is broad, tranſparent, with a dark margin, the motion is vaciliatory; it often appears as if it were double.

PULVISCULUS. Tranſparent, with a green margin. The animalcula of this ſpecies appear, when properly magnified, like ſpherical pellucid grains of different ſizes; the circumference is green, and a green bent line paſſes through the middle of ſome of them, ſuppoſed to indicate that they are ſeparating into two diſtinct animalcula. They rove about with a wavering motion, and are found early in the ſpring in marſhy grounds.

UVA. Tranſparent and gregarious. The animalcula of this ſpecies, when collected in a heap, have a rotatory motion. The ſmaller particles ſeparate from the larger, dividing, ſometimes, into as many portions as there are conſtituent particles in the group, when ſeparated they revolve with incredible ſwiftneſs. "To try," ſays Mr. Adams, "whether this group of animalcula was collected together by mere chance, or whether it was their natural ſtate, the following experiment was made. A ſingle corpuſcle was taken the moment it was ſeparated from the reſt, and placed in a glaſs by itſelf; it ſoon increaſed in ſize, and when it had attained nearly the ſame bulk as the group from which it was ſeparated, the ſurface began to aſſume a wrinkled appearance, which gradually changed till it became exactly ſimilar to the parent group." The ſame proceſs was again tried, and with ſimilar ſucceſs. It is found in a variety of infuſions.

MONASABA, in *Geography*, a town of Hindooſtan, in Oude; 25 miles E. of Mahomdy.

MONASERAI, a town of Hindooſtan, in the circar of Sumbulpour; 10 miles S.E. of Sumbulpour.

MONASIO, a town of Italy, in the department of the Lario; 15 miles N. of Como.

MONASTEER, a town of Africa, built by the Arabs, on a peninſula, which advances into the ſea; 50 miles S.E. of Tunis.

MONASTER, a town of Ruſſian Poland, in the palatinate of Kiev; 40 miles E. of Bialacerkiev.

MONASTEREVEN, a poſt-town of Ireland, in the county of Kildare and province of Leinſter. It is ſituated on the river Barrow, and the Athy branch of the grand canal paſſes very near it. It has a flouriſhing trade, and a conſiderable population. There was an abbey here, which after the ſuppreſſion came into the Moore family. It ſtill wears the venerable appearance, and retains the name of an abbey, and under the appellation of Moore abbey is the ſeat of the marquis of Drogheda. Monaſtereven is 30 miles S.W. from Dublin, and 10 N.W. from Maryborough.

MONASTERII PROVISOR. See PROVISOR.

MONASTEROLO, in *Geography*, a town of France, in the department of the Stura; three miles N.W. of Savigliano.

MONASTERY, a convent, or houſe built for the reception of religious; whether it be abbey, priory, nunnery, or the like.

MONASTERY is only properly applied to the houſes of monks, mendicant friars, and nuns. The reſt are more properly called *religious houſes*.

For the origin of monaſteries, ſee MONASTIC and MONK. The houſes belonging to the ſeveral religious orders, which obtained in England and Wales, were cathedrals, colleges, abbies, priories, preceptories, commanderies, hoſpitals, friaries, hermitages, chantries, and free chapels. Theſe were under the direction and management of ſeveral officers. The diſſolution of houſes of this kind began ſo early as the year 1312, when the Templars were ſuppreſſed; and in 1323, their lands, churches, advowſons, and liberties, here in England, were given by 17 Edw. II. ſtat. 3. to the priory and brethren of the hoſpital of St. John of Jeruſalem. In the years 1390, 1437, 1441, 1459, 1497, 1505, 1508, and 1515, ſeveral other houſes were diſſolved, and their revenues ſettled on different colleges in Oxford and Cambridge. Soon after the laſt period, cardinal Wolſey, by licence of the king and pope, obtained a diſſolution of above thirty religious houſes, for the founding and endowing his colleges at Oxford and Ipſwich. About the ſame time a bull was granted by the ſame pope to cardinal Wolſey to ſuppreſs monaſteries, where there were not above ſix monks, to the value of eight thouſand ducats a year, for endowing Windſor, and King's college in Cambridge; and two other bulls were granted to cardinals Wolſey and Campeius, where there were leſs than twelve monks, and to annex them to the greater monaſteries; and another bull to the ſame cardinals to enquire about abbies, to be ſuppreſſed, in order to be made cathedrals. Although nothing appears to have been done in conſequence of theſe bulls, the motive which induced Wolſey, and many others, to ſuppreſs theſe houſes, was the deſire of promoting learning; and archbiſhop Cranmer engaged in it with a view of carrying on the Reformation. There were other cauſes that concurred to bring on their ruin: many of the religious were looſe and vicious; the monks were generally thought to be, in their hearts, attached to the pope's ſupremacy; their revenues were not employed according to the intent of the donors; many cheats in images, feigned miracles, and counterfeit relics, had been diſcovered, which brought the monks into diſgrace; the Obſervant friars had oppoſed the king's divorce from queen Catherine; and theſe circumſtances operated, in concurrence with the king's want of a large ſupply, and the people's deſire to ſave their money, to forward a motion in parliament, that, in order to ſupport the king's ſtate, and ſupply his wants, all the religious houſes might be conferred upon the crown, which were not able to ſpend above 200*l.* a-year; and an act was paſſed for that purpoſe, 27 Hen. VIII. c. 28. By this act about 380 houſes were diſſolved, and a revenue of 30 or 32,000*l.* a-year came to the crown; beſides about 100,000*l.* in plate and jewels. The ſuppreſſion of theſe houſes occaſioned great diſcontent, and at length an open rebellion; when this was appeaſed, the king reſolved to ſuppreſs the reſt of the monaſteries, and appointed a new viſitation; which cauſed the greater abbies to be ſurrendered apace; and it was enacted by 31 Hen. VIII. c. 13. that all monaſteries, &c. which have been ſurrendered ſince the fourth of February, in the twenty-ſeventh year of his majeſty's reign, and which hereafter ſhall be ſurrendered, ſhall be veſted in the king. The knights of St. John of Jeruſalem were alſo ſuppreſſed by the 32 Hen. VIII. c. 24. The ſuppreſſion of theſe greater houſes by theſe two acts, produced a revenue to the king of above 100,000*l.* a-year, beſides a large ſum in plate and jewels. The laſt act of diſſolution in this king's reign was the act of 37 Hen VIII. c. 4. for diſſolving colleges, free chapels, chantries, &c. which act was farther enforced by 1 Edw. VI. c. 14. By this act were ſuppreſſed 90 colleges, 110 hoſpitals, and 2374 chantries and free chapels. The number of houſes and places ſuppreſſed from firſt to laſt, ſo far as any calculations appear to have been made, ſeems to be as follows:

Of leſſer monaſteries, of which we have the valuation - - -	374
Of greater monaſteries - - - -	186
Belonging to the hoſpitallers - - -	48
Colleges - - - - - -	90
Hoſpitals - - - - -	110
Chantries and free chapels - -	2374
Total	3182

Beſides the friars' houſes, and thoſe ſuppreſſed by Wolſey, and many ſmall houſes, of which we have no particular account.

The ſum total of the clear yearly revenue of the ſeveral houſes at the time of their diſſolution, of which we have any account, ſeems to be as follows:

	£	*s.*	*d.*
Of the greater monaſteries - -	104,919	13	$3\frac{1}{2}$
Of all thoſe of the leſſer monaſteries, of which we have the valuation	29,702	1	$10\frac{1}{2}$
Knights hoſpitallers head houſe in London - - - -	2,385	12	8
We have the valuation of only 28 of their houſes in the country -	3,026	9	5
Friars' houſes, of which we have the valuation - - -	751	2	$0\frac{3}{4}$
Total £	140,784	19	$3\frac{3}{4}$

If proper allowances are made for the leſſer monaſteries, and houſes not included in this eſtimate, and for the plate, &c. which came into the hands of the king by the diſſolution, and for the value of money at that time, which was at leaſt ſix times as much as at preſent; and we alſo conſider that the eſtimate of the lands was generally ſuppoſed to be much under the real worth, we muſt conclude their whole revenues to have been immenſe.

It doth not appear that any computation hath been made of the number of perſons contained in the religious houſes.

Thoſe of the leſſer monaſteries diſſolved by 27 Hen. VIII. were reckoned at about -	10,000
If we ſuppoſe the colleges and hoſpitals to have contained a proportionable number, theſe will make about - - - -	5,347
If we reckon the number in the greater monaſteries, according to the proportion of their revenues, they will be about 35,000; but as probably they had larger allowances in proportion to their number than thoſe of the leſſer monaſteries, if we abate upon that account 5000, they will then be - -	30,000
One for each chantry and free chapel - -	2,374
Total	47,721

But as there were probably more than one perſon to officiate in ſeveral of the free chapels, and there were other houſes which are not included within this calculation, perhaps they may be computed in one general eſtimate at about 50,000. As there were penſions paid to almoſt all thoſe of the greater monaſteries, the king did not immediately come into the full enjoyment of their whole revenues: however, by means of what he did receive, he founded ſix new biſhoprics, *viz.* thoſe of Weſtminſter, (which was changed by queen Elizabeth into a deanery, with twelve prebends and a ſchool,) Peterborough, Cheſter, Glouceſter, Briſtol, and Oxford. And in eight other ſees he founded deaneries and chapters, by converting the priors and monks into deans and prebendaries, *viz.* Canterbury, Wincheſter, Durham, Worceſter, Rocheſter, Norwich, Ely, and Carliſle. He founded alſo the colleges of Chriſt-church in Oxford, and Trinity in Cambridge, and finiſhed King's-college chapel there. He likewiſe founded profeſſorſhips of divinity, law, phyſic, and of the Hebrew and Greek tongues, in both the ſaid univerſities. He gave the houſe of Grey Friars, and St. Bartholomew's hoſpital, to the city of London; and a perpetual penſion to the poor knights of Windſor; and laid out great ſums in building and fortifying many ports in the channel. It is obſervable, upon the whole, that the diſſolution of their houſes was an act, not of the church, but of the ſtate; in the period preceding the Reformation, by a king and parliament.

ment of the Roman Catholic communion, in all points except the king's ſupremacy; to which the pope himſelf, by his bulls and licences, had led the way.

Although none, in this enlightened period, can approve either the original eſtabliſhment or continued ſubſiſtence of monaſteries; yet the deſtruction of them was felt and lamented, for a conſiderable time, as a great evil. One inconvenience that attended their diſſolution was the loſs of many valuable books, which their ſeveral libraries contained: for during the dark ages, religious houſes were the repoſitories of literature and ſcience. Beſides, they were ſchools of education and learning; for every convent had one perſon or more appointed for this purpoſe; and all the neighbours that deſired it might have their children taught grammar and church muſic there, without any expence. In the nunneries alſo young females were taught to work and read; and not only people of the lower rank, but moſt of the noblemen's and gentlemen's daughters were inſtructed in thoſe places. All the monaſteries were alſo in effect great hoſpitals, and were moſt of them obliged to relieve many poor people every day. They were likewiſe houſes of entertainment for all travellers. And the nobility and gentry provided not only for their old ſervants in theſe houſes, by corrodies, but for their younger children, and impoveriſhed friends, by making them firſt monks and nuns, and in time priors and prioreſſes, abbots and abbeſſes. On the other hand, they were very injurious to the ſecular and parochial clergy, by taking on themſelves many prebends and benefices, by getting many churches appropriated to them, and penſions out of many others; and by the exemptions they got from the epiſcopal juriſdiction, and from the payment of tithes. Nor were they leſs injurious to the nation in general, by depriving the public of ſo many hands, which might have been very ſerviceable to it in trade and other employments; by greatly diminiſhing the number of people, in conſequence of the inſtitution of celibacy; and by their houſes or churches being ſanctuaries for almoſt all ſorts of offenders. And if the ſuperſtition had continued, and the zeal of eſtabliſhing religious inſtitutions had exerted itſelf with equal vigour to the preſent age, we ſhould ere this have been a nation of monks and friars, or probably have become a prey to ſome foreign invader. We ſay nothing now of the acts of moral turpitude, which were committed in theſe abodes of celibacy and indolence; which, however they might have been exaggerated, were without doubt flagrant and atrocious. See Tanner's Notitia Monaſtica; and for an abſtract, Burn's Eccl. Law, art. *Monaſteries.*

MONASTIC, ſomething belonging to monks, or the monkiſh life.

The monaſtic profeſſion is a kind of civil death, which in all worldly matters has the ſame effect with the natural death.

The council of Trent, &c. fix ſixteen years for the age at which a perſon may be admitted into the monaſtical ſtate.

St. Anthony is the perſon who, in the fourth century, firſt inſtituted the monaſtic life; as St. Pachomius, in the ſame century, is ſaid to have firſt ſet on foot the cœnobitic life, *i. e.* regular communities of religious.

In a ſhort time the deſerts of Egypt became inhabited with a ſet of ſolitaries, who took upon them the monaſtic profeſſion. (See Anchoret, Hermit, &c.) St. Baſil carried the monkiſh humour into the Eaſt, where he compoſed a rule, which afterwards obtained through a great part of the Weſt.

In the eleventh century, the monaſtic diſcipline was grown very remiſs. St. Odo firſt began to retrieve it in the monaſtery of Cluny: that monaſtery, by the conditions of its erection, was put under the immediate protection of the holy ſee, with a prohibition to all powers, both ſecular and eccleſiaſtical, to diſturb the monks in the poſſeſſion of their effects, or the election of their abbot. In virtue hereof, they pleaded an exemption from the juriſdiction of the biſhop, and extended this privilege to all the houſes dependent on Cluny. This made the firſt congregation of ſeveral houſes under one chief immediately ſubject to the pope, ſo as to conſtitute one body, or, as they now call it, one *religious order*. Till then, each monaſtery was independent, and ſubject to the biſhop. See Monk.

MONASTIER, in *Geography*, a town of France, in the department of the Upper Loire, and chief place of a canton, in the diſtrict of Le Puy; 9 miles S.S.E. of Le Puy. The place contains 1766, and the canton 8255 inhabitants, on a territory of 197½ kiliometres, in 9 communes.

MONASTIRSKA, a town of Ruſſia, in the government of Toboliſk, on the Mura. N. lat. 57° 4′. E. long. 99° 24′.

MONATOO, a town of Bengal, in the province of Palamow, where is a paſſage acroſs mountains to Koonda; 23 miles N.N.E. of Palamow.

MONAZZO, a town of Naples, in the province of Otranto; 14 miles S.E. of Tarento.

MONBACHIO, a town of Naples, in Principato Ultra; 15 miles E. of Conza.

MONBIN, or Mombin, in *Botany*, the French and Spaniſh name of a Weſt Indian fruit, called by the Engliſh Hog Plum, *Spondias lutea*, Linn. Sp. Pl. 614; Monbin arbor foliis fraxini, fructu luteo racemoſo; Plum. Nov. Gen. 44. t. 22. Madam Merian, who gives an excellent repreſentation of this plant in her tab. 13, deſcribes the fruit as of an aſtringent quality, but cauſing perſpiration, which is of the ſame yellow colour as itſelf. See Spondias.

MONBLANC, in *Geography*, a town of Spain, in Catalonia, on the river Francoli; 17 miles N. of Taragon.

MONBODDO, Lord, in *Biography*, ſo called according to the courteſy of the Scottiſh bar, and on this account he is more generally known by that title, than by his name of James Burnet, was born about the year 1714. He was educated at one of the Scotch univerſities, and paid a great attention to claſſical ſtudies: but as ſoon as he had determined on the law as the future profeſſion of his life, he paſſed through the ordinary courſe of juridical ſtudies, and was, in the year 1737, admitted a member of the faculty of advocates at Edinburgh. His application to literary and juridical ſtudies was almoſt inceſſant, and he acquired a high reputation for legal knowledge, as well as for an extenſive acquaintance with the Grecian language and literature. In the year 1767 he obtained a judge's ſeat on the bench of the court of ſeſſion, and performed with credit and honour the duties of that high office; inſomuch that it is recorded, that no ſentence paſſed by him was ever reverſed by the houſe of peers. In the courſe of his literary ſtudies, he was led to attempt the compoſition of a work, that might raiſe his name to diſtinction among men of letters, the main object of which is to prove the ſuperior wiſdom of the ancients, compared with that of the moderns. The firſt volume of his intended work, entitled "The Origin and Progreſs of Language," was given to the public in 1773, which was followed, at different periods, by five other volumes. With the philoſophical hiſtory of language was involved neceſſarily that of civilization and knowledge; and what the author wrote on theſe ſubjects was peruſed by critics with ſentiments of mingled reſpect, deriſion, and indignation. His lordſhip had, however, many advocates, whoſe zeal, to ſay the leaſt, was in every reſpect equal to their knowledge and learning. Thoſe who were partial to modern literature, ſays a biographer of lord Monboddo, on account of their ignorance of, and inability to enter into that of antiquity; or who, though not unacquainted with the more popular of the ancient authors, were, however, ſtrangers to the deeper myſteries of Greek erudition, condemned lord Monboddo's work with bitter and contemptuous cenſure. The Scotch literati generally held the labours of their countryman in much diſeſteem; but in England its reception was more favourable to the author's expectations. Here were found ſome critics of univerſally acknowledged talents and profound learning, who, while they ſmiled at many of his ſtrange notions and hypotheſes, were willing to applaud him for the ſervice he had done to the intereſts of learning. In the late Mr. Harris, the author of Philoſophical Grammar, and other erudite works, he found an admirer and literary friend, who was exceedingly delighted to meet with a perſon that had cultivated thoſe ſtudies with an ardour equal to what he had himſelf beſtowed on them, and who almoſt worſhipped the excellence of the ancient Greeks, as far ſurpaſſing all other excellence. While lord Monboddo was proceeding in his publication of this work, he commenced the compoſition of a larger undertaking, with the expreſs view of unfolding and vindicating the principles of Grecian philoſophy. This work, entitled "Ancient Metaphyſics," conſiſted of five volumes, quarto, of which the firſt was publiſhed in 1779, and the laſt appeared after the author's death. In this he vainly attempts to revive the abſurd principles of the Ariſtotelian philoſophy, and treats modern ſyſtems, not excepting that of the immortal Newton, with a ſort of ridicule and contempt, that only expoſed himſelf to well merited deriſion, or to the more worthy emotions of pity and compaſſion. Lord Monboddo's private life was ſpent in the practice of all the ſocial virtues, and in the enjoyment of much domeſtic happineſs. He married an amiable lady, by whom he had a ſon and two daughters; but of theſe joys in the cup of life, he was quickly bereaved by the loſs of his ſon and wife,—afflictions which cut deep to the heart: but like a true philoſopher, when he found ſorrow of no avail, he rouſed himſelf to exertion, and called forth his Chriſtian principles, which, in the midſt of calamity, led him to truſt and hope in him who gave, and who has a right to take away.

He was now offered, in addition to his place as judge in the ſupreme civil court in Scotland, a ſeat in the court of juſticiary, the ſupreme criminal court, on which he would have done the higheſt honour, compared with ſome of the men who have ſince ſat there, and who will be everlaſtingly remembered for their ſentences in the years 1793, 1794, &c. Though the ſalary of this office would have produced a convenient increaſe of his income, he was ſatisfied with his preſent emoluments, and refuſed to accept what had been offered, leſt its buſineſs ſhould too much detach him from his favourite ſtudies. His patrimonial eſtate did not amount to more than a clear income of 300*l. per annum*, yet he would never raiſe his rents, ſuppoſing that he was by this means ſerving his tenants; an idea unqueſtionably founded in error. We have known many inſtances, in which land has been vaſtly improved, and tenants enriched, by demanding of them a riſe in their rents, correſponding to the increaſed demands of the times. The error of lord Monboddo was, however, very venial: it originated from the beſt and moſt humane motives. He ſhewed, indeed, at no time a particular ſolicitude for any great improvement of his lands: his main object was, that the perſons who lived on them ſhould be amply ſupported by the produce. The vacations of the court of ſeſſion afforded him leiſure to retire every year, in the ſpring and autumn, to the country, where he was accuſtomed to dreſs in a ſtyle of ſimplicity, as if he had been only a plain farmer, and to live among the people upon his eſtate with all the kind familiarity and attention of a father among his children. In this ſtate he had a viſit from Dr. Samuel Johnſon; and though, probably, no two perſons could differ more than theſe, yet lord Monboddo was too hoſpitable to enter into any contentious diſcuſſions with a ſtranger in his own houſe. His lordſhip frequently viſited London, during his vacations; to which city he was allured by the great number of men of profound erudition, whoſe converſation he had an opportunity of enjoying there. In all his journies he was accuſtomed to ride on horſeback, attended by a ſingle ſervant. On his return from the laſt viſit, which he made purpoſely to take leave of his friends, he was taken ill on the road, and would probably never have reached home, had not a friend overtaken him, and prevailed on him to travel the remainder of the way in his carriage. His lordſhip died in June 1799, in the 85th year of his age. Although rigidly temperate in his habits, he delighted much in the convivial ſociety of his friends; and among theſe he could number all the moſt eminent characters in Scotland for virtue, literature, and real elegance of converſation. Of his various excellencies we have heard much from a noble lady, now herſelf no more, who never ceaſed to cheriſh his memory with reſpect and honour.

MONBRUN, in *Geography*, a town of Africa, in the kingdom of Hoval; 15 miles S.W. of Gourbel.

MONBUEY, a town of Spain, in the province of Leon; 30 miles S S.W. of Aſtorga.

MONCADA, a town of Spain, in Catalonia; 8 miles N. of Barcelona.—Alſo, a town of Spain, in Valencia; 7 miles N.W. of Valencia. This town is now reduced to a village: it has a pariſh church, a convent of Dominicans, and a population of about 1000 inhabitants.

MONCALIER, a town of France, in the department of the Po, on an eminence near the river, containing two churches, ſeveral convents, and a royal palace; 4 miles S. of Turin.

MONCALVO, a town of Iſtria; 7 miles S. of Rovigno.—Alſo, a town of France, in the department of Marengo; 9 miles N. of Aſti.

MONÇAON, a ſmall but fortified town of Portugal, in the province of Entre Duero é Minho, on the Minho; 25 miles N. of Braga. N. lat. 42°. E. long. 8° 10.

MONÇARAS, a town of Portugal, in Alentejo, on the Guadiana, containing more than 1500 inhabitants; 25 miles E. of Evora.

MONCAYO, a town of Spain, in Aragon; 11 miles W. of Borja.

MONCHABOO, a town of the Birman empire, which was formerly its capital; 52 miles N. of Ava. N. lat. 22° 34'. E. long. 97° 40'.

MONCLAR, a town of France, in the department of the Lot, and chief place of a canton, in the diſtrict of Montauban; 10 miles E.S.E. of it. The place contains 1776, and the canton 5267 inhabitants, on a territory of 150 kiliometres, in 8 communes. N. lat. 43° 58'. E. long. 1° 40'.—Alſo, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diſtrict of Villeneuve-d'Agen; 7 miles weſt from it. The place contains 2061, and the canton 8462 inhabitants, on a territory of 150 kiliometres, in 10 communes.

MONÇON, a town, with a caſtle, of Spain, in Aragon, on the river Cinca; 25 miles N.W. of Lerida.

MONCONTOUR, a town of France, in the department of the Vienne, and chief place of a canton, in the diſtrict of Loudun; 7 miles S.S.W. of Loudun. The place contains 819, and the canton 7173 inhabitants, on a territory of 212½ kiliometres, in 18 communes. N. lat. 46° 53'. E. long. 0° 4'.—Alſo, a town of France, in the department of the North Coaſts, and chief place of a canton, in the diſtrict of St. Brieuc; 10 miles S.S.E. of St. Brieuc. The place contains 1685, and the canton 14,380 inhabitants, on a territory of 215 kiliometres, in 11 communes.

MONCONYS, BALTHASAR DE, in *Biography*, a writer of travels, was born at Lyons, and received the early part of his education in the Jeſuits' college of that city. The plague, which in 1628 deſolated many countries, at this period, forced him to quit his native place; and he went to Spain, where he completed his ſtudies at the univerſity of Salamanca. He attached himſelf to mathematics, chemiſtry, and aſtrology; and in Portugal, which he viſited, he gained conſiderable reputation by his facility in forming horoſcopes. From Portugal he travelled into the Eaſt, for the purpoſe of increaſing his knowledge in the occult ſciences, as they were falſely called, and tracing the remains of the philoſophy of Hermes Triſmegiſtus, and Zoroaſter. Diſcovering, perhaps, the vanity of the purſuit, he returned to France, and devoted himſelf to mathematical and phyſical ſtudies, which engaged him in correſpondence with moſt of the learned men of his time. He died at Lyons in 1665; ſoon after which his travels were publiſhed, in three volumes, quarto: they are ſaid to contain many rare and very curious obſervations. Moreri.

MONCOORAH, in *Geography*, an iſland in the mouth of the Ganges, about twelve miles long, and three broad. N. lat. 22° 10'. E. long. 91° 10'.

MONCOQ, a town of France, in the department of the Lot, and chief place of a canton, in the diſtrict of Cahors; 12 miles S.W. of Cahors. The place contains 1970, and the canton 10,804 inhabitants, on a territory of 205 kiliometres, in 16 communes. N. lat. 44° 20'. E. long. 1° 17'.

MONCRIF, FRANCIS-AUGUSTIN PARADIS DE, in *Biography*, a French poet and polite writer, was born of a family in middle life, at Paris, in 1687. Though intended for a buſineſs ſuited to his rank in ſociety, he devoted himſelf to literature, hoping to obtain the patronage of ſome perſon of conſequence. One of his earlieſt compoſitions was an "Ode on the Death of Louis-le-Grand," by which he expected to conciliate the favour of the regent. But he did not excel in lyrics, and is chiefly diſtinguiſhed by ſmall theatrical pieces, complimentary verſes, madrigals, and ballads, which the French call *romances*. He was an actor as well as a writer, read with grace, and acted in a very agreeable way in the dramatic interludes then in vogue, and thus rendered himſelf acceptable to the moſt cultivated ſocieties; at the ſame time, by his diſcretion and good humour, avoided every thing that might give offence. He obtained the poſts of private ſecretary to the count of Clermont, and reader to the queen, and was admitted to many honours in the court of Lewis XV. He did not live wholly to himſelf, but was liberal to his poor relations, zealous in the ſervice of his friends, and grateful for paſt favours; an inſtance of which laſt quality he gave, in his requeſt to be allowed to follow into his retreat the count d'Argenſon, who was exiled in 1757. Moncrif lived enjoying perfect health till a very ſhort time before his death, which took place in 1770, when he had attained the age of 83. As an author, his principal productions are "Eſſai ſur la Neceſſité et ſur les Moyens de plaire," which is a very inſtructive work on the art of becoming agreeable in ſociety; "Les Abderites," a comedy; "Poeſies diverſes;" ſome diſſertations; and ſeveral little dramatic pieces of the opera kind. His "Hiſtoire des Chats" was a trifle of the ſportive kind. His works have been publiſhed collectively in four volumes.

MONDA, or MUNDA, in *Geography*, a town of Spain, in Grenada, near which Cæſar gained a victory over the ſons of Pompey; 23 miles W. of Malaga.

MONDAGELE, a town on the eaſt coaſt of Ceylon; 28 miles S. of Trincoli.

MONDAHU, a river of Brazil, which runs into the Atlantic, S. lat. 3° 10'. W. long. 40° 46'.

MONDARA, a town of Nubia; 40 miles S.W. of Dekin.

MONDAY, PLOUGH. See PLOUGH.

MONDAY *Bay*, in *Geography*, a bay on the coaſt of Terra del Fuego, in the ſtraits of Magellan, affording good anchorage in 20 fathoms; 15 miles S.E. of Cape Upright.

MONDEGO, a river of Portugal, which riſes near Guarda, in the province of Beira, and diſcharges itſelf into the Atlantic, 12 miles S.W. of Montemor e Velho.

MONDEJAR, a town of Spain, in New Caſtile; 25 miles E. of Madrid.

MONDELLO, a town of Sicily, in the valley of Mazara; 8 miles N. of Palermo.

MONDIM, a town of Portugal, in the province of Beira; 10 miles S.S.E. of Lamego.

MONDINO, or in Latin MUNDINUS, in *Biography*, a phyſician deſervedly celebrated in the dark ages, was born at Milan, according to Freind, and flouriſhed early in the 14th century. He held the profeſſorſhip of medicine at Bologna in the year 1316, and enjoyed an extenſive reputation throughout Italy, then the great ſeat of ſcience, for his medical ſkill. His principal claim to diſtinction, however, reſts upon his zeal and ſucceſs in the cultivation of anatomy, of which art he muſt be deemed the reſtorer, having been the firſt among the moderns who diſſected human bodies. He was the author of a work, entitled "Anatomia omnium humani Corporis interiorum Membrorum," firſt printed at Pavia in 1478, and afterwards frequently republiſhed, with various commentaries. It is a methodical treatiſe, very copious upon the ſubject of the viſcera, in the deſcription of which he introduced many original obſervations, but paſſes lightly over the ſubject of the nerves and blood-veſſels. It abounds, however, with a multitude of errors, reſulting from his attachment to the opinions of Galen and Avicenna, and is marked by the rudeneſs and inaccuracy of the times. Nevertheleſs, it conferred a real benefit on the infant ſcience, and acquired ſuch a high character for authority in Italy, that the ſtatutes of Padua, and ſome other medical ſchools of Italy, prohibited the uſe of every other work, as a text-book for the ſtudents of anatomy: and it continued in this general eſtimation for nearly two centuries. Mundinus died at Bologna in 1325, or 1326, and was buried in the church of St. Vital. Freind's Hiſt. of Med. Eloy Dict. Hiſt.

MONDONEDO, in *Geography*, a town of Spain, in Galicia, 25 leagues N.E. of St. Jago, and at a ſimilar diſtance W. of Oviedo, is ſurrounded by mountains; ſituated at the bottom of a hill, at the entrance of a fertile and pleaſant valley, and in the midſt of ſeveral ſprings and brooks, and ſeparated by the two rivers Sigto and Ruzos from its ſuburbs. It is the ſee of a biſhop, ſuffragan of Compoſtella, and has ſeven churches, including the cathedral and convents, one chapter of canons, one ſeminary, one oratory, and two hoſpitals. The town, which is tolerably large, is encompaſſed by walls, and has five gates and two bridges. The houſes are tolerably built, of good ſtone; the ſtreets are rather narrow, but regular; the grand ſquare is watered by a fountain, and many other fountains cool and cleanſe the ſtreets. The air is very ſalubrious. The popolation conſiſts of 5600 perſons. The place is defended by the caſtle of Caſtro Oro. The river Mino riſes at a little diſtance north of this town.

Mondonedo, *Sierra de*, a mountain of Galicia of great extent, occupying the whole extremity of the north-eaſt of Galicia, towards the Aſturian boundary to the eaſt, and proceeding to the north as far as Cabo Ortegal, and to the weſt as far as the Atlantic ocean.

MONDONVILLE, John Joseph Cassanea de, in *Biography*, born at Narbonne in 1711, owes his reputation and his fortune to inceſſant diligence and toil, a great paſſion for his art, and a regular conduct. He at firſt acquired his reputation by the violin: he was the rival of the famous Guignon, who was at the head of his art. They executed together at the Concert Spirituel, and varied with great taſte numerous favourite airs in duo, to the infinite ſatisfaction of the public. He is celebrated by the famous Le Cat of Roan, for producing the *ſons harmoniques* upon his violin, of which art he ſeems to have been the firſt who diſtinguiſhed himſelf.

He compoſed ſonatas for the harpſichord, with an accompaniment *obligato* for the violin, which at one time were in high favour all over Europe. After this, motets for a ſingle voice, accompanied by difficult leſſons on the harpſichord, which gained him the place of maſter of the chapel royal. He directed the Concert Spirituel during many years with great reputation, and likewiſe compoſed ſeveral pieces for the opera, which had great ſucceſs.

M. Laborde, from whom this article is extracted, has recorded his private character in a way that does his memory more honour, perhaps, than his compoſitions; which, though in great favour in theſe days at Paris, were always too much caſt in a French mould to be equally admired elſewhere. His melody was national, but his accompaniments were ſpirited and ingenious. He died in 1772, at 61.

MONDOVI, in *Geography*, a town of France, in the department of the Stura, late capital of a ſmall province in Piedmont, to which it gave name; ſituated at the foot of the Apennines, on a mountain near the river Ebro. It was erected into a biſhopric by pope Urban VI. in 1388, under the archbiſhopric of Turin. Beſides the cathedral, it has five pariſh churches, an univerſity, twelve convents, and about 10,000 inhabitants. It was taken by the French, after a ſplendid victory, in 1796; 30 miles S. of Turin. N. lat. 44° 24′. E. long. 7° 56′.

MONDRAGON, a town of Spain, in the diſtrict of Guipuſcoa, in the province of Biſcay, near which are medicinal ſprings, and a mine of excellent iron; 24 miles S.S.W. of St. Sebaſtian.

MONDRAGONE, a town of Naples, in Lavora, near the ſea-coaſt, celebrated on account of its medicinal baths; 13 miles N.W. of Capua.

MONDUKOLSKOI, a town of Ruſſia, in the government of Irkutſk, on the borders of China. N. lat. 50° 8′. E. long. 103° 24′.

MONEAH, a town of Hindooſtan, in Bahar, on the right bank of the Ganges; 17 miles W. of Patna.

MONEBA, a town of Africa, in Calbari, on the Camarones. N. lat. 3° 40′.

MONEDA, a town of Sweden, in the province of Smaland; 14 miles N.W. of Wexio.

MONEDULA, Jackdaw, in *Ornithology*, a ſpecies of *Corvus*; which ſee.—Alſo, a ſpecies of Crotophaga. See Crotophaga *Ani*.

MONEER, in *Geography*, a town of Hindooſtan, in Bahar; 23 miles N.W. of Saſeram.

MONEGAL, a town of Hindooſtan, in Golconda; 33 miles S. of Combamet.

MONEGLIA, a town of the Ligurian republic; ſeven miles W. of Brugneto.

MONEINS, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the diſtrict of Oleron; 9 miles W. of Pau. The place contains 5550, and the canton 11,004 inhabitants, on a territory of 157½ kiliometres, in 7 communes.

MONEMERION, Μονημεριον, among the ancient Romans, a ſhow, according to ſome, wherein none but tame beaſts were expoſed to view.

Others will have it to be a ſhow of one day's continuance.

MONESTIER, in *Geography*, a town of France, in the department of the Higher Alps, and chief place of a canton, in the diſtrict of Briançon; 13 miles N.W. of Gap. The place contains 2708, and the canton 4736 inhabitants, on a territory of 212½ kiliometres, in three communes.

Monestier-*de-Clermont*, a town of France, in the department of the Iſere, and chief place of a canton, in the diſtrict of Grenoble; 16 miles S. of Grenoble. The place contains 569, and the canton 4258 inhabitants, on a territory of 355 kiliometres, in 10 communes.

MONESTIES, a town of France, in the department of the Tarn, and chief place of a canton, in the diſtrict of Alby; 9 miles N. of Alby. The place contains 1210, and the canton 8101 inhabitants, on a territory of 250 kiliometres, in 18 communes.

MONETA, or Juno Moneta, in *Mythology*, the goddeſs of money, who had a temple at Rome, is repreſented upon medals with the inſtruments of coinage, the hammer, the anvil, the pincers and the die, with the Latin word "moneta." Others ſay, that this name is formed from *moneo*, I warn or adviſe, becauſe a little before the Gauls beſieged Rome, ſhe had warned the people to buy a ſow big with young, an etymology that is ſupported by the authority of Cicero: "Junonem appellatam monetam, a moneo videlicet verbo, denominatam." See Money.

MONETÆ Pes. See Pes.

MONETAGIUM, Monetage, or *Mintage*, the right or privilege of coining money.

MONETALES Triumviri. See Triumviri.

MONETARIUS, or Moneyer, a name which antiquaries and medalliſts give to thoſe who ſtruck the ancient coins or monies.

Many of the old Roman, &c. coins have the name of the monetarius, either written at length, or at leaſt the initial letters of it. See Medal.

MONETIA, in *Botany*, received its name from L'Heritier, in compliment to the celebrated J. B. de Monet, Chevalier de Lamarck; ſee Lamarckia.—L'Herit. Stirp. Nov. 1. t. 1. Schreb. 81. App. 813. Willd. Sp. Pl. v. 1. 669. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 264. (Azima; Lamarck Dict. v. 1. 343. Illuſtr. t. 807. Juſſ. 425.)—Claſs and order, *Tetrandria Monogynia*, L'Herit. (*Dioecia Tetrandria*, Schreb. 813.) Nat. Ord. uncertain.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, ſwelling, permanent, cloven into four, lanceolate, acute, reflexed ſegments, two of which are deeper than the reſt. *Cor.* Petals four, linear, acute, recurved, longer than the calyx. *Stam.* Filaments four, erect, inſerted into the receptacle, almoſt as long as the corolla; anthers ovate, incumbent. *Piſt.* Germen ſuperior, nearly ſquare, terminating in a thickiſh, conical ſtyle, ſhorter than the ſtamens; ſtigma acute. *Peric.* Berry? juiceleſs, globular, with a little point, ſurrounded by the calyx, of two cells? *Seeds* ſolitary, flat on one ſide, convex on the other.

Obſ. The flowers are occaſionally trifid or bifid.

Eſſ. Ch. Calyx inferior, four-cleft. Corolla of four petals. Berry? of two cells. Seeds ſolitary.

1. M. *barlerioides.* Four-ſpined Monetia. L'Herit. Stirp. Nov. t. 1. Willd. Thunb. Prodr. 28. (Azima tetracantha; Lamarck Dict. v. 1. 343. Lycium indicum ſpinis quaternis ad foliorum ſingulorum exortum; Seb. Theſ. v. 1. 21. t. 13. f. 1.)—Spines four. Leaves ſmooth on both ſides. Native of India, and the Cape of Good Hope. It flowers in the ſtove about Auguſt or September. This is a middling-ſized ſpinous ſhrub, reſembling *Barleria hyſtrix* in habit. *Root* perennial, woody, branched, cracked, with the taſte of liquorice. *Stem* erect, full of chinks, aſh-coloured. *Branches* oppoſite, diffuſe, denſe; the ſmaller ones prickly, deflexed, ſquare, green at firſt, afterwards greyiſh. *Shoots* green, naturally downy, but becoming ſmooth by culture. *Prickles* four together, croſſing each other horizontally, awl-ſhaped, ſharp-pointed, withering at the tip, with one internal ſtreak, about half as long as the leaves. *Leaves* oppoſite, on very ſhort ſtalks, ſpreading, ovate, pointed, entire, ribbed. *Flowers* axillary, on the young ſhoots, about three in a cluſter, ſometimes ſolitary, ſeſſile and herbaceous. *Bracteas* two-leaved, oppoſite, adhering to the flowers laterally, very narrow, acute, changing into prickles.

2. M. *diacantha.* Two-ſpined Monetia. Willd. (Azima diacantha; Lamarck Dict. v. 1. 343. Amaranthoides indicum verticillatum parietariæ hirſutis foliis, ſpinoſum; Pluk. Alm. t. 133. f. 3. Tsjérou-Kára; Rheed. Hort. Malab. v. 5. 73 t. 37.)—Spines two. Leaves downy beneath. Native of India.—This is an evergreen ſhrub, riſing to the height of ſix feet, with a thickiſh *ſtem,* and numerous aſh-coloured *branches,* which are very ſpinous. *Leaves* two or three together, almoſt ſeſſile, roundiſh-oblong, thick, cloſe; dark green, ſmooth and ſhining above, paler and hairy beneath. *Flowers* axillary, at the baſe of the ſpines, ſmall and greeniſh. The whole herb has a bitter flavour.

Mr. Dryander, in his remarks on Profeſſor Gmelin's edition of the *Syſtema Naturæ,* Linn. Tranſ. v. 2. 221, obſerves "that *Azima nova* he ſuppoſes is meant for *Azima tetracantha* of Lamarck. *A. diacantha* being only taken from Plukenet's figure, is conſequently doubtful."—We have however retained it after the example of Willdenow, relying upon the accuracy of Rheede's deſcription and figure.—Kanden-Kára; Rheed. Hort. Malab. v. 5. 71. t. 36, ſeems undoubtedly of this genus, and perhaps merely a variety of *diacantha.*

Schreber, on reviſing this genus, has removed it from *Tetrandria* to *Dioecia,* a meaſure, of which we do not ſee the propriety, both organs being preſent in all the flowers, though, as it appears, each is occaſionally defective.

MONETOU Islands, in *Geography,* two iſlands in lake Michigan. N. lat. 44° 50'. W. long. 85° 28'.

MONEY, in *Commerce,* is a general term for coin, paper, or any other meaſure of value, or repreſentative of property, that paſſes current from hand to hand as a circulating medium. See Bank, Cash, Circulation, Coin, Currency, Exchange, Paper *Money,* and Political *Economy.* For an accurate definition of money, ſee the next article.

The origin of money ſeems to have been coeval with the firſt regulations of civil ſociety, or at leaſt it is too remote to be traced by any authentic hiſtory. The invention of this common meaſure, or ſtandard, according to which all other things ſhould be eſtimated, is aſcribed by ſome perſons, on the authority of Joſephus, to Cain; although the firſt information that has been tranſmitted concerning it, originates with the patriarch Abraham, who paid 400 ſhekels for a burying place. The Greeks refer the invention of money to Hermodice, wife of king Midas; and the Latins to Janus. Barter, that is the exchange of one commodity for another, was the ordinary mode of traffic in the earlier periods of the world: thus we find in Homer, that Glaucus's golden armour was valued at 100 oxen, and Diomedes's armour at 10. This method, which ſtill obtains among ſavage nations, muſt have been found extremely inconvenient in the early ages of commerce, and hence the neceſſity of adopting ſome commodity of general utility and demand as a meaſure of value. This neceſſity and its expedient are well explained by Ariſtotle in his Politics (book i. chap. 6.) "All uſeful things," ſays the philoſopher, "could not, without great difficulty, be tranſported from place to place, it was reſolved, by common conſent, that in bartering commodities, they ſhould reciprocally give and receive ſome ſubſtance, which, being in its nature applicable to the purpoſes of life, might, at the ſame time, be eaſily carried about."

The ſubſtance which has been adopted as a circulating medium, or meaſure of value, has been various in different ages and countries. In Italy it was originally cattle, if we may judge from the Latin word *pecunia,* money, which is ſaid to be derived from *pecus,* a herd or flock. Thus Scaliger ſays, "à pecu formatur pecunius, undè pecunia: ſubintelligatur res vel quid ſimile, et ſicut veterum divitiæ conſiſtebant in copia pecudis, ita moneta pecudis effigie primùm notata fuit. Et apud Athenienſes nummi figurâ boum ſignati fuerunt." Pliny ſays, that money was called *pecunia,* becauſe their firſt coin was ſtamped with the figure of a cow. The Latin word *moneta* for money is however probably more modern than *pecunia,* and is ſaid to be derived from *moneo,* to adviſe or mark, that is, to ſhew by ſome mark the weight and fineneſs of the metal of which coins were compoſed. Thus, according to Iſidorus, "Moneta ita appellatur, quia monet nè qua fraus in pondere vel metallo fiat." In favour of this etymology, Suidas obſerves, that when the Romans were in want of money, Juno *admoniſhed* them to practiſe juſtice, and then there would be no want of money; and when they had found the good effect of this counſel, ſhe was ſurnamed *Juno Moneta,* and money was coined in her temple. In proceſs of time, money was made a goddeſs, and enſhrined by the name of *Dea Pecunia,* under the figure of a woman holding a balance in one hand, and a cornucopia in the other.

In all nations where commerce has made any conſiderable progreſs, the precious metals, either in coins or ingots, or their repreſentative value in paper, have been adopted as money. Other ſubſtances, however, are ſtill uſed for this purpoſe in different countries, eſpecially for the common or inferior purpoſes of trade, as cowries or ſmall ſhells in India, and ſalt bricks, and beads, in Abyſſinia. See Coin, and the ſequel of this article.

As we have already given an account of the progreſs and preſent ſtate of metallic monies under the article Coin, and of monies of exchange under the head Exchange, it remains here to explain what is to be underſtood by monies of account, and to ſtate their names in different countries, and alſo their value compared with ſterling.

Money is diſtinguiſhed into real and imaginary. By real money is underſtood coin, or any other circulating medium, and by imaginary, or ideal money, a nominal ſum, which is not repreſented by any piece or coin, but which is uſed in keeping accounts, as the pound ſterling, the livre Tournois, &c.

Imaginary monies have had their origin, for the moſt part, in real coins, or in weights. Theſe units, which were originally adopted as meaſures of value, have been always continued under the ſame denomination, notwithſtanding the fluctuations which may have taken place in the prices of metals, or of merchandize. There are, however, imaginary monies which have not thus originated, but have been contrived for the purpoſe of ſimplifying accounts, as the centimes of France, and the cents in America. It ſhould, however, be obſerved, that all monies of account are not imaginary, nor are they, in all places, the monies of exchange, but they are moſt generally ſo.

In order to underſtand the monies of account in the following table, ſome preliminary explanations may be neceſſary.

Monies are diſtinguiſhed in different countries by particular denominations, as *ſpecie*, *effective*, *currency*, *banco*, *giro*, *moneta di cambio*, *caſh*, *valuta*, *&c.*

Specie and *effective* generally mean coin, but in Germany the word *ſpecie* is applied to the rix-dollar and its diviſions, as coined after the rate of the empire.

Currency moſtly ſignifies the common or current money of a place, which, in Holland, is called *caſſæ*, in Venice *moneta piccola*, and in other parts of Italy *moneta lunga*; but in ſome parts of Germany, and particularly in Augſburg, currency means money of account, and it has the ſame meaning in America and the Weſt Indies, where it derives its name from a paper currency which has been long depreciated and diſcontinued.

Banco is the money which is placed in banks of depoſit, and which is not drawn out, but transferred from one perſon to another, in the payment of debts and contracts.

Giro, in moſt parts of Germany, means money of exchange, which in Italy is called *moneta di cambio*.

Caſh generally means real money, but in Hanover the term is applied to a certain ſuperior kind of money uſed for large payments, as diſtinguiſhed from another ſort, uſed in inferior departments of buſineſs, called gold value. The word caſh is likewiſe applied to a ſmall coin in China, and in ſome parts of India beyond the Ganges.

The word *valuta*, or *valeur*, is applied in moſt parts of the continent of Europe to the prices or rates at which different kinds of monies are reckoned in commercial tranſactions.

The difference of one ſort of money compared with another is moſtly reckoned at ſo much *per cent.* When a better ſort is given for a worſe, the premium or per centage is called *agio*. But when the difference or per centage is conſidered with regard to the inferior ſort of money, it is called *diſcount*. *Diſcount* is likewiſe a term applied to an allowance of ſo much *per cent. per annum* for the payment of money before it becomes due, and this diſcount differs from the former as *agio* differs from *intereſt*.

Intereſt is an allowance of ſo much *per cent. per annum* for the uſe of money, and is therefore an addition to the principal, but *agio* adds nothing to the capital, being only the actual difference in value. In the ſame manner diſcount between different ſorts of monies, and diſcount for prompt payment differ; in the former caſe there is no loſs nor diminution, but in the latter there is a deduction from the principal. See Agio, Interest, and Discount.

The following table, which we extract, by permiſſion, from the Univerſal Cambiſt, will ſhew the value of the principal monies of account of the chief trading places, in ſterling, according to the mint regulations of thoſe countries compared with the mint laws of England; and though moſt of the monies are imaginary, yet, as they repreſent certain ſums of coined money, their value is thence eaſily known.

Table of Monies of Account, containing the Value of the Monies of Account of different Places (expreſſed in Pence and Decimals of Pence), according to the Mint Price both of Gold and Silver in England; that is, *3l. 17s. 10½d. per* Oz. for Gold, and *5s. 2d.* per Oz. for Silver.

		Value in Silver.		Value in Gold.	
		d.	*dec.*	*d.*	*dec.*
Aix la Chapelle -	Rixdollar Current - -	31	40	31	43
Alicant - -	Libra or Peſo - - -	39	40	37	38
Amſterdam - -	Rixdollar Banco (agio at 4 *per cent.*)	54	64	variable*	
	Florin Banco - - -	21	85	ditto	
	Pound Flemiſh Banco - -	131	10	ditto	
	Rixdollar current - -	52	54	ditto	
	Florin current - - -	21		ditto	
	Pound Flemiſh current - -	126		ditto	
Antwerp - -	Pound Flemiſh (money of exchange)	123	25	123	87
	Florin (money of exchange) -	20	54	20	64
	Pound Flemiſh current - -	105	65	106	18
	Florin current - - -	17	60	17	70
Arragon - -	Libra Jaqueſa - - -	49	25	46	75
Augſburg - -	Florin Giro, or money of exchange	32		31	83
	Florin current - - -	25	20	25	07
Barcelona - -	Libra Catalan - - -	28	14	26	70
Baſil - -	Rixdollar, or Ecu of exchange -	47	27	47	
	Rixdollar current - -	42	45	42	20

* In the places marked *variable*, the price of the coins is not fixed; and, therefore, the intrinſic value in gold of the monies of account cannot be aſcertained for any length of time.

MONEY.

				Value in Silver.		Value in Gold.	
				d.	dec.	d.	dec.
Bergamo	-	-	Scudo of 7 Lire	35	67	36	50
Berlin	-	-	Pound Banco	47	25	variable	
			Rixdollar current	36		ditto	
			Rixdollar in Fredericks	——	*	39	68
Bern	-	-	Ecu of 3 Livres	42	64	42	90
			Crown of 25 Batzen	35	53	35	75
Bologna	-	-	Lira corrente	10	86	10	62
			Lira money of exchange	11	12	10	89
Bolſano	-	-	Florin Giron, or money of exchange	33	26	33	08
			Florin moneta lunga, or currency	25	20	25	06
Bremen	-	-	Rixdollar current	37	80	variable	
			Rixdollar in Carls d'or	——		39	68
Canary Iſlands		-	Real current	3	95	3	66
Caſſel	-	-	Rixdollar current	37	80	variable	
Cologne	-	-	Rixdollar ſpecie of 80 Albuſes	31	38	ditto	
			Rixdollar current of 78 Albuſes	30	60	ditto	
Conſtantinople		-	Piaſtre, or Dollar	13	12	uncertain	
Dantzic	-	-	Gulden or Florin	9		9	
Denmark	-	-	Rixdollar ſpecie	54	72	——	
			Rixdollar Sundiſh ſpecie	53	21	——	
			Rixdollar Crown money	48	37	——	
			Rixdollar Daniſh currency	44	27	44	88
			Rixdollar Holſtein currency	43	78	44	16
England	-	-	Pound ſterling	240		240	
Florence	-	-	Lira	8	10	8	53
			Ducat, or Crown current	56	70	59	71
			Scudo d'oro, or Gold Crown	——		63	97
France	-	-	Livre Tournois	9	54	9	38
			Franc (new ſyſtem)	9	70	9	52
Francfort	-	-	Rixdollar Convention money	37	80	37	65
			Rixdollar Muntze, or in ſmall coins	31	50	——	
Germany	-	-	Rixdollar current	37	80	variable	
			Rixdollar ſpecie	50	40	ditto	
			Florin of the Empire	25	20	ditto	
			Rixdollar Muntze	31	50	ditto	
			Florin Muntze	21		ditto	
Geneva	-	-	Livre current	16	13	16	93
			Florin	4	60	4	84
Genoa	-	-	Lira fuori Banco	7	99	7	83
			Pezza, or Dollar of exchange	45	94	45	02
			Scudo di cambio, or Crown of exchange	36	75	36	02
			Scudo d'oro marche	85	49	83	77
Hamburgh	-	-	Mark Banco (at a medium)	18	22	variable	
			Pound Flemiſh Banco	136	65	ditto	
			Mark current	14	82	ditto	
			Pound Flemiſh current	111	15	ditto	
Hanover	-	-	Rixdollar, *in caſh*	42		42	26
			Rixdollar, *gold value*	39		39	24
Ireland	-	-	Pound Iriſh	221	56	221	56
Konigſberg	-	-	Gulden or Florin	12		variable	
Leghorn	-	-	Pezza of 8 Reals	46	75	49	16
			Lira moneta buona	8	13	8	55
			Lira moneta lunga	7	79	8	19
Leipſic	-	-	Rixdollar convention money	37	80	variable	
			Rixdollar in Louis d'or or Fredericks	——		39	68
Lucca	-	-	Lira	7	40	7	77
			Scudo d'oro	55	50	58	27
			Scudo corrente	51	80	54	39
Malta	-	-	Scudo or Crown	21	32	23	34

---

[*] Where the columns are marked with a daſh, it is to be underſtood that there is no coin in the metal of that column by which the monies of account can be computed.

		Value in Silver.		Value in Gold.	
		d.	*dec.*	*d.*	*dec.*
Milan	Lira Imperiale	10	41	10	53
	Lira corrente	7	36	7	44
	Scudo Imperiale	60	90	61	60
	Scudo corrente	42	32	42	78
Modena	Lira	3	82	—	
Munich	Gulden or Florin	21		21	28
Nancy	Livre (money of Lorraine)	7	38	7	26
Naples	Ducat regno	40	80	uncertain	
Navarre	Real	4	92	4	67
	Libra	8	21	7	79
Neufchatel	Livre Tournois	13	63	13	40
	Livre foible	5	45	5	36
Novi	Scudo d'oro marche	85	49	83	77
Parma	Lira	2	45	2	40
Perſia	Toman of 100 Mamoodis	287	60	—	
Poland	Gulden or Florin	6	03	6	27
Portugal	Milree	68	75	67	34
	Old Cruſade	27	50	26	94
Prague	(*See Vienna.*)				
Riga	Rixdollar Alberts	52	54	variable	
	Rixdollar currency (agio at 40 *per cent.*)	37	53	ditto	
Rome	Scudo or Crown	52	05	51	63
	Scudo di Stampa d'oro	79	37	78	73
Ruſſia	Ruble	38	50	39	35
St. Gall	Florin, money of exchange	27	44	variable	
	Florin current	22	76	ditto	
St. Remo	Lira	8	46	8	90
Sardinia	Lira	18	21	18	82
Sicilly	Ounce	122	54	124	80
	Scudo or Crown	49	02	49	92
Spain	Real of old plate	4	93	4	57
	Real of new plate	5	24	4	86
	Real of Mexican plate	6	55	6	07
	Real Vellon	2	62	2	43
	Dollar of old plate or of exchange	39	45	36	59
Stralſund	Rixdollar of account	28	35	variable	
	Pomeranian Gulden	14	18	ditto	
Straſburg	Livre and Franc (*ſee France.*)				
	Florin	19	08	18	76
Sweden	Rixdollar	55	41	56	43
Switzerland	Franc (new ſyſtem)	22	14	—	
Trieſte	Florin, Auſtrian currency	25	20	25	05
	Lira, Trieſte currency	4	76	4	73
	Lira di piazza	4	65	4	63
Turin	Lira	11	28	11	23
Valencia	Libra	39	45	36	59
Venice	Lira piccola (in the old coins)	5	07	variable	
	Lira piccola (in the coins introduced by the Auſtrians)	4	25	ditto	
Vienna	Florin	25	20	25	05
Zant	Real	4	06	variable	
Zurich	Florin, money of exchange	25	85	ditto	
	Florin current	23	50	ditto	

From the above table the Intrinſic Par of exchange may be computed where the monies of account and of exchange are the ſame; but for a more ſyſtematic and comprehenſive ſtatement of the par, both according to aſſays and mint regulations; ſee Exchange.

We ſhall here ſubjoin ſome additions to the hiſtorical part of the preſent article, as well as to that of Coin and Coinage, to which the reader is referred.

Among the ancient Britons, iron rings, or, as ſome ſay, iron plates, or tin plates and rings, were uſed for money. Among the Lacedæmonians, iron bars were quenched with vinegar, thus intending that they ſhould not ſerve for any other uſe. Seneca obſerves, that there was anciently ſtamped money of leather, *corium forma publica impreſſum*; and the ſame thing was put in practice by Frederic II. at the ſiege of Milan; to ſay nothing of an old tradition among ourſelves, that, in the confuſed time of the barons wars, the like was done in England. In 1360, king John of France, who agreed to pay our Edward III. for the ranſom of his perſon 3,000,000 of gold crowns, was reduced to the neceſſity of paying for the neceſſaries of his houſhold in leather money, in the middle of which there was a little nail of ſilver. The Hollanders, we know, coined great quantities of paſteboard in the year 1574. Numa Pompilius made money of wood and leather; nor does it appear that the Romans were much acquainted with the art of ſtriking money in metal during the time of their kings. There is reaſon to believe, that both gold and ſilver money were very early in uſe in Egypt and Aſia, and thence ſoon afterwards introduced into Carthage and Greece. From Greece it was brought to Rome, and thence gradually weſtward into all the Roman provinces.

The firſt ſhape, ſays Mr. Pinkerton, in which money appeared, was that of pieces of metal without any ſtated form or impreſſion, but merely regulated to a certain weight; for *weight* was the grand ſtandard of ancient coinage, ſo that all large ſums were paid in weight even down to the Saxon period of England. With us weight is now applied to each particular piece, and that only in gold: whereas, with the ancients, weight was applied to the ſum total; to ſilver as well as gold; nay, in ſome inſtances, to braſs. In Greece large ſums were referred to ſo many "Mnæ," or "Minæ," and alſo to the larger denomination of ſo many "Talents." (See MINA and TALENT.) As in Greece the firſt eſtimation of money was merely by weight, this was likewiſe the caſe in Rome. Silver was the metal firſt uſed in Grecian coinage, but copper in the Roman; the former metal having been long unknown to the Romans. The firſt valuation of Roman money was by the "libra gravis æris," or pound of heavy braſs; and when by the progreſs of their conqueſts they obtained ſilver and gold, theſe were regulated in the ſame manner. The common Roman pound, yet uſed at Rome, conſiſted of 12 ounces of 458 grains each, equal to our ounce avoirdupois; but the money ounce ſeems to have had only 420 troy grains, and the pound 5040. This was the ſtandard of copper; and when ſilver came to be coined, ſeven denarii went to the ounce, as in Greece eight drachms: the gold was regulated by the ſcriptulum, ſcrupulum, ſcruple, or third part of a denarius, and by the larger weights juſt mentioned. (See DENARIUS, ÆS, and SESTERTIUS.) Money in old Rome, when riſing to a high ſum, was eſtimated not by the talent, a term unknown to the Romans, but by the hundred weight of braſs, called "Pondus" by way of eminence. See SESTERTIUM.

As to the origin of the Roman coinage we may obſerve, that the ſtates adjoining to Latium, and from which moſt probably the form of the firſt Roman coinage was derived, were, on the N. and W. the Etruſcans; and upon the S. and E., at a great diſtance, the Grecian colonies in Magna Græcia and Sicily. To the Etruſcans Mr. Pinkerton aſcribes the origin of the Roman coinage, and not to the Grecian colonies, or to the Sicilians. (See LIBRA.) The firſt Roman coinage, according to Pliny and other reſpectable authors, took place in the reign of Servius Tullus in the year 460 B.C., or according to the common calculation 550 years B.C. The coinage of Tullus ſeems to have been confined to the As, Æs, or piece of braſs only. (See AS.) The largeſt imperial braſs coin was a piece of the value of two-pence Engliſh, called "Seſtertius," which ſee. Before the time of the firſt Cæſar, as Mr. Pinkerton thinks, yellow braſs began to be uſed in the Roman coinage, and this was always conſidered as double in value to the Cyprian, or copper. From Auguſtus downward, the large braſs were all of the yellow ſort, and not one of them copper. The largeſt of thoſe that are called the middle ſize were likewiſe all of yellow braſs; and that of the next ſize, which is the As, weighing the half ounce, is univerſally copper. The orichalcum, or what we term braſs, was by the ancients held in far ſuperior eſteem to copper, or the "Æs Cyprium." It is obſerved, that all the large braſs coins were of yellow metal, and the middle braſs yellow, or red; but the former were always of the fineſt workmanſhip. The ruſt, with which time covers them, has confounded them together, and our putting little more value on braſs than on copper hath confirmed the deceit, whereas the ancients put double the value on braſs that they put on copper; but the large braſs ſhould not be taken for copper, becauſe they ſometimes have now a copper hue: before the perſon who examines can decide, he muſt always ſcrape the ſide of the metal; and he will thus learn that the ancient coinages of braſs and of copper were kept as diſtinct as thoſe of gold and ſilver. (See SESTERTIUS.) Under Valerian and Gallienus, there appeared a new coinage of copper waſhed with ſilver. Coins of this ſort are juſt the ſize of the denarius; and, indeed, they are the "denarii," or "philippei ærei." See DENARIUS and FOLLIS. For an account of the ſilver coinage of Rome; ſee DENARIUS.

The gold coinage of Rome took place, according to Pliny, ſixty-two years after ſilver, that is, in the 547th year of the city, by vulgar account, or 204 B.C. At that time the ſcruple, which even now remains, paſſed for 20 ſeſterces. Afterwards it was thought proper to coin 40 pieces out of the pound of gold; and by degrees this weight was diminiſhed to 45 in the pound. See SCRUPLE.

The aureus, or common gold coin, in the firſt coinage was worth 30 ſilver denarii, equal to 1*l.* ſterling; gold being to ſilver as $17\frac{1}{7}$ to 1. It thus continued till Sylla's time, when it weighed no leſs than 166 grains at an average, or 30 in the pound of gold. About the year of Rome 675, 77 years B.C., the aureus fell to the rate of 40 to the pound, and paſſed for 20 denarii. In the reign of Claudius the aureus went for 100 ſeſtertii, or 25 ſilver denarii; at which rate it remained. The aureus fell by degrees to 45 in the pound, or about 110 grains of medial weight each, and continued of this ſtandard till the time of Elagabalus, when it fell to about 92 grains at an average, or near 55 in the pound. Under Philip aurei of two or three ſizes appear, of a rude fabric, and having a head of Rome on one ſide, and various reverſes; and this practice of making different ſizes of gold coins continued, ſo that under Valerian I., Gallienus, and his ſucceſſors, five or ſix ſizes occur. That the aureus went for 25 ſilver denarii down to Alexander Severus is clear, but the value of theſe different ſizes does not appear. Suppoſing that ſtandard to remain till the time of Conſtantine I. the double aureus will have borne 50 ſilver denarii, and the aureus 25. The "triens" muſt have had eight ſilver denarii, and two denarii ærei; the double triens twice as much. The denarius was not then worth above 14*s.* Engliſh. Under Aurelian and his ſucceſſor Probus, the aureus was of 100 grains; and there were alſo halves of about 50 grains, and double aurei, upwards of 200 grains, of very fine workmanſhip. Down to Conſtantine I. the aureus ſtood at between 80 and 70 grains. This prince, without altering the ſize of the coin, introduced, inſtead of the aureus, the ſolidus of 6 in the ounce of gold, and to paſs for 14 of his new ſilver coins, called Milliarenſes, and 25 denarii as before; gold being to ſilver about 14 to 1. The ſolidus, or chief gold coin, continued of the ſame ſtandard to the cloſe of the Byzantine empire; for gold was common in Conſtantinople, while ſilver became more and more ſcarce. The ſolidus was worth 12*s.* ſterling. See Solidus.

In the firſt gold coinage at Rome, the aureus was divided into four inferior parts; the ſemiſſis, or half, of 60 ſeſtertii; the tremiſſis, or third, of 40; the fourth, of 30; and the ſixth, or ſcrupulum, of 20. But ſoon after all theſe ſubdiviſions were diſcontinued, except the ſemiſſis, or half; which occurs in the conſular times, and in thoſe of ſome emperors, but is extremely ſcarce, ſo that few of them muſt have been ſtruck. Some have ſuppoſed, without ſufficient authority, that the Romans called the gold ſemiſſis a denarius aureus. Denarius was uſed, as our penny, for a coin. The common aureus was called denarius aureus very naturally, becauſe it was of the ſame ſize with the ſilver denarius. See Aureus.

With regard to the materials of Engliſh money, ſee Coin.

As for the *impreſſion* of money, the Jews, though they deteſted images, yet ſtamped on the one ſide of their ſhekel, the golden pot which had the manna: and on the other, Aaron's rod; the Dardans, two cocks fighting; Alexander, as is held by ſome, his horſe Bucephalus: though this may be doubted of, becauſe the horſe is found as frequently on the coins of ſeveral of the kings of Macedon, his predeceſſors, as his. The Athenians ſtamped their coins with an owl, or an ox; whence the proverb on bribed lawyers, *bos in lingua;* the people of Ægina with a tortoiſe; whence that other ſaying, *Virtutem & ſapientiam vincunt teſtudines.* As to the Romans, the monetarii ſometimes impreſſed the images of men that had been eminent in their families, on their coins; but no living man's head was ever ſtamped on the Roman coin till after the fall of the commonwealth; after that time they bore the emperor's head on one ſide; and, from this time, the practice of ſtamping the prince's image on coins has obtained among all civilized nations, the Turks and other Mahometans excepted; who, in deteſtation of images, inſcribe only the prince's name, with the year of the tranſmigration of their prophet.

For an account of the impreſſion of Britiſh money, ſee Coin.

As to the *figure* of money, it is either round, as in England; multangular, or irregular, as in Spain; ſquare, as in ſome parts of the Indies; or nearly globular, as in moſt of the reſt.

After the arrival of the Romans in this iſland, the Britons imitated them, coining both gold and ſilver with the images of their kings ſtamped on them; when the Romans had ſubdued the kings of the Britons, they alſo ſuppreſſed their coins, and brought in their own, which were current here from the time of Claudius to that of Valentinian the Younger, this being about the ſpace of five hundred years.

Mr. Camden obſerves, that the moſt ancient Engliſh coin he had known, was that of Ethelbert, king of Kent, the firſt Chriſtian king in the iſland; in whoſe time all money accounts began to paſs by the names of pounds, ſhillings, pence, and mancuſes.

The penny ſeems borrowed from the Latin *pecunia*, or rather from *pendo*, on account of its juſt weight, which, till Edward III.'s reign, contained as much ſilver as about three-pence of our money: theſe were coarſely ſtamped with the king's image on one ſide, and either the mint maſter's name, or the city's where it was coined, on the other: five of theſe pence made their ſcilling, probably ſo called from *ſcilingus*, which the Romans uſed for the fourth part of an ounce; forty of theſe ſcillings made their pound, and four hundred of theſe pounds were a legacy, or a portion for a king's daughter; as appears by the laſt will of king Alfred.

By theſe names they tranſlated all ſums of money in their old Engliſh teſtament; talents by *punder;* Judas's thirty pieces of ſilver by *thirtig ſcillinga;* tribute-money, by *penining;* and the mite by *ſcorthling.*

But it muſt be obſerved they had no other real money, but pence only; the reſt being imaginary monies, *i.e.* names of numbers, or weights: thirty of theſe pence made a mancus, which ſome take to be the ſame with a mark; manca, as appears by an old MS., was *quinta pars unciæ*. Theſe mancas, or mancuſes, were reckoned both in gold and ſilver; for in the year 680, we read, that Ina, king of the Weſt Saxons, obliged the Kentiſh men to buy their peace at the price of thirty thouſand mancas of gold. In the notes on king Canute's laws, we find this diſtinction, that *mancuſa* was as much as a mark of ſilver; and *manca*, a ſquare piece of gold, valued at thirty-pence. See Mancus.

The Danes introduced a way of reckoning money by ores, *per oras*, mentioned in Domeſday book; but whether they were a diſtinct coin, or a certain ſum, does not plainly appear: this, however, may be gathered from the abbey-book of Burton, that twenty ores were equivalent to two marks.

They had alſo a gold coin called *byzantine*, or *bezant*, as being coined at Conſtantinople, then called *Byzantium;* the value of which coin is not only now loſt, but was ſo entirely forgotten, even in the time of king Edward III. that, whereas the biſhop of Norwich was fined a byzantine of gold, to be paid the abbot of St. Edmunſbury, for infringing his liberty (as it had been enacted by parliament in the time of the Conqueror), no man, then living, could tell how much it was; ſo that it was referred to the king to rate how much he ſhould pay; which is the more unaccountable, becauſe, but a hundred years before, two hundred thouſand bezants were exacted by the ſultan, for the ranſom of St. Lewis, of France; which were then valued at one hundred thouſand livres.

Though the coining of money be a ſpecial prerogative of the king, yet the ancient Saxon princes communicated it to their ſubjects; inſomuch, that in every good town there was, at leaſt, one mint, but at London eight; at Canterbury four for the king, two for the archbiſhop, one for the abbot at Wincheſter, ſix at Rocheſter, at Haſtings two, &c.

The Norman kings continued the ſame cuſtom of coining only pence, with the prince's image on one ſide, and on the other the name of the city where it was coined, with a croſs ſo deeply impreſſed that it might be eaſily parted, and broken into two halves, which, ſo broken, they call *halfpence*, or into four parts, which they called *furthings*, or *farthings*.

In the time of king John, money coined in the eaſt parts of Germany came in ſpecial requeſt in England, on account of its purity, and was called *eaſterling money*, as all the inhabitants of thoſe parts were called *Eaſterlings;* and, ſhortly after, ſome of thoſe people, ſkilled in coining, were ſent for hither, to bring the coin to perfection; which, ever ſince, has been called *ſterling*, from *eaſterling*.

King Edward I. who firſt adjuſted the meaſure of an ell by the length of his arm, herein imitating Charles the Great, was the firſt, alſo, who eſtabliſhed a certain ſtandard for the coin, which is expreſſed to this effect by Gregory Rockley, mayor of London, and mint-maſter. "A pound of money containeth twelve ounces: in a pound there ought to be eleven ounces, two eaſterlings, and one farthing, the reſt alloy: the ſaid pound ought to weigh twenty ſhillings and three-pence in account and weight; the ounce ought to weigh twenty-pence, and a penny twenty-four grains and a half. Note, that eleven ounces two-pence ſterling ought to be of pure ſilver, called *leaf-ſilver;* and the minter muſt add, of other weight, ſeventeen-pence halfpenny farthing, if the ſilver be ſo pure."

About the year 1320, the ſtates of Europe firſt began to coin gold; and, among the reſt, our king Edward III. The firſt pieces he coined were called *Florences,* as being coined by Florentines; afterwards he coined nobles; then roſe nobles, current at ſix ſhillings and eight-pence; half-nobles, called *halfpennies,* at three ſhillings and four-pence, of gold; and quarters at twenty-pence, called *farthings of gold.* The ſucceeding kings coined roſe-nobles, and double roſe-nobles, great ſovereigns, and half Henry nobles, angels, and ſhillings.

Kiing James I. coined units, double crowns, Britain crowns; then crowns, half-crowns, &c. On this ſubject, ſee MEDALS.

TABLES of Gold and Silver, compoſed from the Authority of Mr. Lowndes, who inſpected the original Indentures, and from Biſhop Fleetwood.

Gold Table.					Silver Table.			
Reigns.	Specie.	Diviſion.	Tale.	Stand. fine.	Specie.	Tale.	Stand. fine.	Propor.
		s. *d.*	£ *s.* *d.*	car. gr.	*d.*	*s.* *d.*	oz. dwt.	100
28 Edw. I.	—	—	—	—	—	XX III	11 2	13 83
18 Edw. III.	Florins	VI	15 0 0	23 3½				
Eodem ann.	Nobles	VI VIII	13 3 4	Ditto				
20 ——	Ditto	Ditto	14 0 0	Ditto	—	XXII VI	Ditto	
27 ——	Ditto	Ditto	15 0 0	Ditto	IV II I	XXV	Ditto	
30, 37, 46 18 Ric. II. 3 Hen. IV.	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	
9 Hen. V.	Ditto	Ditto	16 13 4	Ditto	IV II I ½ ¼	XXX	Ditto	
1 Hen. VI.	Royals Angels	X VI VIII	22 10 0	Ditto	Ditto	XXXVII VI	Ditto	
4 ——	Nobles	VI VIII	16 13 4	Ditto	Ditto	XXX	Ditto	
24 ——	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	
39 ——	Angels	VI VIII	22 10 0	Ditto	Ditto	XXXVII VI	Ditto	11 1
4 Edw. IV.	—	—	20 16 0	Ditto	Ditto	Ditto	Ditto	
5 ——	Nobles	X						
	Angels	VI VIII	22 10 0	Ditto	Ditto	Ditto	Ditto	
8, 11 16, 22 —— 1 Ric. III. 9 Hen. VII.	—	—	—	—	—	—	Ditto	
1 Hen. VIII.	Sovereigns Royals Angels Nobles	XXII VI XI III VII VI VI VIII	27 0 0	Ditto	Ditto	XXXV	Ditto	11 17
			Gold ſtand. lowered.					
	Crowns ½ Ditto	V II VI	25 2 6	22 0	Ditto	—	Ditto	
						Silver ſtand. lowered.		
34 ——	Sovereigns Angels	XX VIII	28 16 0	23 0	XII VI III ½ ¼	XLVIII	10 0	A ſtate of confuſion
36 ——	Crowns	V	30 0 0	22 0	Ditto	Ditto	6 0	
37 ——	—	—	30 0 0	20 0	Ditto	Ditto	4 0	
1 Edw. VI.	Ditto	Ditto	Ditto	Ditto		Ditto	Ditto	
3 ——	Ditto	Ditto	34 0 0	22 0	XII	LXXII	6 0	
4 ——	Sovereigns Angels	XXIV VIII	28 16 0	23 3½	—	—	Ditto	
5 ——	—	—	—	—	Ditto	Ditto	3 0	
6 ——	Sovereigns Angels	XXX X	36 0 0	23 3	s. s. d. V 2 6 d. XII VI III 1½ ¼d.	LX	11 1	

	Gold Table.				Silver Table.			
Reigns.	Specie.	Diviſion.	Tale.	Stand. fine.	Specie.	Tale.	Stand. fine.	Propor.
		s. d.	£ s. d.	car. gr.	d.	s. d.	oz. dwt.	100
	Sovereigns	XX	33 0 0	22 0				
	Crowns	V						
1 Mary	—	—	36 0 0	23 3½	—	LX	11 0	
2 Eliz.	Sovereigns	XXX	36 0 0	23 3½	VI IV III II ½ 1¼	Old ſtand.		
	Royals	XV						
	Angels	X						
	Sovereigns	XX	33 0 0	22 0	—	LX	11 2	11 16
	Crowns	V						
19 Eliz.	Angels	X	36 0 0	23 3½	Ditto	LX	11 2	
26 ——	Nobles	XV	36 0 0	23 3½				
35 ——	Sovereigns	XX	33 0 0	22 0				
	Crowns	V						
43 ——	Angels	X	36 10 0	23 3½	s. s. d. d. V 2 6 XII d. VI II I ½	LXII	11 2	
	Sovereigns	XX	33 10 0	22 0				
	Crowns	V						
2 Jac. I.	Unites	XX	37 4 0	22 0	Ditto	Ditto	11 2	
	Dub. crow.	X						
	Britiſh crow.	V						
	Thiſtl. crow.	IV						
3 ——	Royals	XXX	40 10 0	23 3½				
	Angels	X						
10 ——	Ditto	Ditto	44 0 0	Ditto				
	Unites	XXII	40 18 4	22 0				
	Doub. Carolus's, &c.	XI						
2 Car. I.	Roſe Royals	XXX	44 10 0	23 3½	s. s. d. d. V 2 6 XII d. VI II 1½	LXII	11 2	
	Spur Royals	XV						
	Angels	X						
	Unites	XX	40 0 0	22 0				
	Dub. crow.	X						
	Britiſh crow.	V						
12 Car. II.	—	—	The ſame of both kinds and value, gold and ſilver.					
22 ——	Guineas	XX	44 10 0	22 0	Ditto	LXII	11 2	14 54
	½ Guineas	X						
	2 Guineas	XL						
	5 Guineas	C						
1 Jac. II.	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	
1 W. & M. Queen Anne George I. George II.	I do not find any alteration in the ſtandard of the gold or ſilver down to the preſent time. 22 carats fine and 2 alloy are the lb. of gold, and 11 oz. 2 dwt. fine, and 18 dwt. alloy, the ſtandard lb. of ſilver; and the diviſion of the pound of gold continues the ſame; that is to ſay, into 44½ guineas, and the ſilver into the uſual number of crowns, &c. But the guineas have varied in the nominal value ſeveral times, riſing up to XXX*s.* and declining to XXI, the preſent current value; but never have been reduced again to their intended level of XX*s.*, nor indeed ought, when compared with the Portugal pieces of 3*l.* 12*s.*, 1*l.* 16*s.*, the guinea appears to be better worth XXI*s.*							15 21

			To the lb. Troy.	
Portugal	- £3 12	-	13	£46 16 0
Engliſh guineas	1 1	-	44½	46 14 6
				0 1 6
And the Portugueſe ſtandard worſe ¼ grain				0 2 6
Total worſe lb. troy by ſtandard and tale			-	0 4 0

This, and the difference in point of exactneſs in coining, wherein the Portugal is much more defective than the Engliſh coins, may be very good reaſons for their being refuſed in payments in any of the receipts of the public revenue; but anſwer very well the purpoſe of thoſe who benefit by the irregularity, in trading with the heavier, and paſſing off the lighter by tale; and which, if they can turn into guineas or heavy ſilver, make another gain.

How our ſtandard is proportioned to that of other countries, and thence what the true par of exchange is between us, ſee COIN.

A Table exhibiting the Standard, Weight, Value, and comparative View of Engliſh Gold Money from King William I., A.D. 1066, to King George III. A.D. 1764.

Years of the kings' and queens' reigns, or the dates of the ſeveral mint indentures.		Standard of the gold at each period.						Value or number of pounds, &c. the lb. troy of ſtand. gold has been coined into.			Value or number of pounds, &c. the oz. troy has been coined into.			Value of 20 ſhillings of coined gold at each period of our preſent money.			Proportion of the ſame 20 ſhillings to our preſent 20 ſhillings.	Proportion between the current value of the lb. troy of ſtandard ſilver and ſtandard gold.	Proportion of fine ſilver to fine gold at each period.
		Fine gold.			Alloy.														
Anni Regnorum.	A.D.	oz.	dw.	gr.	oz.	dw.	gr.	£	s.	d.	£	s.	d.	£	s.	d.			
William I. - -	1066	11	18	18	0	1	6												
William II. -	1087	11	18	18	0	1	6	9	0	0	0	15	0	5	12	$8\frac{1}{2}$	5.63414	9.0000	8.36874
18th Edw. {III. VI.}	1345	11	18	18	0	1	6	15	0	0	1	5	$1\frac{5}{8}$	3	7	$7\frac{1}{8}$	3.38048	14.8148	13.7754
18th ſame - -	1345	11	18	18	0	1	6	13	3	4	1	2	$0\frac{5}{8}$	3	17	$0\frac{1}{4}$	3.85118	13.0041	12.0917
20th ſame -	1347	11	18	18	0	1	6	14	0	0	1	3	$5\frac{1}{8}$	3	12	$5\frac{1}{4}$	3.62194	12.4444	11.5714
27, 30, 37, and 46th d° 18th Richard II. and 3d Henry IV.	1373 1395 1402	11	18	18	0	1	6	15	0	0	1	5	$1\frac{1}{8}$	3	7	$7\frac{1}{4}$	3.38048	12.0000	11.1581
9th Henry V. -	1422	11	18	18	0	1	6	16	13	4	1	7	$11\frac{1}{8}$	3	0	$10\frac{1}{8}$	3.04243	11.1111	10.3315
1ſt and 39th Henry VI.	1422 1461	11	18	18	0	1	6	22	10	0	1	17	$8\frac{3}{8}$	2	5	$0\frac{1}{8}$	2.25365	12.0000	11.1581
4th ſame - -	1426	11	18	18	0	1	6	16	13	4	1	7	$11\frac{1}{8}$	3	0	$10\frac{1}{8}$	3.04243	11.1111	10.3315
4th Edw. {IV. VII.}	1465	11	18	18	0	1	6	20	16	8	1	14	$10\frac{7}{8}$	2	8	$8\frac{1}{8}$	2.43394	11.1111	10.3316
5, 8, 11, 16, and 22d d° 1ſt Richard III. - and 9th Henry VII.	1482 1483 1494	11	18	18	0	1	6	22	10	0	1	17	$8\frac{3}{8}$	2	5	$0\frac{7}{8}$	2.25365	12.0000	11.1581
1ſt and 23d Henry VIII.	1509 1532	11	18	18	0	1	6	27	0	0	2 2	5 5	$2\frac{7}{8}$ 0	1	17	$6\frac{3}{4}$	1.87804	12.0000	11.1581
1ſt and 23d ſame	1509 1532	11	0	0	1	0	0	25	2	6	2	5	$8\frac{1}{4}$	1	27	$2\frac{1}{4}$	1.85971	11.1656	11.2682
34th ſame - -	1543	11	10	0	0	10	0	28	16	0	2	10	1	1	13	$11\frac{1}{8}$	1.69614	12.0000	10.4348
36th ſame -	1545	11	0	0	1	0	0	30	0	0	2	14	$6\frac{1}{2}$	1	11	1	1.55750	12.5000	6.81818
37th ſame - - 1ſt and 2d VI. Edw. IX. -	1546 1549	10	0	0	2	0	0	30	0	0 0	3	0	0	1	8	$3\frac{7}{8}$	1.41591	12.5000	5.0000
3d ſame - -	1550	11	0	0	1	0	0	34	0	0	3	1	$9\frac{3}{4}$	1	7	$5\frac{7}{8}$	1.37426	9.4444	5.15151
4th ſame -	1551	11	18	18	0	1	6	28	16	0	2	8	3	1	15	$2\frac{1}{2}$	1.76066	8.0000	2.01048
6th ſame - -	1553	11	18	18	0	1	6	36	0	0	3	0	$3\frac{3}{4}$	1	8	2	1.40853	12.0000	11.1078
6th ſame - -	1553	11	0	0	1	0	0	33	0	0	3	0	0	1	8	$3\frac{1}{8}$	1.41591	11.0000	11.0500
1ſt Mary I. - 2d Elizabeth -	1553 1560	11	18	18	0	1	6	36	0	0 0	3	0	$3\frac{3}{4}$	1	8	2	1.40853	12.0000	11.0576
2d and 35th ſame	1560 1594	11	0	0	1	0	0	33	0	0 0	3	0	0	1	8	3	1.41591	11.0000	11.1000
19th and 26th ſame	1578 1585	11	18	18	0	1	6	36	0	0	3	0	$3\frac{3}{4}$	1	8	2	1.40853	12.0000	11.1581
43d ſame - -	1601	11	18	18	0	1	6	36	10	0	3	1	$1\frac{3}{4}$	1	7	$9\frac{3}{8}$	1.38924	11.7741	10.9481
43d ſame -	1601	11	0	0	1	0	0	33	10	0	3	0	$10\frac{3}{4}$	1	7	$10\frac{3}{4}$	1.39477	10.8064	10.9047
1ſt James I. -	1603	11	0	0	1	0	0	37	10	0	3	8	$2\frac{1}{8}$	1	4	11	1.24600	12.0967	12.2067
2d ſame - -	1604	11	0	0	1	0	0	37	4	0	3	7	$7\frac{5}{8}$	1	5	$1\frac{1}{2}$	1.25604	12.0000	12.1091
3d ſame -	1605	11	18	18	0	1	6	40	10	0	3	7	$10\frac{1}{4}$	1	5	$0\frac{1}{4}$	1.25203	13.0645	12.1479
10th ſame - -	1613	11	18	18	0	1	6	44	0	0	3	13	8	1	3	$0\frac{5}{8}$	1.15243	14.1935	13.1977
10th ſame -	1613	11	0	0	1	0	0	40	18	4	3	14	$4\frac{3}{4}$	1	2	10	1.14195	13.1935	13.3189
2d Charles I. - 12th Charles II. -	1627 1661	11	18	18	0	1	6	44	10	0	3	14	$6\frac{5}{8}$	1	2	$9\frac{1}{2}$	1.13948	14.3548	13.3478
2d Charles I. -	1627	11	0	0	1	0	0	41	0	0	3	14	$6\frac{1}{2}$	1	2	$9\frac{1}{2}$	1.13948	13.2258	13.3460
22d Charles II. - 1ſt James II. -	1671 1685	11	0	0	1	0	0	44	10	0	4	0	10	1	1	0	1.05000	14.3548	14.4853
William III. -		11	0	0	1	0	0	47	15	9	4	6	$11\frac{3}{4}$	0	19	6^{3}	9.76743	15.4314	15.5717
3d George I. - 3d George III. -	1717 1763	11	0	0	1	0	0	46	14	6	4	4	$11\frac{1}{2}$	1	0	0	1.00000	15.07258	15.20960

For

A TABLE, ſhewing the Standard Weight, Value, and comparative View of Engliſh Silver Money, from King William I., A. D. 1066, to A. D. 1765.

Dates of the ſeveral Mint indentures.	Standard of the ſilver at each period.		Nº of ſhillings &c. in the pound weight, viz. in twelve ounces troy, of ſtandard ſilver coined at each period.	Weight of twenty ſhillings in reckoning of ſtandard ſilver at each period.	Weight of fine ſilver contained in twenty ſhillings at each period.	Value of the ſame twenty ſhillings in reckoning of our preſent money.	Proportion of money at each period to that of our preſent money.	Value of the ounce of the then ſtandard ſilver to that of our preſent money.	Value of the ounce fine ſilver at each period.	Kings and queens in theſe periods.
	Fine Silver.	Alloy.								
A. D.	oz. dw.	oz. dw.	s. d.	oz. dw. gr.	oz. dw. gr.	£ s. d.		s. d.	s. d.	
1066	11 2	0 18	21 4	11 5 0	10 8 3	2 18 1½	2.9062	5 2	1 11⅛	William Conq.
1087	11 2	0 18	20 0	12 0 0	11 2 0	3 2 0	3.1000	5 2	1 9⅝	William Rufus.
1300	11 2	0 18	20 3	11 17 1	10 19 6	3 1 2¾	3.0614	5 2	1 9⅞	Edward I.
1347	11 2	0 18	22 6	10 13 8	9 17 8	2 15 1⅜	2.7557	5 2	2 0⅜	Edward III.
1354 1395 1402	11 2	0 18	25 0	9 12 0	8 17 11½	2 9 7¼	2.4802	5 2	2 3	Richard II. Henry IV.
1412	11 2	0 18	32 0	7 10 0	6 18 18	1 18 9	1.9375	5 2	2 10⅚	
1422	11 2	0 18	30 0	8 0 0	7 8 0	2 1 4	2.0666	5 2	2 8½	Henry VI.
1422	11 2	0 18	37 6	6 8 0	5 18 10	1 13 0¾	1.6531	5 2	3 4½	
1426 1446	11 2	0 18	30 0	8 0 0	7 8 0	2 1 4	2.0666	5 2	2 8½	
1461 1464 1482 1483 1494	11 2	0 18	37 6	6 8 0	5 18 10	1 13 0¾	1.6531	5 2	3 4½	Edward IV. Edward V. Henry VII.
1505	11 2	0 18	40 0	6 0 0	5 11 0	1 11 0	1.5500	5 2	3 7¼	
1509 1532	11 2	0 18	45 0	5 6 16	4 18 6	1 7 6⅝	1.3776	5 2	4 0⅚	Henry VIII.
1543	10 0	2 0	48 0	5 0 0	4 3 8	1 3 3¼	1.1635	4 7⅞	4 9⅝	
1545	6 0	6 0	48 0	5 0 0	2 10 0	0 13 11⅚	0.6984	2 9½	8 0	
1546 1547 1548	4 0	8 0	48 0	5 0 0	1 13 8	0 9 3¾	0.4656	1 10⅜	12 0	
1549	6 0	6 0	72 0	3 6 16	1 13 8	0 9 3¾	0.4656	2 9½	12 0	Edward VI.
1551	3 0	9 0	72 0	3 6 16	0 16 16	0 4 7⅞	0.2328	1 4¾	24 0	
1553	11 1	0 19	60 0	4 0 0	3 13 16	1 0 6	1.0286	5 1¾	5 5⅛	Mary I.
1560 1583	11 2	0 18	60 0	4 0 0	3 14 0	1 0 8	1.0333	5 2	5 4⅞	Elizabeth.
1601 1605 1627 1661 1671 1685 1720 1764	11 2	0 18	62 0	3 17 10	3 11 14¾	1 0 0	1.0000	5 2	5 7	James I. Charles I. Charles II. James II. George I. George III.

For tables containing the principal gold and ſilver coins of all nations: the firſt table ſhewing the fineneſs of thoſe of gold, compared with the Engliſh ſtandard of 22 carats, with their weight, and contents in pure gold, and their value, according to the mint price of gold in England, *i. e.* 3*l.* 17*s.* 10½*d per* ounce, ſtandard; and the ſecond table exhibiting the fineneſs of all ſilver coins, compared with the Engliſh ſtandard of 11 oz. 2 dwts., their weight and contents in pure ſilver, with their value according to the mint price of ſilver in England, *i. e.* 5*s.* 2*d. per* ounce, ſtandard; we refer to the valuable publication of Dr. Kelly, entitled "Univerſal Cambiſt."

The king, by proclamation, may at any time prohibit all his ſubjects, not exceeding one year, to lend or advance money to any foreign prince or ſtate, without licence under the great or privy ſeal; and if any perſon knowingly offend in the premiſes, he ſhall forfeit treble the value of the money lent, &c. two-thirds to the king, and the other to the informer; but perſons may deal in foreign ſtocks, or be intereſted in any bank abroad, eſtabliſhed before iſſuing his majeſty's proclamation. Stat. 3 Geo. II. cap. 5.

Money, taking the term in its moſt comprehenſive ſenſe, may be defined to mean any commodity that can be employed for the purpoſe of facilitating the interchange of what men poſſeſs for what they deſire.

In the ſcience of political economy, diſcuſſion is much retarded and perplexed, by the looſe and ambiguous meaning of the terms employed, and by the want of introductory and preparatory axioms: the terms uſed in this ſcience have, in the common concerns and language of life, acquired certain meanings ſo firmly, that it is difficult to ſhake them looſe and forget them, when we come to employ them in it. The conſequence is, that the reader, not aware that words, the meaning of which is familiar to him, are to be taken, in the diſcuſſion on which the author has entered, in a new and peculiar ſenſe, is ſtartled and thrown back into doubt and confuſion, when, after having followed the train of reaſoning for ſome time, and admitted its juſtneſs and force, he finds that he and the author have throughout it been affixing very different meanings to the ſame terms. The ſame perplexing conſequences reſult from the want of introductory and preparatory axioms: perhaps every ſcience would be benefited as well as mathematics, though not to ſuch a degree, if the terms to be employed were previouſly defined, and the poſitions to be taken for granted were previouſly laid down. It is certain that thus the way would be cleared at the commencement, and this every perſon converſant with ſubjects which require a long and intricate train of reaſoning knows to be of the utmoſt importance towards the attainment of the truth.

Theſe obſervations are introduced to apologize for, or rather to warrant the time that may be occupied in purſuing the juſtneſs and accuracy of the definition given of money, and in pointing out the erroneous and defective character of ſome other definitions, before entering on the ſubject itſelf.

Hume, in his Eſſay on Money, has defined it to be "the inſtrument which men have agreed upon to facilitate the exchange of one commodity for another." At firſt ſight it may ſeem that this definition of Hume, and that which ſtands at the head of this article, are preciſely the ſame; they, no doubt, are very ſimilar; and if preciſion and fullneſs were not abſolutely indiſpenſable in all definitions, and if political economy, as has been already remarked, did not more than moſt other ſciences, require this fullneſs and preciſion, Mr. Hume's definition muſt have been adopted as ſufficiently accurate. But on examining it we ſhall find, that, taking it ſtrictly (and a definition, if it will not bear to be taken ſtrictly, loſes its eſſential character and its whole utility), it does not comprehend money, when employed to interchange labour and ſkill for commodities. In all caſes where one commodity is exchanged for another commodity, and an inſtrument is employed for the purpoſe of facilitating that exchange, that inſtrument, according to Mr. Hume's definition, is money; but if we adhere ſtrictly to his definition, the facilitating of no exchange except of one commodity for another is effected by money; or rather, Mr. Hume's definition does not comprehend any other kind of exchange, except that of one commodity for another, and here he does not comprehend all the uſes of money, or employs the term *commodity* in a ſenſe not generally known and admitted: in either caſe it is objectionable; in the firſt, becauſe there are inſtances of interchange which it does not comprehend, and in the ſecond caſe, becauſe it employs a term in a meaning not known and acknowledged.

After all, however, Mr. Hume's definition of money approaches much nearer the truth than thoſe which are commonly given. According to ſome, money may be defined to be the ſtandard of value. Here another ſource of error and confuſion opens to our view: in all ſcientific diſcuſſions, metaphorical language, or terms borrowed from other ſubjects, if not employed with great caution and judgment, are very prejudicial: they either leave no diſtinct idea when transformed from their appropriate ſubjects, or more frequently carry with them more of their original meaning and force than the ſubject to which they are applied will admit of. If we examine the phraſe ſtandard of value, without at preſent enquiring how far it is a proper definition of money, we ſhall find that it gives no diſtinct idea: the word ſtandard is here employed in a meaning perfectly different from that which is given to it, in ſubjects where it is a common and appropriate term. If we were to talk of the ſtandard of weight, of height, or of fineneſs, we ſhould be immediately ſtruck with the expreſſion as conveying no meaning, as, in fact, nonſenſe: it is well known what a ſtandard weight, height, or fineneſs are; they mean a weight, height, or fineneſs fixed by law or cuſtom. Standard of value, therefore, as applied to money, cannot define it, becauſe, if examined, it will be found to convey no meaning: and if the terms be altered, and "ſtandard value" uſed in their ſtead, though theſe words convey a meaning, it is a meaning which cannot be applied to them, if employed as a definition of money. Money cannot be ſaid to be the ſtandard value of commodities: if the price of any commodity were fixed by law, ſuppoſe, for inſtance, that the price of a buſhel of wheat were fixed at one guinea, then this coin, this deſcription of money might be ſaid to be the ſtandard value of a buſhel of wheat; but in no point of view can money, generally ſpeaking, be ſaid to be the ſtandard value of commodities; and we have ſhewn that the expreſſion ſtandard of value has no meaning.

It perhaps may be thought that more time has been occupied in pointing out the abſurdity of this definition than was neceſſary; but in political economy, as much is to be done by removing error, as by eſtabliſhing truth: when error is completely removed, ſo that the way is clear and open, common ſenſe will do much in this branch of ſcience.

The next definition of money is much more plauſible: thoſe who are aware, either of the abſurdity, or who ſuſpect the incorrectneſs of the former definition, maintain that money is the meaſure of value. In our remarks on that definition which made money the ſtandard of value, it was not deemed neceſſary to inveſtigate the proper meaning of the word *value*, becauſe the remarks that were offered on the other term were deemed amply ſufficient to ſet it aſide. But on examining this definition, both the terms muſt be ſcrutinized.

Smith, in his Wealth of Nations, has obſerved that every commodity has two ſorts of value, a value in uſe and a value in exchange; but in political economy the term *value* can have only one meaning. Political economy relates only to a ſtate of ſociety, where a diviſion of labour exiſts; where, of courſe, each man has more of the commodities his labour and ſkill have produced than he has occaſion for, and conſequently wiſhes to exchange them for commodities produced by the labour and ſkill of others. Where no diviſion of labour exiſts; where there is, conſequently, no interchange of commodities; there is, ſtrictly ſpeaking, no wealth, no value; there is no room, no occaſion for the ſcience of political economy. Whether, in treating of other ſubjects, *value* ſhould or can be uſed in a ſenſe different from that which is given it in political economy, as a ſcience relating to the interchange of commodities, is a queſtion foreign to the preſent diſcuſſion. In political economy, and under the circumſtances of ſociety, which political economy ſuppoſes and refers to, *value* ought only to be employed in one ſenſe. What that ſenſe is a little reflection will teach us.

In the ſtate of ſociety we are ſuppoſing commodities are interchanged: before this can take place, the quantities or weights of each commodity that are to be given for any other commodity, muſt be fixed; and that particular weight or quantity of any given commodity, which can be obtained for a certain weight or quantity of another commodity, may, ſtrictly ſpeaking, be ſaid to be the value of this ſecond commodity: it avails or has power to obtain the former commodity. But this expreſſion may be reciprocally uſed: if, for inſtance a buſhel of wheat is exchanged for 30lb. of meat, the value of the buſhel of wheat may be ſaid to be 30lb. of meat, and the value of 30lb. of meat to be a buſhel of wheat. Value, therefore, is a term which, in political economy, has, properly ſpeaking, only one meaning, becauſe this ſcience relates ſolely to a ſtate of ſociety, where interchange of commodities takes place: and this meaning of the word value, referring to the interchange of commodities, implies that where any two commodities are interchanged, each can procure a certain portion of the other.

Let us now revert to the definition of money under conſideration: according to it, money is the meaſure of value. The expreſſion, at firſt ſight, ſeems ſufficiently preciſe and clear, whatever opinion may be formed of its propriety and juſtneſs as a definition of money. But a cloſer inſpection and examination of it will probably convince us that it is not ſo preciſe and clear as at firſt ſight in ſeems to be. When we talk of a yard as a meaſure of length, we have preciſe and clear ideas affixed to our expreſſion: we mean, that if ſuch a table is a yard long, we can immediately not only figure to ourſelves its length, but compare it with other objects which poſſeſs length. How will this apply to money defined and conſidered as the meaſure of value? Whoever knows what a yard is, immediately and clearly knows what is meant by a yard of cloth; but he who equally well knows what an ounce of gold, or a guinea is, by no means, therefore, certainly knows what quantity of corn, or any other commodity, this ounce of gold or guinea will meaſure. Indeed the very application of the term *meaſure*, as applied to value, when thus brought forward in a particular caſe, and not uſed generally and looſely, muſt ſtrike us as improper, and contrary to analogy. We have ſeen what is the meaning of the term *value;* it expreſſes the quantity of any particular commodity which can be procured in exchange for another commodity:—in order to do as much juſtice as poſſible to the definition of money, under conſideration, let us take money as one of the commodities, and corn as another; we ſhall ſtill perceive that the definition is incorrect. How can money be ſaid to meaſure the value of corn? It has been obſerved, that value is a reciprocal expreſſion; that is, it can be equally well applied to either of the two commodities, which are interchanged for each other: if money, therefore, may be defined to be the meaſure of the value of any commodity, of corn for inſtance; corn, with equal propriety, may be defined to be the meaſure of the value of money. But in neither caſe can the definition be uſed; for nothing changeable in value, that is, which at one time will command a greater or leſs quantity of any commodity than at another time, can meaſure value.

It may, perhaps, be urged, that if the term were changed, and if money were defined to be the expreſſion of the value of commodities, the objection would be removed: there is ſome weight and propriety in this remark: value muſt have reference to two commodities: it muſt expreſs how much of any particular commodity can be obtained for another commodity; and as money is uſed as that commodity, for which all others are directly given in exchange, the value of all others would naturally be expreſſed with reference to money. But ſtill this would be a very incomplete definition of money; and when we come to enquire how money (according to the definition given at the head of this article) facilitates the interchange of what men poſſeſs for what they deſire, we ſhall find that this definition includes the former.

Let us now inquire what qualities money muſt poſſeſs, in order that it may anſwer the purpoſe pointed out in the definition; *viz.* that of facilitating the interchange of what men poſſeſs for what they deſire. Money, it has been ſaid, being the meaſure of value, muſt have value, on the ſame principle and for the ſame reaſon, that whatever meaſures length muſt have length. It may be true that money muſt have value; but not for the reaſon (if reaſon it can be called) here alleged. This mode of reaſoning affords another inſtance of the bad effects of borrowing illuſtrations and proofs in political economy from other ſubjects. At firſt ſight, the concluſion that money, being the meaſure of value, muſt have value, appears to follow neceſſarily from the facts brought forward in ſupport of it; though thoſe facts are merely analogous, and not belonging to the ſubject to be proved; but it requires only a little time for reflection, it merely requires that the judgment ſhould have time to withdraw itſelf from the influence of powerful but irrelevant aſſociations, in order to perceive that there is no force in the remark, that becauſe what meaſures length poſſeſſes length, therefore what meaſures value (allowing the expreſſion) ſhould poſſeſs value.

There is, in fact, not the leaſt occaſion for bringing in this analogy to prove that money, in its character of money, muſt poſſeſs value: that is implied in the very meaning of the term; nothing can facilitate the interchange of commodities; nothing can be exchanged itſelf for any other commodity which does not poſſeſs value. But a much more important and difficult queſtion remains to be noticed, diſcuſſed, and ſolved. Is it eſſential to the character and uſes of money that the commodity of which it is formed ſhould poſſeſs value, independent of its application as ſuch? Another queſtion ariſes out of this, or rather is involved in it. Can the value of any commodity, when uſed as money, be greater than it poſſeſſed when not applied to this purpoſe?

In order that theſe intricate and important queſtions may be conſidered with due deliberation, on ſufficient data, and in regular order, it will be proper to call in the aid both of ſpeculative reaſoning, and of what we know to be fact. Our acquaintance with the hiſtory of nations, at that period when they firſt began to perceive the neceſſity of adopting ſome inſtrument of barter, is ſo very imperfect, that we are not ſupplied with a detail of the different methods they purſued previous to the adoption of the metals for that purpoſe: it is eaſy to imagine, however, how they would proceed: and by the help of what we actually know to have been the caſe, and of what we may fairly conclude to have been the intermediate ſteps, where hiſtory is ſilent, we may gain the point we have in view; *viz.* an anſwer to the queſtions, whether it is eſſential to the character and uſes of money, that the commodity of which it is formed ſhould poſſeſs value, independent of its application as ſuch ; and whether the value of any commodity, when uſed as money, is greater than it poſſeſſed when not applied to this purpoſe. All hiſtory coincides in informing us that the commodities firſt uſed as money poſſeſſed value prior to, and independently of, their being inveſted with this character. Cattle appear to have been uſed for this purpoſe at as early a period of hiſtory as we can trace back ; and when the metals were firſt employed, thoſe kinds were choſen which were in regular uſe and demand, and which, conſequently, poſſeſſed value. Indeed it is natural to ſuppoſe, that if a perſon could not, in exchange for the produce of his labour, procure directly what he wanted, he would diſpoſe of it only for ſuch a commodity as he knew was in general demand, and which, therefore, he could be at no loſs to diſpoſe of. Unleſs we can imagine that men would barter their commodities for what they neither needed at the moment, nor what, at ſome future period, would procure them what they needed, this muſt have been the caſe. Let us ſuppoſe that a perſon, in this ſtate of ſociety, had more corn than his own wants required ; and that another perſon ſtood in need of this corn, but had only ſome commodity to offer in exchange for it, which the firſt perſon did not then require : if this commodity were of ſuch a nature, as the firſt perſon were likely ſoon to require, or if it were ſuch as he knew was in demand, and would, therefore, be the certain means of obtaining him any other commodity which he might wiſh for, he would have no objection to exchange his corn for it. But it is evident, that in both theſe caſes the exchange is that of commodities that are valuable ; *i. e.* each of which avails to purchaſe or procure ſome other uſeful and deſirable commodity. In the latter caſe, where the exchange of the corn was made for a commodity which was to be employed again in exchange, that commodity, in fact, was money : it anſwers exactly to the definition of money, it facilitates the exchange of commodities : the perſon who poſſeſſed the corn, wiſhed, for inſtance, to exchange it for meat ; but the perſon who was diſpoſed to take his corn, and to whom, at that period, we could ſuppoſe he could alone diſpoſe of it, had no meat ; he, therefore, offered him ſome other commodity, and if this commodity would avail, either by direct or indirect exchange, to procure meat, the perſon poſſeſſing the corn would not heſitate to part with the one for the other. But it is plain, that unleſs this commodity would avail to obtain, either directly or indirectly, the meat which he needed (or whatever elſe it might be), the perſon could not part with his corn. Money, therefore, or that commodity which is employed for the purpoſe of facilitating the exchange of what men poſſeſs for what they deſire, muſt poſſeſs value, at leaſt when firſt uſed in that character.

It ſtill, however, remains to be inquired, whether a commodity uſed as money, and, as ſuch, poſſeſſed of value, when firſt employed for that purpoſe, may not retain its character and power of money, when deprived of its property of value. As the metals are now uſed for money, let us ſuppoſe that gold and ſilver were to loſe all value, independently of their character as money ; that there was no demand for them as articles of luxury or uſe :—would they ſtill be as valuable as money ? It would, at firſt ſight, appear certain, that as they had derived their power as money ſolely from their being valuable commodities, when they were ſtript of their value, they would at the ſame time be neceſſarily ſtript of their character of money. But this may be doubted, both from what we know of the human mind, and from what actually takes place. Men, having been ſo long accuſtomed to receive gold and ſilver in exchange for their commodities ; and having ſo long ceaſed to revert to, or conſider on every occaſion of parting with their commodities for theſe metals, that they were receiving ſomething in exchange intrinſically valuable ; *i. e.* valuable independently of its character of money ; would, by the mere force of habit and aſſociation, and by the confidence which they had produced, continue to receive gold and ſilver, even after their intrinſic value had ceaſed ; *i. e.* after they had loſt that property which at firſt had made them paſs as money. This we ſee partly to be the caſe : men do not heſitate to receive coin that is much worn ; or, in other words, they exchange their commodities for coin, after it has loſt part of its value ; and the habit and aſſociation are much more likely to be broken, by a diminution in the ſize, or an alteration in the appearance of the coin, while the value of what is actually received remains the ſame, than by receiving coin in exactly the ſame ſtate as uſual, only that the metal of which it is made has loſt its intrinſic value.

We may therefore infer, on this part of the ſubject, that no commodity can be employed at firſt as money, unleſs it poſſeſs value ; that any circumſtance which affects this value, will, for a very conſiderable time, affect the character and credit of the commodity as money ; but that, in proceſs of time, the conſideration of the intrinſic value of the commodity loſes much of its force, and it is taken as money without reference to this intrinſic value.

In one reſpect, however, the value of money would fall, if the commoditiy of which it were formed loſt its intrinſic value ; *i. e.* if it no longer were in demand for any other purpoſe but that of money. Let us ſuppoſe that the demand for gold and ſilver, except for the purpoſe of money, ſuddenly ceaſed : the natural and immediate conſequence would be, that what was before uſed for articles of luxury, &c. would be coined into money ; and the quantity of money being thus increaſed, its value would neceſſarily fall. The other queſtion that was ſtarted, *viz.* can the value of any commodity, when uſed as money, be greater than it poſſeſſed, when not applied to this purpoſe ; has, in a great meaſure, been ſolved in the obſervations already made. In all caſes where worn coin is taken, this is, in fact, the caſe. It may, indeed, be urged, that worn coin, only of the inferior metals, is received at its original value ; that gold coin is not ſo received ; and that in the inſtances where ſilver coin, when worn, is received at its original value, it is only ſo received as part of the gold coin. But as there can be no doubt of the fact, that the value of twenty-one worn ſhillings, when compared with the value of a guinea, is much leſs than the value of that quantity of ſilver which would form twenty-one mint ſhillings, when compared with a guinea, the inference is indubitable, that in all caſes where worn ſilver coin is received either for commodities, or for gold coin at its original value, the value of ſilver uſed as money is greater than its value as a ſimple commodity.

The inference which has been drawn, however, from this circumſtance is by no means correct ;—that money does not derive its character from the intrinſic value of the commodity of which it is formed, nor from the general confidence reſulting from the knowledge of that value, and the conſequent willing, and habitual acceptance of it in exchange for all commodities ; but from authority. Thoſe who are of this opinion, contend that the ſtamp on the coin gains it a ready circulation, not becauſe it proves its legal weight and purity, but becauſe it is the ſign of the authority of government ; that in receiving money no regard is paid to the material of which it is formed, nor to the value of that material, but ſolely to the authority which iſſued it. If this were true, the ſame authority could make ſtamped leather paſs as current as ſtamped gold and ſilver. But this opinion is grounded entirely on a miſconception of the nature of money, and of the manner in which any given commodity is inveſted with that character; it alſo confounds two things quite diſtinct and unconnected. There can be no doubt that government, or any body of men, who receive a large portion of the wealth of the community, could give a partial circulation to any kind of money, independently of its intrinſic value, by declaring their readineſs to receive it in payment of their demands. In Scotland, and in the provincial diſtricts of England, where local bank notes are common, confidence and circulation are often given to them in a great degree, by the declaration of the agents of government, that they will receive them in payment of the different taxes; but this is not authority: this mode of giving circulation to any kind of money is merely an illuſtration of the doctrine that has been laid down in this article; that the reaſon why any commodity, when originally employed as money, ſhould poſſeſs intrinſic value, is, that thus it will be readily and generally received; but if this ready and general acceptance can be given any other way, the purpoſe is effectually anſwered. In a rude ſtate of ſociety, the only mode of enſuring this was, to offer ſome commodity in general uſe and demand; and therefore when a perſon parted with the produce of his labour, if he could not get for it what he wanted, he ſelected, and kept by him, ſome commodity which would always enſure the obtaining of the object of his wiſhes either directly or indirectly. In a more advanced ſtate of ſociety, confidence would effect the ſame object; but there is a great difference between authority and confidence; there is a great difference between commanding that any commodity ſhould be received as money, and declaring that it will be received as ſuch. The former mode, we know from hiſtory, has always failed of ſucceſs, whenever the command was not ſupported by the intrinſic value of the commodity ordered to paſs as money. The latter mode, if the declaration came from thoſe through whoſe hands a great portion of the money of the country muſt paſs, will give credit and circulation as money to any commodity, nearly with as much facility and certainty; though not to ſuch an extent, as if the commodity poſſeſſed intrinſic value equal to that at which it was iſſued as money.

Money, then, or any commodity which can be employed for the purpoſe of facilitating the interchange of what men poſſeſs, for what they deſire, muſt, in the firſt inſtance, have poſſeſſed intrinſic value: if this intrinſic value were leſſened, before its character and uſe, as money, had become ſo firmly fixed, as to have ſuperſeded or effaced, in commercial tranſactions, all reference to its intrinſic value, then the value of it, as money, would fall in proportion as its intrinſic value were leſſened. But this would not be the caſe, at leaſt ſo certainly, and in ſuch exact proportion, if the leſſening of the intrinſic value took place in a country of great commerce and confidence, in a gradual manner, and by no means that were calculated to create alarm or diſtruſt.

The next topic, in point of order and importance, connected with the conſideration of the principles of money, is ſuggeſted, and will be beſt explained by a paſſage in the eſſay "Of Money" by Hume, already referred to. "It was a ſhrewd obſervation of Anacharſis the Scythian, who had never ſeen money in his own country, that gold and ſilver ſeemed to him of no uſe to the Greeks, but to aſſiſt them in enumeration and arithmetic." In this ſentiment of Anacharſis, we may perceive the germ of the opinions of thoſe authors, who maintain either what they call the doctrine of an abſtract currency, or that money is but counters wherewith to reckon the different commodities that are mutually exchanged in the concerns of life; and it is alſo worthy of remark, that the mode in which the uſe of money is ſupplied in London and all commercial cities, where obſervation and experience have ſuggeſted expedients for it, is exactly that which Anacharſis ſuppoſes to have been the only mode, in which gold and ſilver were of uſe to the Greeks. Our modern merchants, in many of their tranſactions, merely ſet off the value of one commodity againſt the value of another; this they indeed do by rating the value in their books by pounds, ſhillings, and pence, but real money is not uſed in the tranſaction. But to return to the conſideration of the more immediate and relevant topic ſuggeſted by the remark of Anacharſis. If gold and ſilver were of no uſe, but to aſſiſt in numeration and arithmetic, as he directly maintained; and as thoſe who regard it only as counters, virtually maintain; or if the real currency of a country could be only an abſtract currency; then the value of this money or currency could not vary, except by a variation in the ſupply of commodities; for, confining ourſelves at preſent to the doctrine which repreſents money only as counters, it is evident that they muſt always bear the ſame proportion to the commodities (provided, as before remarked, that the ſupply of commodities did not vary) which they ſerved to rate or eſtimate, in the ſame manner as if all exchanges of commodities were effected by the mode adopted in London for many of them, the only circumſtance which could make any difference in the value at which they were reſpectively rated in the books of the merchants, would be a variation in the ſupply; for if money were only counters, and of no uſe but to aſſiſt in numeration and arithmetic, there would be no motive to increaſe the quantity of it, and conſequently any variation between the ſupply of it and of commodities, muſt ariſe from a greater or leſs ſupply of the latter. The inference, that any difference in the value of money, or the command it poſſeſſes over commodities, muſt ariſe from a variation in the ſupply of the latter, follows more directly and neceſſarily from the doctrine of an abſtract currency. It is, however, ſo very difficult to conceive of ſuch a currency, and therefore to reaſon upon it, that very few obſervations may ſuffice. Thoſe who maintain it ſeem to confound two things; the name and denomination, and the power of the currency; and to infer, becauſe the former may be conſidered as ſomething abſtract, therefore the latter is ſo alſo; that becauſe the former remains the ſame, therefore there is no change in the latter. If, however, by abſtract currency, they mean money of account, (and that ſeems the only clear meaning that can be affixed to the terms,) then the obſervation juſt made holds perfectly good; that if there were no other money but money of account, or abſtract currency, any variation in the power or value of this, when compared with commodities, muſt proceed from a change in the ſupply of the commodities; for it is impoſſible that mere abſtract currency, or money of account, not having actual exiſtence, can vary.

But money is of ſome other uſe than merely to aſſiſt in numeration and arithmetic; and this leads us to the conſideration of it, not merely in the character of a commodity which can facilitate the interchange of what men poſſeſs for what they deſire—though that is the eſſential character of it; but as the ſource of induſtry, ſkill, and enterprize, and conſequently of real wealth. Mr. Hume, remarking on the obſervation of Anacharſis, ſays, "It is indeed evident that money is nothing but the repreſentation of labour and commodities, and ſerves only as a method of rating and eſtimating them. Where coin is in greater plenty, as a greater quantity of it is required to repreſent the ſame quantity of goods; it can have no effect either good or bad, taking a nation within itſelf, any more than it would make an alteration in a merchant's books; if, inſtead of the Arabian method of notation, which requires few characters, he ſhould make uſe of the Roman, which requires a great many. Nay the greater quantity of money, like the Roman characters, is rather inconvenient, and requires greater trouble both to keep and tranſport it;" it is not however perfectly correct to ſay, that, taking a nation within itſelf, a greater plenty of coin can have no effect, either good or bad; and indeed Mr. Hume afterwards points out ſome effects both good and bad, which a greater ſupply of coin produces. One effect, however, he does not advert to, which is of ſo injurious a nature, that if it were not generally, and in a great degree counterbalanced by the beneficial conſequences of this greater ſupply, it would render it a moſt ſerious evil. If, where coin is in greater plenty, a greater quantity of it is required to repreſent the ſame quantity of goods; then the power of all thoſe who poſſeſs only money, over thoſe goods, muſt be diminiſhed. We muſt therefore look to the other conſequences of a greater ſupply of money.

Theſe Mr. Hume has detailed, but the order and manner in which he ſuppoſes them to flow, is by no means correct, or warranted by facts. As this is a moſt important and intereſting topic, it will be neceſſary to quote his obſervations, before we proceed to point out their error.

" Though the high price of commodities be a neceſſary conſequence of the increaſe of gold and ſilver, yet it follows not immediately upon that increaſe, but ſome time is required before the money circulates through the whole ſtate, and makes its effect be felt on all ranks of people. At firſt no alteration is perceived; by degrees the price riſes, firſt of one commodity, then of another, till the whole at laſt reaches a juſt proportion with the new quantity of ſpecie which is in the kingdom. In my opinion it is only in this interval or intermediate ſituation between the acquiſition of money and riſe of prices, that the increaſing quantity of gold and ſilver is favourable to induſtry. When any quantity of money is imported into a nation, it is not at firſt diſperſed into many hands, but is confined to the coffers of a few perſons, who immediately ſeek to employ it to advantage. Here are a ſet of manufacturers or merchants, we ſhall ſuppoſe, who have received returns of gold or ſilver for goods which they ſent to Cadiz. They are thereby enabled to employ more workmen than formerly, who never dream of demanding higher wages, but are glad of employment from ſuch good paymaſters. If workmen become ſcarce, the manufacturer gives higher wages, but at firſt requires an increaſe of labour; and this is willingly ſubmitted to by the artizan, who can now eat and drink better, to compenſate his additional toil and fatigue. He carries his money to market, where he finds every thing at the ſame price as formerly, but returns with greater quantity and of better kinds, for the uſe of his family. The farmer and gardener, finding that all their commodities are taken off, apply themſelves with alacrity to the raiſing more, and at the ſame time can afford to take better and more clothes from their tradeſmen, whoſe price is the ſame as formerly, and their induſtry only whetted by ſo much new gain. It is eaſy to trace the money in its progreſs through the whole commonwealth, where we ſhall find that it muſt firſt quicken the diligence of every individual, before it increaſes the price of labour."

Now there are three poſitions maintained in this illuſtrative reaſoning, the firſt of which may, or may not, be true, according to circumſtances; the other two cannot be true under any circumſtance. It is aſſumed that the price of labour will not be increaſed, in the firſt inſtance, by an increaſe in the quantity of money, becauſe a greater number of workmen will be employed; and of courſe the number of workmen thus increaſed, bearing the ſame proportion to the increaſed money, that they formerly did, no addition will be made to the price of labour; this, however, cannot be the caſe, unleſs we ſuppoſe that before the increaſed quantity of money gave employment to theſe workmen, they were entirely unemployed; for if they were previouſly employed, the greater demand for them, occaſioned by the increaſe of money, muſt undoubtedly and neceſſarily raiſe the price of labour. Again, Mr. Hume ſuppoſes that the workmen who have thus gained employment, find every thing in the market at the ſame price as formerly, though an increaſed demand for the commodities ſold there is neceſſarily occaſioned by the increaſed money theſe workmen carry to market. If the price of commodities in the market is not increaſed immediately on the increaſe of demand for them, when, or how, can it be raiſed? not afterwards, for, as Mr. Hume juſtly obſerves, the farmer and gardener apply themſelves with alacrity to raiſing an additional ſupply; and if the price was not raiſed, when there was only the uſual ſupply, and a more than uſual demand, it muſt fall when the ſupply is raiſed proportionally to the demand. The ſame remarks may be applied to the third poſition laid down by Mr. Hume, *viz.* that the farmer and gardener, though they go to their tradeſmen with more money in their pockets, and can therefore afford to buy better, and more clothes than formerly, yet get them at the old prices.

In fact, the proceſs by which an increaſe of money in any country promotes induſtry and raiſes prices, varies according to circumſtances: if the increaſed ſupply is brought in by thoſe who lay out money principally or entirely in conſumption, the proceſs goes on in one mode; if the increaſed ſupply is brought in by thoſe who lay out money principally for the purpoſes of production, the proceſs goes on in another way. In the firſt inſtance, the perſons into whoſe poſſeſſion the increaſe of money has come, naturally lay it out according to their fancies and habits, either in obtaining a larger quantity of thoſe commodities which they formerly bought, or in the purchaſe of other commodities which their inferior means hitherto prevented them from obtaining: in either caſe there is a greater demand in the market while the ſupply is the ſame. If, for inſtance, the increaſed money comes into the poſſeſſion of labouring men, they either lay it out in getting more bread for themſelves and families; or if they previouſly had enough of that, but could not procure meat, the increaſed money is laid out in the purchaſe of meat. In the one caſe there is a greater demand for bread, in the other for meat; while the ſupply is the ſame: a riſe in price muſt therefore take place. The next ſtep in the proceſs is that the bakers or butchers, finding a greater demand for their articles, and obtaining conſequently a higher price for them, are induced to increaſe the ſupply: here then we may ſuppoſe the increaſed money and the bread or meat to have balanced each other. But we muſt look a little farther; the baker or the butcher, in the firſt inſtance, obtaining a higher price for their commodities, and ſubſequently ſelling a greater quantity, and thus increaſing their profits, are enabled, in their turn, to do what the labouring men did when they obtained more money. They can afford to ſpend more; (for at preſent, all the caſes we ſuppoſe are thoſe of men who lay out their increaſed money in conſumption, not in production); the articles on which they ſpend their increaſed profits muſt in their turn experience a riſe of price, which will produce a greater ſupply. It is needleſs to purſue the operations of this additional ſupply of money any further, or to point out how it will be gradually ſpread over the community, always in ſome degree affecting the prices of thoſe commodities to the purchaſe of which it is applied. It may, however, be further remarked, that there are many diſturbing forces, which may prevent the conſequences now enumerated from following certainly, and in the order laid down, from an increaſed ſupply of money; and that the riſe of price is ſeldom or never proportioned exactly to the increaſed demand; while, on the other hand, a ſupply equal to the increaſed demand ſeldom brings the prices down to their former level.

Let us now ſuppoſe that the increaſed quantity of money is in the poſſeſſion of thoſe who will expend it in productions; ſome individual caſe will render the ſubject more clear, and enable us to trace the conſequences more directly and minutely. A cotton manufacturer, for inſtance, has his capital doubled, and determines to apply this increaſe of fortune ſolely to the extenſion of his trade: of courſe he muſt employ more men to work for him, and more of the raw material. Unleſs we can imagine that there were quite unemployed the additional number of men that he would need, his demand for more workmen muſt raiſe the price of labour; and even on the ſuppoſition that there were a ſufficient number of unemployed workmen, ſtill, if we reflect a little, we muſt be convinced that the price of labour will be raiſed, even in this caſe; for theſe unemployed workmen, being of courſe anxious to procure employment, may be conſidered as a ſupply greater than the demand in the market; of courſe this circumſtance muſt have a conſiderable effect in lowering the price of labour; but when the cotton manufacturer hires them, he in fact increaſes the demand for workmen, and therefore muſt raiſe the price. So that the effect is not altered in its nature, though it is in degree, whether we ſuppoſe the cotton manufacturer to go into the market for workmen, where all are already engaged, or where there are a ſufficient number to be found unemployed: in the former caſe, the price of labour would riſe much higher than it would in the latter caſe; for we are to reflect that the lowering of the price of labour or of any commodity is effected, not only by thoſe who want it not being ſo numerous, or not being ſo able and willing to purchaſe it at the former price, but alſo, in nearly an equal degree, by thoſe who have it to diſpoſe of, on their perceiving the demand diminiſhed, offering it at a lower rate, each being anxious, under theſe circumſtances, to get rid of the article he has in the market.

The firſt effect, then, of the increaſed capital of the cotton manufacturer is to raiſe the price of labour: it is unneceſſary to point out again how the increaſed wages which the labourer obtains will operate on the price of commodities, and ſubſequently on their ſupply; this has already been done. But beſides a riſe in the price of labour, the increaſed capital of the manufacturer, being partly expended on cotton, and partly alſo on the buildings and machinery neceſſary to manufacture this additional quantity of cotton, its effects on theſe muſt alſo be apparent, at firſt in the riſe of price, and afterwards in the greater ſupply. On the other hand, the ſupply of cotton goods in the market being increaſed, while the demand remains the ſame, the price of them muſt fall: here then we may perceive an eſſential difference between the effects of an increaſed ſupply of money, accordingly as it comes into the hands of thoſe who lay it out in conſumption, or into the hands of thoſe who lay it out in production. In the latter caſe, the immediate effect is a riſe in price, the indirect and ſubſequent is a greater ſupply, ſtimulated by this riſe in price; but this greater ſupply may not be more than ſufficient to meet the greater demand; in the former caſe, although a riſe in the price of labour, and of thoſe articles neceſſary for the manufacture is occaſioned, which is alſo met by a greater ſupply; yet, beſides theſe effects correſponding to the effects in the latter inſtance, there is a greater ſupply of cotton goods in the market; ſo that whatever opinion may be formed reſpecting the conſequences (as they affect the national proſperity) of an increaſed ſupply of money in the hands of thoſe who expend it in conſumption, there ſeems to be no reaſon for doubting that the conſequences are beneficial, when the increaſed ſupply is expended on production.

But it will be proper to look more cloſely into the effects of a greater quantity of money, in order to perceive in what caſe it is beneficial to a nation, and by what means it is beneficial; and in what caſes it is prejudicial to a nation, and by what means it is ſo.

When the effect of a greater ſupply of money is to ſtimulate induſtry, ſo as to bring a greater quantity of commodities into the market, then there can be no doubt that it is beneficial to a nation. At firſt ſight it may appear of little moment, whether there is a greater quantity of commodities produced or not, if the price of them is not diminiſhed: but the real wealth and proſperity of a nation does not conſiſt in there being few commodities produced, though they are ſold at ever ſo cheap a rate; it conſiſts in the abundant ſupply, provided there is a demand for that ſupply, whatever be the price of them; for an abundant ſupply and a proportional demand proves that all claſſes of the community have full employment; that they are exerting their ſkill and induſtry, and that this ſkill and induſtry are well paid. Now there is no motive which will ſtimulate men ſo powerfully and generally to the exertion of additional ſkill and induſtry, as the proſpect of greater gain; and the proſpect of greater gain cannot be held out, unleſs there is a greater demand for their goods, and a conſequent higher price given for them; this, it is evident, cannot be the caſe, unleſs the quantity of money in the nation be increaſed. It may, indeed, be alleged, that a greater demand for any particular commodity may be created by the abſtraction of demand for ſome other commodity; but in this caſe it is evident, that what is gained to the nation in one caſe, is loſt in the other; for thoſe who produce the latter commodity will ſuffer from the diminution of demand, as much as thoſe who produce the former commodity will be benefited by an increaſe of demand. The caſe ſuppoſed, therefore, muſt be that of a greater demand for any particular deſcription of commodities, without any variation in the demand for any other commodity; and this caſe cannot exiſt, unleſs there be a greater quantity of money in the nation.

This illuſtration of the effects of an increaſed quantity of money has proceeded on the ſuppoſition that they were confined within the nation where the increaſe took place: but it may be proper to examine what will be the effects on the commercial tranſactions of this nation with other nations: theſe effects will be ſimilar to thoſe which are known to proceed from great capital; *i. e.* the ability to purchaſe the raw materials of manufacture cheaper, by taking them in greater quantities, and for ready money, and to ſell the manufactured article cheaper, both from the circumſtance of the raw materials having been bought cheaper, and from the increaſe of capital, and conſequently of trade, enabling the manufacturer to be ſatisfied with leſs proportional profits. It is evident, however, that all theſe beneficial conſequences depend on one important circumſtance; that the increaſed quantity of money, on whatever it is expended, though it at firſt raiſes the price, yet ſoon afterwards, by ſtimulating induſtry, brings in ſuch an additional ſupply, as fully anſwers the increaſed demand. In this caſe alone money, when it flows with greater abundance than formerly into a nation, is beneficial to it.

A greater abundance of money will be prejudicial to a nation, either when it flows in too rapidly or irregularly; or when the nation, previouſly to this additional ſupply of money, had exerted its induſtry and ſkill to the utmoſt. As this latter caſe is a very improbable one, we ſhall confine our obſervations principally to the former.

When a greater quantity of money flows in very rapidly, the induſtry of the nation cannot keep pace with it; prices are ſuddenly raiſed very high; and though the ſame effect follows in ſome degree, even in this caſe, which we have ſeen to be the natural conſequence of a greater quantity of money, a greater demand, and a riſe in the price of commodities, *viz.* that a greater ſupply is produced by the ſtimulus given to induſtry; yet, induſtry muſt have ſome time in which to exert itſelf, and it alſo has its limits. Beſides, it by no means follows, that the increaſed demand for any commodity, is in the exact proportion of the increaſed quantity of money brought into market for the purchaſe of that commodity; ſo that if the increaſed ſupply of it be regulated by the increaſed quantity of money, independently of any regard to what is the actual amount of the increaſed demand, the conſequence will be that a larger quantity of the commodity will be brought into the market, than can find vent there, at leaſt at a fair price. Now this circumſtance is moſt likely to happen, where a greater abundance of money flows in very rapidly; the immediate conſequence is that there is a ſtrong competition, and the price of the commodity is forced up much higher than would have been the caſe, if the flow of money into the market had been gradual and progreſſive.

The ſame evil reſults from the circumſtance of a greater abundance of money flowing in irregularly; partly in the mode juſt detailed, and partly in another manner. Nothing renders the production of any commodity ſo certain and ſteady, and conſequently nothing benefits a nation at large, and thoſe whoſe labour gives birth to it, ſo much as a regular and known demand for it: but if at one time there is a large ſupply of money in the market, and at another time the ſupply is comparatively ſmall, the manufacturer does not know how to regulate his labour, and as it is ſafer and more prudent to err on the ſide of a deficient ſupply, the market is moſt likely to ſuffer in this reſpect.

We may therefore conclude that where a greater abundance of money flows into a nation ſlowly, gradually, and regularly, the nation will be benefited by it: induſtry and ſkill will proceed in their natural courſe, by advances likewiſe ſlow, gradual, and regular; and the ground which they thus ſecure, they will keep certainly and firmly. The wealth of the nation reſting on a firm foundation, will not be apt to be ſhaken or diminiſhed. But, on the other hand, where the influx of wealth is ſudden, rapid, or irregular, it will certainly tend much more to raiſe the prices than to increaſe the ſupply of commodities; and even that increaſed ſupply, as far as it does take place, will not be conſtant or regular.

The other caſe, in which a greater abundance of money was ſtated to be prejudicial to a nation, was that, where, previouſly to this additional ſupply, the nation had exerted its induſtry and ſkill to the utmoſt. This, it was added, was a very improbable caſe; yet it certainly exiſted in Holland ſome time before the French revolution deſtroyed the commerce of that country. Money was there ſo abundant, that it could ſcarcely be employed in any manner, ſo as to produce a ſmall profit. In this country, therefore, under theſe circumſtances, it is evident that a greater abundance muſt have been prejudicial; the only effect it could have would have been that of ſtill farther depreſſing the profits of thoſe who either had money to lend, or who employed it themſelves.

Let us now look at the effects on the property of a nation, which would be produced by diminiſhing the quantity of its money; and, in order that we may perceive and trace theſe effects more clearly, let us ſuppoſe a particular caſe. Let us ſuppoſe that the quantity of money brought into the market for the purchaſe of meat was diminiſhed: the immediate reſult would be, that each butcher, anxious to diſpoſe of his meat, would offer it below the uſual price; or, if we can ſuppoſe that they all perſiſted in ſeeking, and actually obtained the uſual price, then, in this caſe, part of the meat muſt remain unſold In either caſe, the butchers would carry home leſs money than uſual, and of courſe would be able to ſpend leſs on the commodities they were in the habit of buying; the venders of thoſe commodities, in their turn, would either be obliged to diſpoſe of them all at reduced prices, or there would remain unſold a part of them. This would happen if the money withdrawn were what was uſually laid out in articles of conſumption; but if it were what were uſually laid out on labour, and for the manufacture of commodities, it is plain that the price of labour would fall, and the ſupply of manufactured articles would be diminiſhed. In proceſs of time, no doubt all things would accommodate themſelves to this diminiſhed ſupply of money; but in the mean while induſtry would be checked, and the real ſtrength and proſperity of the nation would be affected.

It is a curious and difficult queſtion to ſolve, whether, under any circumſtances of the diminution of money, the ſupply of commodities would ſtill remain the ſame, ſo that, in fact, the only conſequence would be that all things would be cheaper; in the ſame manner, that the only conſequence of an increaſed ſupply of money may, under certain circumſtances be, that the price of commodities is raiſed; or whether, as on the latter ſuppoſition, the conſequence may be, either that the price is raiſed, or that induſtry being ſtimulated, the ſupply of commodities is increaſed in a proportion equal to the increaſe of money; ſo, on the former ſuppoſition, of a diminution of money, the conſequences may be either a diminution of price, or a proportional diminution of ſupply. One thing, however, is certain, that as it is ſcarcely poſſible for money to flow into a nation in greater abundance than formerly, without ſtimulating the induſtry of the nation, whatever may be its permanent effects on the price of commodities; ſo it is ſcarcely poſſible for money to be taken away from a nation, without checking its induſtry, whatever may be the effects of this meaſure on price.

Dr. Smith juſtly obſerves, that it is impoſſible to determine what is the proportion which the circulating money of any country bears to the whole value of the annual produce circulated by means of it; but though it is impoſſible to determine this, yet one rule for approximating towards the truth is laid down, which, as it ſeems to proceed on an erroneous idea of the nature of money, deſerves ſome notice in a diſcuſſion on the principles of that commodity. It has been ſaid, that the quantity of money required to conduct the commerce of any nation, muſt be directly as the amount of that commerce, and as the rapidity with which the money circulates; it is this latter diviſion of the rule for eſtimating the neceſſary quantity of money, that requires ſome notice, as proceeding on an erroneous idea of it. Whenever any commodity employed as money ceaſes to circulate, it ceaſes to be money; it is only money, ſtrictly and properly ſpeaking, while it circulates; and in the intervals of its circulation,

culation, be they long or ſhort, it ſuffers a temporary loſs of that character, becauſe it is not then performing the office of money. A thouſand guineas locked up in the cheſt of a miſer, or by any other means kept unemployed, can with no more propriety be called money than a thouſand ounces of plate, or a thouſand medals of gold in the ſame ſituation. The phraſe rapidity of circulation, therefore, ought to be ſet aſide, as conveying an erroneous idea. To put this in a ſtronger and clearer point of view ; let us ſuppoſe that the circulating medium of any country conſiſts of a million guineas ; and that there are coined at the mint an additional hundred thouſand : while theſe continue in the mint, it could not with any propriety be ſaid, that the circulating medium was increaſed one-tenth ; nor could this be ſaid, if, as ſoon as they were iſſued from the mint, they were locked up, and not brought into circulation. Let us now ſuppoſe, that the circulating medium conſiſts of 1,100,000*l.*, but that one-eleventh of this, or 100,000*l.*, are conſtantly unemployed : they, ſtrictly ſpeaking, could not be ſaid to conſtitute any part of the money of the nation ; nor, if they were thrown into regular and conſtant circulation, could it be ſaid that the rapidity of the circulation was increaſed, any more than it could be ſaid with propriety that the circulation was increaſed by the additional ſupply of one hundred thouſand guineas from the mint, or from the cheſt in which they had been locked up. It makes no real difference in the circulating medium of a country, whether the ſame hundred thouſand guineas are conſtantly locked up, or when a ſum to that amount, the guineas conſtituting it continually changing, is conſtantly unemployed : the circulating medium in both caſes would be actually increaſed, if that ſum were added to the money of the country ; *i. e.* if it were brought into conſtant uſe ; in neither caſe could it properly be ſaid that the rapidity of circulation was increaſed.

An erroneous idea, founded on a ſimilar miſconception of the real nature of money, is very generally entertained reſpecting the cauſe of a high or low rate of intereſt. That the rate of intereſt ſhould be low when money is plentiful in a country ; and that, on the other hand, it ſhould be high when money is ſcarce, are ſuppoſed to be the natural, obvious, and neceſſary conſequences of theſe circumſtances reſpectively. Now, as in the caſe of coin unemployed, it has not the character, and cannot fulfil the offices of money ; ſo in the caſe of money not brought into competition with any given commodity, it cannot affect the price of that commodity. There is as little reaſon to ſuppoſe that an increaſed quantity of money would directly and neceſſarily raiſe the price of meat, if it were all expended in the purchaſe of bread, as to imagine that this increaſed ſupply, merely becauſe it flows into a nation, ſhould lower the rate of intereſt : the rate of intereſt, like the price of all commodities, muſt depend on the proportion between the ſupply and demand : if the increaſed quantity of money is employed to enlarge the ſupply of money to be lent out at intereſt, while the demand continues the ſame, then the rate of intereſt will be lowered ; but if it is employed for any other purpoſe, then it can have no effect on the rate of intereſt. Such are the leading and moſt important topics connected with the diſcuſſion of the *principles* of money, to which alone this article has been confined. An attempt has been made to illuſtrate theſe principles, in the firſt place, by pointing out the real nature of money, or the qualities neceſſary in any commodity which is to be employed for the purpoſe of facilitating the interchange of what men poſſeſs for what they deſire ; in the ſecond place, by pointing out the modes in which money operates in the interchange of commodities ; and in the third place, by detailing and explaining the effects produced on the proſperity of a nation, by an increaſe or diminution in the ſupply of money. Some collateral and incidental topics have alſo been touched upon, all tending to the ſame object, *viz.* that of illuſtrating the nature of money, and the mode of its operations.

It has been thought proper to abſtain from introducing any diſcuſſion reſpecting the different kinds of money that have been, or are, generally employed, or reſpecting the queſtions to which this branch of the ſubject would naturally give riſe ; as whether, if metallic money is employed, one metal alone ſhould be the ſtandard and legal tender, and the others ſhould be permitted to circulate along with it, according to their market price ; or whether the proportions ſhould be fixed by law : the diſcuſſion of this point will fall under the head of SILVER. What are the advantages and diſadvantages of a metallic and paper currency ; and the various important queſtions connected with this branch of the ſubject of money ; theſe will fall under the head PAPER *Currency :* and what circumſtances affect the proportional value of the currency of one country, as compared with that of other countries ; theſe will be conſidered under the head PAR *of Exchange.* In the courſe of the preſent article, the nature of value has been ſlightly touched upon ; this will be more fully and particularly treated of under its proper head ; and ſome further illuſtration of the nature and operations of money, will occur under the articles PRICE, STOCK or *Capital,* and WEALTH, which could not ſo properly find a place in this article.

In noticing the authors that treat on the *principles* of money, it is ſcarcely neceſſary to mention Smith, in his Wealth of Nations ; on this, as on moſt of the fundamental topics of political economy, this author is perſpicuous and ſatisfactory, though he does not always exhauſt the ſubject on which he treats.

On the *principles* of money, much perhaps may be gained from his incidental illuſtrations, and from the general principle that pervades his works, and lies at the foundation of his ſyſtem, than from what he directly advances on the ſubject. Hume, in his eſſay "Of Money," has thrown out only ſome very luminous ideas, which, though not always exactly correct, as we have endeavoured to prove, yet almoſt unavoidably, in the mind of an attentive reader, give riſe, not merely to the perception of the error which they contain, but alſo to ſuch a train of reflections as ſtill further illuſtrate the ſubject. Indeed it is the ſingular merit of this author in his eſſays, that he guides and ſtimulates his readers to reflection. Sir James Stewart, in his Enquiry into the Principles of Political Economy, has entered pretty fully into the ſubject of money in the 28th chapter of his 2d book : there is a very ſtriking and eſſential difference between the works of this author and that of Smith in his Wealth of Nations. Throughout the whole work of Stewart, there is that want of methodical and luminous arrangement, that obſcurity and unſatisfactorineſs in reaſoning, and that claſhing and contradictorineſs of opinion, which muſt exiſt, where there are no clear and well grounded general principles eſtabliſhed and purſued. His chapter on money, however, contains many valuable and ſound doctrines ; puſhed in ſome inſtances too far, as where he endeavours to prove that an increaſe of money in a nation cannot affect the prices ; the opinion that it neceſſarily, uniformly, and permanently muſt raiſe the prices, is no doubt erroneous ; but if the illuſtrations in this article are correct, the contrary opinion, that it cannot produce this effect, is alſo erroneous. The controverſy which took place towards the cloſe of the 17th century reſpecting the ſtate of the currency, and that which took place a few years ago, gave riſe to many pamphlets, ſome of which treat directly and entirely on the principles of money, and others of them only incidentally; theſe are, of courſe, of various merit, and will not add much that is ſatisfactory and ſolid to what may be gathered from Smith, Hume, and Stewart.

Money, *Falſe*, or *Baſe*, is either ſtruck by an unqualified perſon, and of unſtatutable metals; or that which has loſt of its weight, either by being clipped on the corners, or filed on the edges: or, laſtly, by having ſome of its ſurface eaten off; if gold, by aqua regia: if ſilver, by aqua fortis.

Another kind of baſe money is that made of pieces of iron, copper, or other metal, covered on each ſide with a thin plate or leaf of gold or ſilver, neatly ſoldered and joined round the edges, and ſtruck, like other coin, with figures, legends, &c. only to be diſtinguiſhed from them by the bulk and weight, and ſound.

Money-*Bills*, in *Parliamentary Language*, comprehend all bills, by which money is directed to be raiſed upon the ſubject, for any purpoſe or in any ſhape whatſoever; either for the exigencies of government, and collected from the kingdom in general, as the land-tax: or for private benefit, and collected in any particular diſtrict, as by turnpikes, pariſh-rates, and the like. With reſpect to theſe bills, the commons are ſo reaſonably jealous of their privilege of framing new taxes for the ſubject, that they will not ſuffer the other houſe to exert any other power but that of rejecting: they will not permit the leaſt alteration or amendment to be made by the lords to the mode of taxing the people by bills of this nature.

Money, *Cert.* See Cert-money.

Money, *Chimney*, *Madning*, *Poll*, *Preſt*, *Preſtation*, *Salvage*, *Ship*, and *Trophy*. See the ſeveral articles.

Money-*wort*, in *Botany*. See Nummularia.

MONEYERS, Moneyors, or *Moniers*, officers of the mint, who work and coin gold and ſilver money; and anſwer all the waſte and charges.

Moneyers is ſometimes alſo uſed for hawkers; or thoſe who make a trade of turning and returning money.

MONEYGALL, in *Geography*, a ſmall poſt-town of Ireland, in the King's county. It is 69 miles S.W. from Dublin, and 10 S.W. from Roſcrea.

MONEYMORE, a ſmall poſt-town of the county of Londonderry, province of Ulſter, Ireland, in the ſouthern part of the county. It is 83 miles N. from Dublin, and two miles from Cookſtown.

MONFALCO, a town of Spain, in Catalonia; 5 miles N.E. of Cervera.

MONFALCONE, a town of Italy, capital of a ſmall principality of the ſame name, ſeated on the coaſt of the Adriatic, and containing about 1200 inhabitants; the whole territory comprehends 20 villages, and about 4600 inhabitants; 15 miles N.W. of Trieſte. N. lat. 45° 53′. E. long. 13° 30′.

MONFALOUT, or Momflot. See Manfalout.

MONFIA, an iſland in the Indian ſea, near the coaſt of Africa, governed by a king, tributary to the Portugueſe; about 60 miles in circumference. S. lat. 7° 30′.

MONFORT-l'Amaury, a town of France, in the department of the Seine and Oiſe, and chief place of a canton, in the diſtrict of Verſailles. The place contains 2400, and the canton 15,809 inhabitants, on a territory of 212½ kiliometres, in 28 communes.

MONFORTE, or Montfort, a town of Portugal, in the province of Tras-los-Montes; 33 miles W. of Bragança.—Alſo, a town of Spain, in Valencia; 13 miles W.N.W. of Alicant.—Alſo, a town of Portugal, in the province of Alantejo; 12 miles S. of Portalegre. N. lat. 38° 56′. W. long. 7° 12′.—Alſo, a town of Portugal, in Beira; 15 miles S.E. of Caſtel Branco. N. lat. 39° 38′. W. long. 6° 58′.—Alſo, a town of Sicily, in the valley of Demona; 10 miles W.S.W. of Meſſina.

Monforte *de Lamos*, a town of Spain, in Galicia; 15 miles N.N.E. of Orenſe.

MONGAELLI, a ſea-port of Madagaſcar, on the W. coaſt. S. lat. 13° 55′.

MONGAGUBA, a river of Brazil, which runs into the Atlantic, S. lat. 9° 20′. W. long. 34° 56′.

MONGALLO, or Gallo, a kingdom of Africa, N. of Mocaranga; having a capital of the ſame name, on a river called Mongallo, which runs into the Indian ocean, S. lat. 10° 5′. E. long. 39° 14′.

MONGALORE, a town of Hindooſtan, in the Carnatic; 15 miles W. of Gingee.

MONGAN, a town of Chineſe Tartary. N. lat. 41° 46′. E. long. 123° 54′.

MONGANORE, a town of Hindooſtan, in Golconda; 12 miles W.N.W. of Rachore.

MONGAS, a country of Africa, S. of Sofala, furniſhing a great quantity of gold, particularly at Maſſapa and Maninas, and the mountain of Ophir, whence, as ſome have ſuppoſed, Solomon derived his treaſures. The Portugueſe are ſettled at Maſſapa, under the government of Mozambique.

MONGASABA, a town of Hindooſtan, in Oude; 28 miles N. of Kairabad.

MONGAULT, Nicholas-Hubert de, in *Biography*, a man of letters, who was born at Paris in 1674, entered, at an early age, into the congregation of the Fathers of the Oratory, and was ſent to ſtudy philoſophy at Mans. The ſyſtem then taught in the ſchools was that of Ariſtotle, which, as Mongault could not comprehend, he did not ſcruple to reject, and adopted that of Deſcartes in its ſtead, the principles of which he openly maintained in public exhibitions. His want of health obliged him to retire, in 1699, to the college of Burgundy, at Paris, where he finiſhed a tranſlation of Herodian, which was publiſhed in the following year. In a few months afterwards, he publiſhed the firſt volume of a tranſlation of the "Letters of Cicero to Atticus," and almoſt immediately after, Colbert, archbiſhop of Toulouſe, gave him apartments in his palace. In a ſhort time the ſuperintendant Foucault, who wiſhed for the converſation and ſervices of a man of learning, prevailed upon Mongault to reſide with him, and obtained for him admiſſion into the Academy of Inſcriptions and Belles Lettres. In 1710, the duke of Orleans appointed him tutor to his ſon, the duke of Chartres: in this ſituation he is celebrated by Duclos, in his Memoirs of the Regency, as "a man of parts and erudition; a theologian, who thought freely on the ſubjects of religion;" but whether he thought his pupil incapable of enlightened principles, or that princes ſhould themſelves be ſubjected to the moſt powerful reſtraints, he certainly endeavoured to impreſs on the mind of the young prince a ſyſtem of religion which had a tendency to excite the greateſt degree of terror. The reſult was, as might have been expected, that after his father's death, the youth went into all the auſterities of monkiſh devotion, in which he continued till his death. The abbè's ſervices were, however, ſo well received by the family, that he obtained, through their means, ſeveral church benefices and civil places. For many years of his life he was ſubject to melancholy, but when free from this complaint, his converſation was lively and inſtructive. He died in 1746: beſides his tranſlation of Cicero's letters, in ſix volumes, he publiſhed two diſſertations in the Memoirs of the Academy of Inſcriptions. He was admitted into the French academy in 1718. Moreri.

MONGELLA, in *Geography*, a ſmall iſland in the Perſian gulf, near Cape Bardiſtan. N. lat. 27° 37'.

MONGER, a little ſea veſſel which fiſhermen uſe.

When a word ends with *monger*, it ſignifies *merchant*; from the Saxon *manger*, i. e. *mercator*.

MONGERAH, in *Geography*, a town of Hindooſtan, in Oude; 55 miles N.W. of Manickpour.

MONGHIR, a town and fortreſs of Hindooſtan, in Bahar, on the S. coaſt of the Ganges; 40 miles E. of Bahar. N. lat. 25° 25'. E. long. 86° 36'.

MONG-HOA, a city of China, of the firſt rank, in the province of Yun-nan, to which no diſtrict belongs; it is ſurrounded with high mountains, which abound with the animals that yield muſk. N. lat. 25° 18'. E. long. 100° 4'.

MONGIA, or MUGIA, a ſea-port town of Spain, in Galicia, near the ſea-coaſt; 35 miles W.N.W. of Compoſtella.

MONGIARDIA, a town of the Ligurian republic; 23 miles N. of Genoa.

MONGLEE, a town of Hindooſtan, in Dowlatabad; 28 miles S. of Renapour.

MONGLEGOARRY, a town of Hindooſtan, in the circar of Guntoor; 12 miles E. of Guntoor.

MONGLETORE, a town of Hindooſtan, in Golconda; 30 miles S.W. of Rachore.

MONGOL, one of the ſmall Philippine iſlands, N.E. of Maſbate. N. lat. 12° 14'. E. long. 123° 55'.

MONGOLBONG, one of the ſmaller Philippine iſlands, E. of Maſbate. N. lat. 12° 10'. E. long. 124°.

MONGOLES, MONGULS, or *Moguls*, a people of ancient origin, and of widely extended dominions in the north-weſtern parts of Aſia; whoſe conqueſts, as far as hiſtory can trace them, might be conſigned to oblivion, if they had not produced in ſucceſſive ages ſignal revolutions in the ſtate of governments and of mankind. It is not eaſy to ſeparate them from the people called Tartars, or to aſcertain their firſt riſe, and their early progreſs towards that vaſt empire which they ultimately acquired. Both the Moguls and Tartars are ſaid to have been the deſcendants of Japhet, the eldeſt ſon of Noah. The progeny of Magog, Meſhech, and Tubal, as many learned men have maintained, planted both the Scythias, and conſequently the country of the ancient Moguls and Tartars. The Tartars claim priority of origin, and pretend to be deſcended from Turk, the eldeſt ſon of Japhet, whom they call Japhis. From their ancient anceſter they derive the name of Turks, which they ſeem to have retained till the time of Jenghiz Khan. This name was ſucceeded by that of Tartars or Tatars; and this appellation was afterwards changed by ſome of their tribes into that of Monguls or Moguls, which appellation prevailed till the dominion of the people, thus denominated, over the ſouthern provinces of Aſia expired, when the former name was again reſumed. The immediate ſucceſſor of Turk was his ſon Taunak, who contributed to enrich and aggrandize the nation over which he preſided; and the government deſcended in this line, from which Timur Beg at a future period is ſaid to have ſprung. One of theſe princes, called Alanza Khan, having twin ſons, *viz.* Tatar and Mogul, or more properly Mung'l, divided his dominions between them, not long before his deceaſe. From Tatar Khan, the Tatars or Tartars derived their name, as the Moguls deduce theirs from Mogul or Mung'l Khan. The latter prince, the firſt monarch of the Moguls, was of a very melancholy diſpoſition, which circumſtance gave occaſion to his name; *Mung*, in the Tartarian language, ſignifying *melancholy*. At his death he left four ſons, from the eldeſt of whom, in a direct line, deſcended the famous Jenghiz Khan. Kara Khan, the eldeſt of theſe ſons, aſcended the throne upon the deceaſe of his father; and the Tartars ſay, that in his time the true religion was baniſhed out of the world, and idolatry ſubſtituted in its place. His ſon and ſucceſſor, Ogus Khan, is ſaid to have worſhipped the true God; and iſſued an order, that every one in his dominions ſhould embrace the true religion. Ogus Khan was a valiant and victorious prince, and ſubdued by his arms the people of Kitay or Kathay, and thoſe of other nations. Ogus Khan, who extended his conqueſts through a long reign, as the Tartars ſay, of 116 years, was held in high veneration over a great part of the Eaſt, and regarded as the greateſt hero, except Jenghiz Khan, that ever lived in the eaſtern parts of the world, by the Turks and Tartars of all denominations. The Ottomans, or Ottoman Turks, ſo called in contradiſtinction to the Turkiſh or Tartarian tribes ſettled in Great and Little Tartary, from him aſſume the name of Oguzians; and pretend that the Othman or Ottoman family is deſcended in a direct line from Ogus Khan. The Tartar hiſtorians blend many fictions with their account of the Tartarian and Mogul princes, ſo that at this diſtance of time, and without the aſſiſtance of collateral records, it is impoſſible to diſtinguiſh between the true and the fabulous relations which their hiſtory contains. Although they are miſtaken in their chronology, as is the caſe particularly with Abu'l Ghazi Bahadur, whoſe Tartarian MS. containing the genealogical hiſtory of the Turks, Tartars, and Moguls, was brought into Europe by M. Von Strahlenberg, by him tranſlated into the German tongue, and afterwards into French, and publiſhed at Leyden in 1726, who refer Ogus Khan to the ninth generation from Noah; it nevertheleſs appears, that this prince was at the head of a powerful nation in the Eaſt, from which the preſent Tartars ſprung, and rendered himſelf famous by his conqueſts. Some have ſuppoſed, that this Ogus Khan was the ſame with the Madyes of Herodotus, and, therefore, that the conqueſts of this prince terminated in the reduction of the Upper Aſia, and that he put an end to his expeditions about the year 631 B.C.

Diſmiſſing the ancient hiſtory of the Mongoles or Moguls, between whom and the Tartars many contentions ſubſiſted for ſeveral ſucceſſive ages, we ſhall confine our account of them, in the ſequel of this article, to a later period. In the 9th century theſe nations appeared roaming about the northern ſide of China and Corea; in the weſt, or Modern Mongolia, the Mong-u, afterwards called Monk-kos and Mongoles; further to the eaſt, the Kitanes; and laſtly, beyond Corea, as far as the eaſtern ocean, the Niudſches or Kin, who, generally ſpeaking, are the ſame people with the Tungnſes, and the Mandſchu or Mantchew, the preſent ſovereigns of China. Theſe three people, gradually increaſing, became at length powerful nations; though at firſt they were weak and inconſiderable. In the 10th century, the Kitanes firſt ſubdued the two other nations, and then the northern provinces of China. The Niudſches, however, ſoon rebelled, and being called to their aſſiſtance by the Chineſe, gained the aſcendancy over them, as well as the Kitanes. Upon this, a part of the latter retreated weſtwards, and took poſſeſſion of the Leſſer Bucharia, where they have ſince borne the name of Karakitans, or Karakitayans. In the mean time the Niudſches ruled over the north of China, and the Mongoley as far as the eaſtern ocean. The Mongoles were divided into ſeveral hordes, who, notwithſtanding the ſupremacy of the Niudſches, had their own khans. It was one of theſe petty princes, Temudſchin or Temulin, who, under the name of Tſchinghis-khan, or Jenghiz-khan, became the founder of a new monarchy, and one of the moſt memorable ravagers of the world. He was only thirteen years old, on the death of his father in 1176, when he became ſovereign of 40,000 families. His career laſted twenty years; during which time he deſolated the countries and ſubjected the people from the Mongoley and from China to the further Aſia, and in Europe quite up to the ſhores of the Dnieper. In the firſt three years of his warfare, he ſubdued the Naimanes, Kirghiſes, and the other Tartarian hordes. He received the voluntary ſubmiſſion of the Igures, a poliſhed nation, who communicated the art of writing to the Mongoles, from whom afterwards the Mandſchu received it. About the ſame time he preſſed forward into the north-weſtern parts of China, and made the king of Tangut his vaſſal. Soon after he turned his arms againſt the Niudſches, proceeding in his conqueſts, murder, and rapine, as far as the capital of Irnking, forced it to ſurrender, and found in it the wiſe Ilidſchutzay, a truly great and noble-minded man, whom he made his firſt officer of ſtate; and who not only reſcued ſeveral millions of perſons from their impending fate, who would otherwiſe have fallen victims to the ſavage Mongoles, but who may be alſo juſtly ſaid to have created the Mongolian ſtate, by poliſhing the manners of that people, and, as far as he was able, diſſeminating among them the arts and ſciences. While the Mongolian army was fighting againſt the Niudſches, in 1217, the flames of war broke out with increaſing fury on the weſtern ſide of the Mongolian empire, which, in proceſs of time, communicated to all the countries round, and the Mongoles advanced to nether Aſia, and thence again to Europe. Having defeated Keſchluk, king of the Naimanes, and cauſed the country to ſubmit, Tſchinghis haſtened to meet the ſultan of Khovareſm, who had cauſed his ambaſſador to be ſlain, and who was his mightieſt and moſt dangerous adverſary, and obliged him to ſubmit. In 1220, Khovareſm, the capital, was captured, and on this occaſion the number of the killed amounted to upwards of 100,000 perſons, and every Mongolian warrior received to his own ſhare twenty-four ſlaves. About the ſame time all the countries and nations round, as far as the Oxus, ſubmitted to his arms. Tſchinghis now diſpatched an army acroſs that river, took Khoraſan, and drove the new khovareſmian ſultan to India. Another army was engaged in China againſt the Niudſches; a third was making conqueſts in Kaptſchak, on the N. ſide of the Caſpian; and a fourth, which had reduced the countries on the S. ſide of that ſea, was now advancing againſt the Kaptſchaks. In 1223, the Polovtzes, a branch of the Kaptſchaks, and Ruſſians loſt the great battle on the Kalka, and were purſued as far as the Dnieper by the Mongoles; who, without proceeding farther into Ruſſia, returned, laden with their booty, by Kaptſchak to Bucharia, to join Tſchinghis. In this year Tſchinghis convoked a general diet, in which was ſettled the form of government to be adopted by the conquering countries. His intended progreſs to India was reſiſted by the army; and, therefore, after an abſence of ſeven years he returned, in 1225, to Mongoley; but in the following year he was obliged to undertake a campaign againſt the rebellious Tangut. The Mongoles penetrated acroſs the great ſandy deſert into that country, and were every where victorious; the royal race was exterminated, and the inhabitants were ſlaughtered in ſuch ſhocking multitudes, that ſcarcely one in fifty was ſpared. After this conqueſt, and when Tſchinghis was meditating the deſtruction of the empire of the Niudſches in China, death, in 1227, terminated all his projects. Oktay, the ſon and ſucceſſor of Tſchinghis, put an end to the empire of the Niudſches in China, and reduced the whole northern China to his authority: he then made war upon the kings of Corea, and determined, with an army of more than a million and a half of men, to overrun the world from one end of one hemiſphere to the other. With 600,000 of his troops he marched in perſon againſt the dynaſty of Song in ſouthern China; while the main body of his army, under the command of his ſon Kayuk and his nephews Baaty and Menku, proceeded to the weſt. In their progreſs they ſubdued the Tcherkaſſes and Avkhaſes, penetrated the Baſchkirey, into Kazan and Bulgaria, and finally came to Moſcow. Fourteen Ruſſian towns were burnt in one month, February 1238. Baaty proceeded toward Novgorod, and ordered all the inhabitants in his paſſage to be maſſacred: but ſuddenly changing the direction of his march, he haſtened to the regions of the Polovtzes and Bulgarians on the Volga. After a deſperate reſiſtance of ten weeks, Kief ſurrendered (1240), and received a Mongolian viceroy. All Ruſſia, except Novgorod, was now tributary to the Mongoles, who every where appointed viceroys, without expelling the Ruſſian princes. Baaty khan, with two great armies, ravaged Poland, Sileſia, and Moravia; marched in perſon into Hungary, pillaged and murdered wherever he went, both here and in Slavonia, Boſnia, Servia, and Bulgaria. While the Mongoles were committing ſuch horrors in Europe, and proſecuting the war againſt the Coreans and the ſouthern Chineſe, they overran likewiſe, with their numerous hoſts, the hither Aſia. A force was ſent through Tſcherkaſſia, or Circaſſia, to make an incurſion upon Armenia; and the Mongoles penetrated into the regions of Arbela, marched through Nineveh, approached Bagdad, conquered Erzerum, ravaged and ſubjugated ſeveral cities and diſtricts of the Leſſer Aſia, and in 1242 made the ſultan of Iconium their vaſſal. In the following year they purſued their inroads into Syria, and came to Aleppo. The death of Oktay ſaved Aſia for a time, and Europe for ever. After an interregnum of four years, the ſucceeding grand khan Kayuk made formidable preparations for war in Europe, but death defeated his projects. His ſucceſſor Menku aboliſhed the caliphate, and ſubjected the ſultan of Iconium and Aſia Minor, as far as the ſtraits of Conſtantinople, to the Mongolian authority. Menku was ſucceeded in 1259 by Koblay. The diſtance of the paramount ſovereign from the other Mongolian ſtates, which extended from the eaſtern ocean as far as the Dnieper and the Mediterranean ſea, accelerated by diſcord and ambition the diſſolution of this enormous monarchy, which now ſeparated into the following extenſive ſtates, *viz.* China, Iran or Perſia, as far as the hither Aſia, Dſchagatay or Tchagatay, ſo called after its founder, Kaptſchak, and Turan; which ſee reſpectively. The next ambitious conqueror, or cruel deſtroyer, as we may call him, that occurs to our notice in the hiſtory of the Mongoles, is Timur or Tamerlane, who was prince of Keſch, near Samarcand, about the time when the Mongoles were entirely expelled from China. His dominion took its riſe in Grand Bucharia, a part of the ancient Dſchagatay. Having ſucceeded in the reduction of that empire, he received, in 1369, the homage of the grandees, and the title of the ſovereign of the world. Of his expeditions and conqueſts we have given ſome account under the article MOGUL *Empire*, and referring to his biographical article, we ſhall here only ſay that juſt as he was preparing to reſtore the dominion of the Mongoles in China, he was removed by death. His ſucceſſors loſt, one after another, all the countries which Tamerlane had left them, Bukharay and Khoraſan excepted; and even theſe the laſt khan Baber, in 1498, was obliged to abandon, who, however, from being an outcaſt and a fugitive, became the founder of the ſtate of Grand

Mongolia in Hindooſtan. With the fall of the Grand Mongolian empire of the Tſchinghiſes began alſo the epocha of their decline: the diſſolution into ſmaller ſtates, which parted again into ſmaller ſtill, and were then reduced to ſubjection, at length brought about a diviſion into ſtems and hordes, and, conſequently, a complete retrogradation from the ſtate of civilization to the condition of raw uncultivated man. It appears that many centuries ago the Mongoles were divided into two leading nations, whoſe partition might probably be owing either to national circumſtances, or to a natural ſeparation by mountains, and afterwards kept up by the ſeparate intereſts of their princes, or from a national enmity occaſioned by perpetual diſſentions. Theſe two nations were brought to a union into one common ſtate by the great Tſchinghis; but on the deſtruction of the monarchy which he had erected, they were ſeparated again by the ancient feuds, and have ever ſince, to their mutual ruin, been engaged in almoſt perpetual hoſtilities. The Mongoles, properly ſo called, compoſe the one, and the Doerbœn-Oiræt the other of theſe nations. Doerbœn-Oiræt means the quadruple alliance, and is the common appellation of four principal races, *viz.* the Oeloet, Kho-it, Tummut, and Barga-Burat. The Oeloet conſtitute that branch, which in Weſtern Aſia and in Europe is known under the name of *Kalmucks*, which ſee: the ſecond ſhoot, Kho-it, is almoſt extinct, if we except ſome remains among the Soongares and Mongoles: of the Tummut, even the place of their preſent abode is not certainly known; and the fourth ſtem, Barga-Burat, which probably, at the time of the troubles excited by Tſchinghis, took up its reſidence in the mountains about the Baikal, has, with all its branches, ever ſince the conqueſt of Siberia, been under the Ruſſian ſovereignty. The Mongoles comprehend the remainder of that people who were driven out of China in the 14th century by the dynaſty of Ming, and are at preſent for the moſt part under the Mandſhur ſovereigns of that empire; though a ſmall portion of them own the Ruſſian ſceptre. Since the demolition of the Soongarian authority, and the reſtoration of peace in the Mongoley, they have inhabited the ſpacious region between Siberia and proper China, from the eaſtern ocean to the Soongarey; and at preſent there is ſcarcely any diſcernible difference between the yellow Mongoles, living from remote ages under the Chineſe protection, and the former Tſchinghiſes or Kalkas-Mongoles. See KALKAS.

When Siberia was conquered by the Ruſſians at the beginning of the 17th century, the Mongoles were ſtill a numerous and free people, governed by their own khans, under whoſe ſovereignty were alſo ſeveral Siberian nations. At firſt they ſubmitted to the Ruſſian arms; ſoon afterwards they regained their liberty, and even granted ſupport to ſeveral nations of Siberia in their reſiſtance to that power. In their inteſtine wars with the Kalmucks, they were generally conquerors, with the loſs, however, of one race after the other. Their frequent and bloody wars with China were ſtill more unfortunate in their iſſue, as their perpetual feuds finally terminated in a complete ſubjugation. At preſent they are not in a condition to liberate themſelves from the yoke; though they have preſerved their paternal ſeat, and oſtenſibly live under the government of their own hereditary princes. The Mongoles, who now form a part of the inhabitants of the Ruſſian empire, withdrew themſelves in the 17th century from the Chineſe dominions, and put themſelves under the Ruſſian ſupremacy; but this ſeceſſion was reſtrained by a border treaty entered into in the 18th century between Ruſſia and China, the former ſtipulating not to give admittance any more to Mongolian runaways. The Ruſſian Mongoles inhabit the regions about the Selenga in the Irkutſkoi diſtrict of the government of Irkutſk, their dwelling place extending from the 122d to the 125th degree of longitude, and between the 50th and 53d degree of north latitude. They conſiſt of ſeven ſtems, and theſe of 20 families or "aimaks," which, by the enumeration of the year 1766, compriſed, beſides 219 baptized, 6918 males.

The vaſt country of the Mongoles or Moguls is bounded on the N. by Siberia, on the E. by Eaſtern Chineſe Tartary, on the S. by the great wall and Leao-tong, and on the W. by Independent Tartary. It was partly from theſe dry deſerts that thoſe conquerors iſſued, who made all Aſia tremble. The Mogul nation is ſub-divided into a multitude of others, who all ſpeak the ſame language, called the Mogul language, comprehending ſeveral dialects underſtood by one another. Theſe have neither towns, villages, nor houſes; they form themſelves into wandering hordes, and live under plain tents, which they tranſport from one place to another, according to the temperature of the different ſeaſons, or the wants of their flocks; they paſs the ſummer on the banks of rivers, and the winter at the foot of ſome mountain, or little hill, which ſhelters them from the ſharp north wind. Each of theſe tribes has its reſpective limits, nor can they go beyond them without being thought to commit an act of hoſtility. They are naturally clowniſh, and dirty in their dreſs, as well as in their tents, where they live amidſt the dung of their flocks, which, when dried, they burn as fuel. Enemies to labour, they ſatisfy themſelves with the food ſupplied by their flocks rather than take the trouble of cultivating the earth; they neglect agriculture more from pride, alleging that "the graſs was for beaſts, and beaſts for man." The men hunt the numerous beaſts, and game, that roam through their vaſt wilds; the women tan leather, dig the culinary roots, prepare the winter proviſions dried or ſalted, and diſtil the koumiſs, or ſpirit of mares' milk. In ſummer they live only on milk, uſing, without diſtinction, that of the cow, mare, ewe, goat, and camel. Their ordinary drink is an infuſion of coarſe tea in warm water; with which they mix cream, milk, or butter, according to their circumſtances. Before they diſtil their ſour milk, thoſe of better condition mix with it ſome of the fleſh of their ſheep, which, as well as the milk, has been left to ferment. This liquor is ſtrong and nouriſhing; and their moſt voluptuous orgies conſiſt in getting drunk with it. Mead and brandy are now great favourites with them. The Moguls are rather ſhort in ſtature, with flat viſage, ſmall oblique eyes, thick lips, and a ſhort chin, with a ſcanty beard. Their ears are large and prominent, the hair black, and the complexion of a reddiſh or yellowiſh-brown; but that of the women is clear, and of a healthy white and red. They have ſurpriſing quickneſs of ſight, and apprehenſion. In their diſpoſition they are free, open, and ſincere; they are docile, hoſpitable, beneficent, active, and voluptuous. Induſtry is a virtue, entirely female; and though great, it is accompanied with perpetual cheerfulneſs. They pride themſelves chiefly on their dexterity in handling the bow and arrow, mounting on horſeback, and hunting wild beaſts. Polygamy is allowed, though they commonly content themſelves with one wife; marriages are celebrated at an early age, and the bride brings a dower in cattle or ſheep. Their tents are circular, in form of the fruſtum of a cone, and covered with a large piece of white or grey felt. A round hole in the top gives paſſage to the ſmoke, which riſes from a fire made in the middle of the tent. Theſe tents, which they have been accuſtomed to prefer to the Chineſe houſes, are cold in winter, and inſupportably warm, and noxiouſly damp, in ſummer.

The tents of the nobles are hung with ſilk, and the floor covered with Perſian carpets. The houſhold utenſils are numerous; and in the ſuperior tents are veſſels of pewter, ſilver, and porcelain. Their dreſs conſiſts of a flat yellow bonnet, which covers the head that is ſhaven, except one lock, wide trowſers, a veſt of light ſtuff with narrow ſleeves, and a girdle, which ſupports the ſabre, knife, and implements for ſmoking tobacco. The outer veſtment is of cloth, or ſkin, with wide ſleeves, and linen is wound about the feet, over which are drawn buſkins of leather, generally black or yellow. Shirts are unknown. The dreſs of the women is the ſame, but inſtead of the outer garment they wear a gown without ſleeves. The ſkins, which they uſe for clothing, are generally thoſe of ſheep; the wool ſide being inmoſt, and the ſkin on the outſide. They are well acquainted with the method of preparing and whitening theſe ſkins. But theſe ſkins, however carefully prepared, exhale a ſtrong and diſagreeable ſmell, on which account they are called by the Chineſe "Tſao-tatſe," ſtinking Tartars. The hair of the females is long, and plaited in treſſes.

When paſturage begins to fail, all the tribes ſtrike their tents, generally from ten to fifteen times in the year, proceeding in the ſummer to the northern, and in the winter to the ſouthern wilds. The herds, men, women, and children, form a regular proceſſion; and are followed by the girls, ſinging with harmony and ſpirit. The amuſements of theſe jovial wanderers conſiſt in running races on horſeback, in which even the girls excel; archery, wreſtling, pantomime, dances, and the ſongs of the young women, generally accompanied by the lute, viol, and pipe; the themes of their ditties being tales of gigantic chivalry, and amorous adventures and ſentiments; but the melody is harſh and diſmal. Cards are not unknown, but the favourite game is cheſs. The bodies of the princes and chief men are burned with many ſolemnities; and the tombs are ſometimes walled, and ornamented with high poles and fantaſtic drapery. They are unacquainted with the uſe of money, and trade only by barter. Such, alſo, with ſome ſhades of difference, are the manners of the Tartars and Mandſhurs. In the Mogul language there are many books written in the various countries to which their wide conqueſts extended.

The religion of the Mogul Tartars is confined to the worſhip of Fo. For their "Lamas" they entertain the moſt ſuperſtitious veneration; though theſe are clowniſh, ignorant, and licentious prieſts, yet to them they attribute the power of calling down hail or rain; and to them they give the moſt valuable of their effects in return for prayers, which they go about reciting from tent to tent. Theſe people are very devout, and continually wear hanging at their necks a kind of chaplet, over which they ſay their prayers.

All the Moguls are governed by khans, or particular princes independent one of the other, but all ſubject to the emperor of China, whom they conſider as the grand khan of the Tartars. When the Mantchews ſubdued China, they conferred on the moſt powerful of the Mogul princes the titles of "vang," "peilé," "peizé," and "cong," which correſpond to our titles of king, duke, count, and marquiſs; each of them had a revenue aſſigned him, but far inferior to the appointments of the Mantchew lords at Pe-king. The emperor ſettled the limits of their reſpective territories, and appointed the laws, according to which they are at preſent governed. Theſe tributary khans have not the power of condemning their ſubjects to death, nor of depriving them of their poſſeſſions: the two caſes of death and confiſcation being reſerved for the ſupreme tribunal eſtabliſhed at Pe-king for the affairs of the Moguls, to which every individual may appeal from the ſentence of his prince, who is obliged to appear in perſon whenever he is cited.

All the Mogul nations, under the Chineſe government, of which we have given an account in the cloſing paragraph of this article, are divided into four principal tribes, which are the Moguls, properly ſo called, the Kalkas, Ortous, and Tartars of Kokonor. The country of the Moguls, according to the map of Chineſe Tartary, taken from the Memoirs of the Jeſuits, extends more than 300 leagues from E. to W., and 200 from N. to S.; it is incloſed between the country of the Ortous, the great wall, Eaſtern Tartary, and the country of the Kalkas; theſe people compoſe 49 "ki," or ſtandards; every ſtandard comprehending an indeterminate number of companies, each of which conſiſts of 150 heads of families; and each company may be reckoned to contain 1000 individuals. Beſides theſe 49 ſtandards, there are five others, under the immediate government of the emperor of China, and commanded by officers whom he ſends thither.

The beſt cultivated canton of all the Mogul territories is the diſtrict of "Cartching," near the great wall, where the emperor every year hunts, and where he has cauſed to be built ſeveral pleaſure-houſes, the principal of which is "Geho." The extenſive domains in this diſtrict, belonging to the emperor, are let out to farmers, and the number of cattle kept by them is immenſe. It has been ſaid that they reckoned there 190,000 ſheep, diſtributed into 225 flocks, and almoſt as many oxen and cows, divided into herds, each of which contained 100. The number of ſtallions there is more conſiderable. Theſe riches in farms, ſtuds and flocks make greater impreſſion on the minds of the Tartar and Mogul princes, and render them much more ſenſible of the majeſty of the emperor, than all the magnificence of his court at Pe-king. Anc. Un. Hiſt. vol. xviii. Tooke's Ruſſia, vol. i. Groſier's China, vol. i. See MOGUL *Empire*, and TARTARY.

MONGON, a town of Peru, ſituated on its coaſt, in the ſouth Pacific ocean; 10 leagues N. of the harbour of Guarmey, and four leagues from Bermajo iſland: it is known at ſea by a high mountain juſt over it, which is ſeen at a greater diſtance than any others on this part of the coaſt.

MONGON, *Cape*, lies on the S. ſide of the iſland of St. Domingo.

MONGOOSE, or MONGOOZ, in *Zoology*, is a ſpecies of *lemur* in the Linnæan ſyſtem, the woolly maucauco of Pennant, and by ſome called the Macaſſar fox. See LEMUR *Mongoz*.

MONGOPUNGOLE, in *Geography*, a town of Hindooſtan, in the circar of Meywar; 36 miles E. of Cheitore.

MONGOU KIAMEN, a poſt of Chineſe Tartary. N. lat. 44° 46′. E. long. 125° 28′.

MONGUILLEM, a town of France, in the department of the Gers; nine miles N.W. of Nogaro. N. lat. 43° 52′. W. long. 0° 7′.

MONGUIPATANE, a town of Hindooſtan, in the circar of Aurungabad; 24 miles S. of Aurungabad.

MONGULCOTE, a town of Hindooſtan, in Bengal; 18 miles N. of Burdwan.

MONGULHAUT, a town of Hindooſtan, in Bengal; 16 miles N. of Rungpour.

MONGUMMA, a town of Hindooſtan, in Boggilcund; 15 miles N.E. of Rewah.

MONHEGAN, or MENHEGAN, a ſmall iſland in the

Atlantic ocean; 12 miles S.E. of Pemaquid Point, in the county of Lincoln and ſtate of Maine.

MONHEIM, a town of the duchy of Berg, on the Rhine; nine miles S.S.E. of Duſſeldorp.—Alſo, a town of Bavaria, in the principality of Neuburg; 18 miles W.N.W. of Neuburg. N. lat. 48° 47′. E. long. 10° 46′.

MONI, a ſmall iſland in the gulf of Engia.

MONIAGUR, a town of Hindooſtan, in Concan; 48 miles N. of Bancout.

MONIAN, a town of Bengal; 20 miles S. of Calcutta.

MONIEH, one of the ſmaller Hebrides. N. lat. 57° 28′. W. long. 7° 36′.

MONJES, a cluſter of ſmall iſlands in the Spaniſh main, near the coaſt of South America. N. lat. 12°. W. long. 70° 40′.

MONIGLIA, Gio. Andrea, of Florence, in *Biography*, member of the academy della Cruſca; a phyſician by profeſſion, was author of a great number of poems for muſic. He may be regarded, ſays M. Laborde, as one of the firſt who began to reform the abuſes of the age; but this was only in his dramatic works, they were all printed at Florence, and dedicated to the grand duke, in 1698. He was eſtabliſhed in the ſervice of his court, which, by very expenſive efforts, ſeems to have delighted in the exhibition of whatever the wild imagination of poets could invent. His works were brought on the different ſtages of Italy from 1657 to about 1680.

MONIKEDAM, or Monikendam, in *Geography*, a ſea-port town of Holland, on the river Monick, on the borders of the Zuyder ſee, with a ſmall port; nine miles N.E. of Amſterdam. N. lat. 52° 29′. E. long. 4° 52′.

MONILIA, in *Botany*, from *monile*, a necklace, alluding to the beaded appearance of the threads, which are ſuppoſed to be the ſeat of the fructification. Perſ. Syn. Fung. 691. Obſ. Mycolog. faſc. 2. t. 4. f. 8, 9. (Aſpergillus; Mich. Gen. 212. t. 91.)—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Stalked or diſperſed, fibrous. Threads beaded or jointed.

Perſoon defines 12 ſpecies of this minute, but curious genus. They are confounded by common obſervers, under the general idea of *Mucor*, or Mould, being found on various putrifying vegetable ſubſtances; ſometimes on the dung of animals. The author juſt mentioned diſpoſes them in three ſections, of which we ſhall cite an example or two.

Section 1. *Stalked; the threads collected into a round head.*

M. *glauca*. Perſ. n. 4. (Aſpergillus capitatus, capitulo glauco, ſeminibus rotundis; Mich. Gen. 212. t. 91. f. 1. Mucor glaucus; Linn. Sp. Pl. 1656. Fl. Dan. t. 777. f. 2.)—Tufted, of a glaucous grey.—Common on rotten apples, peaches, melons, &c. It forms tender greyiſh-white patches, of no determinate figure. When examined with a microſcope, each minute individual proves to be a globoſe *head of threads*, radiating in every direction, and ſupported by a long ſlender *ſtalk*. The texture is ſo tender and evaneſcent, that the plant cannot be preſerved.

M. *penicillus*. Perſ. n. 7. Obſ. Mycol. faſc. 2. 35. t. 4. f. 8, 9.—Cluſtered, lemon-coloured, permanent. Stalk downy. Threads even.—Found by Perſoon on the dung of mice, but very rarely. The texture is durable. *Stalks* rigid, ſhorter than the former, their height ſcarcely exceeding the diameter of the *head*. The *threads* are ſmooth, not beaded, forming an exception to the generic character, ſo that Perſoon juſtly doubts, whether this little plant be properly referred to *Monilia*. It can hardly however be reduced to any other known genus.

Section 2. *Cauleſcent; threads ſtraight, digitate.*

M. *digitata*. Perſ. n. 9. (Aſpergillus albus tenuiſſimus, graminis dactyloidis facie, ſeminibus rotundis; Mich. Gen. 213. t. 91. f. 3. Mucor cruſtaceus; Linn. Sp. Pl. 1656, with an erroneous quotation of Micheli's letter-preſs. M. penicillatus; Bull. v. 1. 107. t. 504. f. 11.)—Glaucous. Stalk ſimple. Threads finger-like.—Very common on all kinds of fermenting or corruptible ſubſtances, compoſing greyiſh uneven tufts, of an extremely delicate and minute ſtructure. The beaded *threads* ſtand four or five together, radiating, at the top of each common *ſtalk*. The latter is ſaid by Bulliard to be ſometimes branched.

Section 3. *Diſperſed, ſtemleſs; threads irregularly ſcattered, muſty.*

M. *antennata*. Perſ. n. 12. (Dematium antennæforme; Hoffm. Germ. Crypt. t. 13. f. 4. Aſpergillus cæſpitoſus, ex obſcuro nigricans, ſeminibus ovatis; Mich. Gen. 213. t. 91. f. 6?)—Diſperſed, black. Joints of the threads ovate.—Common in autumn on the trunks of trees, or on pales, which it renders black in patches. In ſummer it is ſaid by Perſoon to be, in a young ſtate, tender, more ſcattered, and almoſt of an olive colour.

Such minute productions as this, muſt neceſſarily be liable to confuſion. Thoſe who ſtudy *Confervæ*, and look no further, would conſider the preſent as of that genus; Lichenographiſts might ſuppoſe it a *Collema*, deſtitute of fructification, or more probably a *Lepraria*, conſiſting of nothing elſe. The patient obſervers of theſe intricate works of creation do great ſervice in collecting them together, even under a confined or partial view of the ſubject, for the uſe of thoſe who can conſider it on a larger ſcale; becauſe every body cannot be ſo laboriouſly intent on every department of nature.

MONILIFERA, Vaillant's name for the *Oſteoſpermum* of Linnæus, alluding to the globoſe form and hard ſubſtance of its ſeeds, which are extremely ſingular in the claſs *Syngeneſia*. See Osteospermum.

MONIMASCA, in *Geography*, a town of Africa, in Cacongo, on the right bank of the Zaire. S. lat. 5° 55′. E. long. 12° 50′.

MONJOUL, a town of Hindooſtan, in Bahar; 45 miles E. of Hajypour. N. lat. 25° 34′. E. long. 86° 18′.

MONISTROL de Loire, a town of France, in the department of the Upper Loire, and chief place of a canton, in the diſtrict of Yſſengeaux; 19 miles N.E. of Le Puy. The place contains 3913, and the canton 10,453 inhabitants, on a territory of 192½ kiliometres, in five communes. N. lat. 45° 17′. E. long. 4° 13′.

MONITORY Letters, are letters of warning and admonition, ſent from an eccleſiaſtical judge upon information of ſcandals and abuſes within the cognizance of his court.

MONITOU Islands, in *Geography*. See Monetou.

MONJUIEH. See Mont-jouy.

MONJUR, a town of Aſiatic Turkey, in Caramania; 20 miles S. of Kirſhehr.

MONIY, a river of Brazil, which runs into the bay of Maranhao. S. lat. 2° 40′. W. long. 45° 29′.

MONK, George, in *Biography*, duke of Albermarle, was ſon of ſir Thomas Monk, and born in 1608. He received his education chiefly from the care of his maternal grandfather ſir George Smith, with whom he reſided. His father was in reduced circumſtances, and having ſubjected himſelf to an arreſt for debt, the ſon, indignant at the ſheriff's officer who came to ſerve the proceſs, aſſaulted and caned him without mercy. To avoid the conſequence of this outrage, he entered at the age of ſeventeen as a volunteer, under his relation ſir Richard Greenville, then about to embark on an expedition againſt the Spaniards. In this and a following enterprize the ſucceſs was trifling, and in 1629 he went to ſerve in the Low Countries, firſt under lord Oxford, and then under lord Goring, the latter of whom advanced him to the rank of captain. During the following ten years he was preſent at various ſieges and battles, and laid in a ſtock of profeſſional knowledge, which qualified him for a higher command. He returned home at the commencement of the civil wars, and was engaged in behalf of the king, but he appears, in a ſhort time, to have fallen under ſuſpicion of being inclined to the cauſe of parliament, and orders had been actually iſſued to arreſt him on his arrival, and his regiment was taken away. He was permitted to go on his parole to Oxford, where he completely juſtified himſelf to the king, and was raiſed to the rank of major-general in the Iriſh brigade, then employed under lord Byron, in the ſiege of Nantwich. He was ſoon made priſoner, and his whole brigade, by Fairfax, and being ſent to the Tower of London, was kept in confinement till November 1646. He amuſed himſelf, during his leiſure, by compoſing "Obſervations on military and political Affairs," which he ſent in manuſcript to lord Liſle, by whoſe direction they were publiſhed after his death. Through the intereſt of this nobleman, Monk was liberated, on condition of taking the covenant; he went to Ireland, where he was appointed commander-in-chief for the parliament in the north of Ireland, and obliged O'Neal, who was at the head of a rebellion of the natives, to raiſe the ſiege of Londonderry. The ſuperiority of the royaliſts, another party at that time in Ireland, and the unwillingneſs of the Scotch troops to act with thoſe of the parliament, ſo embarraſſed him, that he found it neceſſary to make a treaty with O'Neal, and to put Dundalk into the hands of the king's troops, after which he returned to England. The parliament was indignant at this termination, and paſſed a vote of diſapprobation of the treaty with O'Neal, but at the ſame time ſo far acquitted Monk, that it was reſolved his conduct ſhould not be enquired into. Monk probably never forgave this proceeding, though he ſoon after accepted a command in Scotland under Cromwell, who formed a regiment for him, and made him lieutenant-general of artillery. He performed ſeveral important ſervices for the government, and when Cromwell left Scotland in purſuit of Charles II., Monk was left to command in that country at the head of 7000 men. In this ſtation he acted with vigour and ſucceſs: beſieged and took Stirling caſtle, whence he ſent all the records of the kingdom to London. He ſtormed Dundee, and, in imitation of Cromwell in Ireland, put the governor, and all the men in arms, to the ſword. This example of ſavage ſeverity deterred other places from reſiſtance, and he became maſter of the whole country, with the exception of ſome of the inacceſſible parts of the Highlands. His health declined, and in 1652 he was obliged to go to Bath, but on his recovery he returned to Scotland, as one of the commiſſioners for its union with the Engliſh commonwealth.

The Dutch war, in the mean time, broke out, and in 1653 Monk was transferred to the ſea-ſervice. "He was now," ſays Dr. Campbell, in his Lives of the Admirals, "nearly forty-five years of age, which ſeemed a little of the lateſt to bring a man into a new ſcene of life, yet it muſt be remembered, that he was bred in a maritime country, and had ſerved at ſea in his youth; ſo that the preferment was not abſolutely out of his way; or if it was, he ſoon made it appear that he could eaſily accommodate himſelf to any ſervice that might be beneficial to his country." In June 1653 he engaged, with the fleet of which he had the command, the Dutch fleet: and being on board the Reſolution with admiral Deane, who in the very beginning of the action was killed by a chain-ſhot, a new invention aſcribed to De Witte, Monk with great preſence of mind threw his own cloak over the dead body, and having taken two or three turns on the deck, and encouraged the men to do their duty, ordered it to be removed into his cabin. The conteſt laſted two days, and at length terminated in a complete victory obtained by the Engliſh. Soon after Van Tromp had fitted out another fleet, with which, on the 29th of July, he engaged the Engliſh under Monk. The Dutch admiral was killed in the action, and a moſt deciſive victory accrued to the Engliſh, teſtified by the capture or deſtruction of more than thirty ſhips, and the moment the reſult was known the States General were obliged to ſend their miniſters here to conclude a peace upon any terms that could be obtained. At an entertainment ſubſequent to the thankſgiving for this victory, Cromwell, now protector, with his own hand put a gold chain around the neck of his ſucceſsful admiral. After this he was employed again in Scotland, and conducted the government with which he was entruſted, ſo as to conciliate the perſonal good-will of the nation, however diſaffected in their hearts, to the rule to which they were forced to ſubmit. His former attachment to the royal cauſe excited ſome diſtruſt of him on the part of Cromwell, and ſome hopes of him in the royaliſts, but he was very cautious, and took care to give no ground of ſuſpicion by his actions. By his letters, and by his conduct, there ſeems now no doubt that he was ſteadily and ſtrongly attached to Cromwell, to whom he not only communicated all that he could diſcover of the king's intelligence with others, but ſent him alſo a copy of the letter, written by king Charles II. to himſelf, which for a conſiderable time was conſidered as a proof of Monk's early affection for the king's ſervice, a ſuppoſition that is now clearly and abſolutely overturned. Cromwell, however, was ſuſpicious of him to the laſt, and but a ſhort time before his death he wrote the general, or admiral, a long letter, concluding with the following poſtſcript, "which," ſays the diſcerning Campbell, "I conceive affords us a better picture of Oliver than is any where to be met with, and which is no leſs ſingular, drawn by his own hand:"

P.S. "There be that tell me, that there is a certain cunning fellow in Scotland, called GEORGE MONK, who is ſaid to lie in wait there to introduce CHARLES STUART. I pray you uſe your diligence to apprehend him, and ſend him up to me."

Immediately on the death of Oliver, Monk proclaimed Richard, from whom he received a very kind letter, which among other things ſaid, "that his father had directed him to be governed chiefly by his advice." To this, Monk returned a prudent anſwer, but did not commit himſelf: he foreſaw that Richard would not be able long to maintain his authority, and was unqueſtionably preparing to act according to circumſtances. But whatever were his private views, no politician could have kept them more cloſely concealed. His relation and early patron, ſir John Greenville, ſent the general's brother to him in Scotland, with a letter from the king, ſoliciting his ſupport; but though he received his brother with kindneſs, he ſent him back with no confidential communication on the ſubject. Lambert, his principal rival, was at this period poſſeſſed of the chief influence over the army in England. By direction of the Committee of Safety, who now held the reins of government, he marched northwards with the view of overawing Monk. The latter, to gain time, diſpatched commiſſioners to London to treat of an accommodation, and in the mean while the parliament reſumed its authority. Monk ſet out on his journey to the metropolis: his character was ſo highly eſtimated, that he received addreſſes on all ſides requeſting that he would uſe his influence, and exert his powers, in ſettling a legal and equitable government. On his arrival he took his quarters in Weſtminſter, affecting a perfect and unlimited obedience to the exiſting parliament, and even cauſed ſome of their orders to be executed which revolted againſt his own mind. At length he complained of the odious ſervice forced upon him, and required the Houſe, in a peremptory manner, to iſſue writs for aſſembling a new and a free parliament. This was the death warrant to the long, or rump parliament, and the general rejoicings that were made on the occaſion ſufficiently proved the odium which that aſſembly had incurred with the nation. Every thing now manifeſtly tended to the reſtoration of monarchy, and yet Monk ſtill maintained the appearance of attachment to republican principles, and allowed, at leaſt openly, no channel of communication between him and the king. At length the general unboſomed himſelf to a perſon by the name of Morrice, a relation and intimate friend, and through his means ſir John Greenville was admitted to a conference with the general, and entruſted with a verbal meſſage to the king, conſiſting of aſſurances of fidelity, and advice for his conduct. Thus was the reſtoration begun, proſecuted, and perfected by Monk, who aſſiſted, on the 8th of May, 1660, at the proclamation of Charles II. in the capital. On the landing of the king at Dover, he was met by the general, who was hailed by Charles and his brother with all the diſtinction juſtly due to one who had been ſo inſtrumental in the great event. It was unqueſtionably regarded as an additional benefit conferred on the ſovereign, though perfectly unjuſtifiable on the part of Monk, that he diſcouraged and oppoſed all all thoſe limitations of the royal power and prerogative which ſome of the beſt and moſt judicious friends to political liberty had propoſed, and inſiſted that his reſtoration ſhould be unconditional. His rewards, as was natural, ſoon followed, and they were as ample as a ſubject could expect. His titles, preferments, and fortune he received as favours from the king, all which he might, perhaps, have received in another way, as a very large party in the country would have gladly made him Oliver's ſucceſſor, but as Campbell expreſſes it, "Monk generouſly deſpiſed a diadem to which he had no right, and with equal greatneſs of mind, refuſed to make any terms with him to whom it belonged, chuſing to leave the king's power, and the people's freedom, to be diſcuſſed in the only aſſembly that could have a right to meddle with them." He was created a knight of the Garter, was admitted into the privy-council, made maſter of the horſe, gentleman of the bed-chamber, firſt commiſſioner of the treaſury, and created duke of Albermarle, with the grant of a landed eſtate of 7000*l. per annum*. His vaſt elevation he bore with the modeſty and diſcretion that ſeemed to be inherent in his diſpoſition. He ſat as one of the commiſſioners for the trial of the regicides, an office which, it is hoped, he undertook with a view of moderating the ferocity of others connected with him, in the ſame commiſſion. As for Monk, he conducted himſelf with at leaſt the appearance of humanity in every caſe, except in the production of private letters from the marquis of Argyle on the trial of that nobleman, and for this he has been juſtly cenſured. The queſtion reſpecting the production of theſe letters, to the prejudice of the marquis of Argyle, has been lately diſcuſſed with much eagerneſs. Mr. Fox, in his poſthumous hiſtorical work, has no doubt of the fact, and he ſpeaks of Monk, with that indignation which he was always known to feel for baſeneſs and hypocriſy. He ſays, "All depended upon the army, and that army had fallen into the hands of one, than whom a baſer could not have been found in its loweſt ranks. Perſonal courage appears to have been Monk's only virtue; reſerve and diſſimulation made up the whole ſtock of his wiſdom." Mr. Roſe endeavours to vindicate the character of the general, but his arguments are feeble, and his reaſoning inconcluſive. Mr. Serjeant Heywood, in his "Vindication of Mr. Fox's Hiſtorical Work," relates very fully and clearly the arguments, for believing that Monk was guilty of the charge imputed to him with reſpect to the unfortunate marquis. He proves, in the moſt ſatisfactory manner, that it is highly probable Monk did receive letters from Argyle which might affect his life, and then offers ſtrong reaſons to ſhew that he moſt likely produced them to the parliament, which was ſitting in judgment on the marquis. Of Monk, the learned ſerjeant ſays, "though not guilty of the preciſe crime for which they [the regicides] were to be tried, he had waded to his dukedom through bloodſhed, duplicity, and crimes." And he further adds, "he probably became the reſtorer of monarchy, only becauſe he was diſappointed in the hope of ſucceeding to the protectorate, on the abdication of Richard. He had recently acted with ſome of thoſe who were brought before him for trial, and his crimes deſerved the ſame puniſhment which he unbluſhing concurred in inflicting upon theirs." On this ſubject we refer our readers for more ample information to Heywood's "Vindication," and to the Monthly Review, vols. lix. and lxix. p. 366, 367.

Monk joined the lord chancellor Hyde in the conſtitutional meaſure of diſbanding the army, with an exception in favour of his own regiment: and he was chiefly inſtrumental in the ſuppreſſion of the inſurrection of the Fifth-monarchy men. At the breaking out of the Dutch war in 1664, he exerted all his powers in refitting and manning the fleet, and was appointed joint-admiral of the fleet with prince Rupert. The two commanders put to ſea in April 1666, and fell in with the Dutch under the younger Tromp and De Ruyter. By the duke's advice prince Rupert took a diviſion of the fleet to oppoſe that of the French, which was coming to the aid of the Dutch. The Engliſh was now much inferior in number to their enemy, but the duke of Albermarle did not heſitate to begin the attack on the 1ſt of June, and a moſt bloody engagement enſued, which laſted four days. On the firſt three, the Engliſh, much inferior to the enemy, were obliged to make a retreating fight, the duke himſelf cloſing the rear, with the full reſolution of blowing up his ſhip rather than be taken. On the fourth, the return of prince Rupert enabled the Engliſh to face about, and a freſh action enſued, at the end of which they retired to their harbours, having been on the whole the principal ſufferers. A new combat, by the ſame commanders on both ſides, on the 25th of July, ended to the diſadvantage of the Dutch; after which the duke of Albermarle came home and ſtruck his flag. The daring enterprize of the Dutch in 1667, who ſailed up the Thames, and burnt ſome ſhips at Chatham, called forth the exertions of this veteran once more, who expoſed himſelf to danger in their defence. At this time he was much out of health, being affected with ſymptoms of dropſy, which put a period to his life, in January 1670, in the 62d year of his age. His remains were depoſited, with great funeral pomp, in Henry VIIth's chapel, in Weſtminſter Abbey. Biog. Brit. Hume's Hiſt. Stockdale's edition of Campbell's Lives of the Admirals, vol. ii.

Monk, anciently denoted a perſon who retired from the world to give himſelf up wholly to God, and to live in ſolitude and abſtinence.

The word is derived from the Latin *monachus*, and that from the Greek μοναχος, *ſolitàry*, of μονὸς, *ſolus*, *alone*; becauſe the ancient monks lived in ſolitude, as the true monks ſtill do.

Such were the hermits and anachorets, who withdrew into deſerts, and lived remote from all commerce of mankind.

Some writers, as father Helyot, (Diſſert. Prelim.) trace the origin of monks up as early as the time of the Therapeutæ; and maintain, that there had been an uninterrupted ſucceſſion of monks from the Therapeutæ to St. Anthony. Others, on the contrary, are contented with going back as far as St. Paul the Hermit.

The original of monks ſeems to have been this. The perſecutions which attended the firſt ages of the goſpel, forced ſome Chriſtians to retire from the world, and live in deſarts and places moſt private and unfrequented, in hopes of finding that peace and comfort among beaſts, which were denied them among men. And this being the caſe of ſome very extraordinary perſons, their example gave ſo much reputation to retirement, that the practice was continued when the reaſon of its commencement ceaſed. After the empire became Chriſtian, inſtances of this kind were numerous, and thoſe, whoſe ſecurity had obliged them to live ſeparately and apart, became afterwards united into ſocieties. We may alſo add, that the myſtic theology, which gained ground towards the cloſe of the third century, contributed to produce the ſame effect, and to drive men into ſolitude for the purpoſe of enthuſiaſtic devotion.

In this kingdom many perſons might ſeek this kind of refuge, during the perſecution of Diocletian about the year 303, and in thoſe perilous and afflictive times, when the Romans oppreſſed the Britons, and when their ſituation was rendered more diſtreſſing by the invaſion of the Scots from Ireland, the Picts and Attacots from the north, and the Saxons and Franks from the eaſt and ſouth.

The monks, at leaſt the ancient ones, were diſtinguiſhed into *ſolitaries*, *cœnobites*, and *ſarabaites*.

The ſolitary are thoſe who live alone, in places remote from all towns and habitations of men, as do ſtill ſome of the hermits.

The cœnobites are thoſe who live in community with ſeveral others in the ſame houſe, and under the ſame ſuperiors.

The ſarabaites were ſtrolling monks, having no fixed rule or reſidence.

The houſes of monks again were of two kinds, *viz.* *monaſteries*, and *lauræ*. See MONASTERY, and LAURA.

Thoſe we call monks now-a-days are cœnobites, who live together in a convent or monaſtery, who make vows of living according to a certain rule eſtabliſhed by the founder, and who wear a habit which diſtinguiſhes their order.

Thoſe that are endowed, or have a fixed revenue, are moſt properly called monks, *monachi*; as the Chartreux, Benedictines, Bernardines, &c. The Mendicants, or thoſe that beg, as the Capuchins and Franciſcans, are more properly called *religious*, and *friars*; though the names are frequently confounded.

The firſt monks were thoſe of St. Anthony; who, towards the year 305, formed them into a regular body, engaged them to live in ſociety with each other, and preſcribed to them fixed rules for the direction of their conduct. Theſe regulations, which Anthony made in Egypt, were ſoon introduced into Paleſtine and Syria by his diſciple Hilarion. Almoſt about the ſame time, Aones, or Eugenius, with their companions Gaddanas and Azyzas, inſtituted the monaſtic order in Meſopotamia, and the adjacent countries; and their example was followed with ſuch rapid ſucceſs, that, in a ſhort time, the whole Eaſt was filled with a lazy ſet of mortals, who, abandoning all human connexions, advantages, pleaſures, and concerns, wore out a languiſhing and miſerable life amidſt the hardſhips of want, and various kinds of ſuffering, in order to arrive at a more cloſe and rapturous communication with God and angels. From the Eaſt this gloomy inſtitution paſſed into the Weſt, and firſt into Italy and its neighbouring iſlands; though it is uncertain who tranſplanted it thither. St. Martin, the celebrated biſhop of Tours, erected the firſt monaſteries in Gaul, and recommended this religious ſolitude with ſuch power and efficacy, both by his inſtructions and his example, that his funeral is ſaid to have been attended by no leſs than 2000 monks. From hence, the monaſtic diſcipline extended, gradually, its progreſs through the other provinces and countries of Europe. There was, however, a great difference in point of auſterity between the weſtern and oriental monks; for the former could never be brought to bear the ſevere rules to which the latter voluntarily ſubmitted; and the reaſon of this difference may be partly derived from the nature of the reſpective climates in which they dwell. The European countries do not ſo much abound with delirious fanatics, and with perſons of a moroſe and auſtere complexion, as thoſe arid regions that lie towards the burning eaſt; nor are our bodies capable of ſupporting that rigid and abſtemious method of living, which is familiar and eaſy to thoſe who are placed under a glowing firmament, and who breathe in a ſultry and ſcorching atmoſphere. It was, therefore, the name, more than the thing itſelf, that was tranſported into the European countries; though this name was indeed accompanied with a certain reſemblance or diſtant imitation of the monaſtic life inſtituted by Anthony and others in the Eaſt. There were beſides the monks of St. Baſil, called in the Eaſt, *Calogeri*, from καλος γερων, *good old man*, and thoſe of St. Jerom, the hermits of St. Auguſtine, and afterwards thoſe of St. Benedict and St. Bernard, at length came thoſe of St. Francis and St. Dominic, with a legion of others; all which ſee under their proper heads, BENEDICTINES, &c.

Towards the cloſe of the fifth century, the monks, who had formerly lived only for themſelves in ſolitary retreats, and had never thought of aſſuming any rank among the ſacerdotal order, were now gradually diſtinguiſhed from the populace, and endowed with ſuch opulence and honourable privileges, that they found themſelves in a condition to claim an eminent ſtation among the ſupports and pillars of the Chriſtian community. The fame of their piety and ſanctity was ſo great, that biſhops and preſbyters were often choſen out of their order; and the paſſion of erecting edifices and convents, in which the monks and holy virgins might ſerve God, in the moſt commodious manner, was at this time carried beyond all bounds. However, their licentiouſneſs, even in this century, was become a proverb; and they are ſaid to have excited the moſt dreadful tumults and ſeditions in various places. The monaſtic orders were at firſt under the immediate juriſdiction of the biſhops, from which they were exempted by the Roman pontiff, about the end of the ſeventh century; and the monks, in return, devoted themſelves wholly to advance the intereſts, and to maintain the dignity of the biſhop of Rome. This immunity which they obtained was a fruitful ſource of licentiouſneſs and diſorder, and occaſioned the greateſt part of the vices with which they were afterwards ſo juſtly charged. In the eighth century the monaſtic diſcipline was extremely relaxed both in the eaſtern and weſtern provinces, and all efforts to reſtore it were ineffectual. Nevertheleſs, this kind of inſtitution was in the higheſt eſteem, and nothing could equal the veneration that was paid, about the cloſe of the ninth century, to ſuch as devoted themſelves to the ſacred gloom and indolence of a convent. This veneration induced ſeveral kings and emperors to call them to their courts, and to employ them in civil affairs of the greateſt moment. Their reformation was attempted by Lewis the Meek, but the effect was of ſhort duration. In the eleventh century they were exempted by the popes from the authority of their ſovereigns, and new orders of monks were continually eſtabliſhed; inaſmuch that in the council of Lateran, that was held in the year 1215, a decree was paſſed, by the advice of Innocent III. to prevent any new monaſtic inſtitutions, and ſeveral were entirely ſuppreſſed. In the fifteenth and ſixteenth centuries, it appears from the teſtimonies of the beſt writers, that the monks were generally lazy, illiterate, profligate, and licentious epicureans, whoſe views in life were confined to opulence, idleneſs, and pleaſure. However, the reformation had a manifeſt influence in reſtraining their exceſſes, and rendering them more circumſpect and cautious in their external conduct.

Monks are diſtinguiſhed by the colour of their habits into *black*, *white*, *grey*, &c. Among the monks, ſome are called monks *of the choir*, others *profeſſed* monks, and others *lay* monks; which laſt are deſtined for the ſervice of the convent, and have neither clericate nor literature.

Monks, *Cloiſtered*, are thoſe who actually reſide in the houſe; in oppoſition to *extra-monks*, who have benefices depending on the monaſtery.

Monks are alſo diſtinguiſhed into *reformed*, whom the civil and eccleſiaſtical authority have made maſters of ancient convents, and put in their power to retrieve the ancient diſcipline, which had been relaxed; and *ancient*, who remain in the convent, to live in it according to its eſtabliſhment at the time when they made their vows, without obliging themſelves to any new reform.

Anciently, the monks were all lay-men, and were only diſtinguiſhed from the reſt of the people by a particular habit, and an extraordinary devotion. Not only the monks were prohibited the prieſthood, but even prieſts were expreſsly prohibited from becoming monks, as appears from the letters of St. Gregory. Pope Syricius was the firſt who called them to the clericate, on occaſion of ſome great ſcarcity of prieſts, that the church was then ſuppoſed to labour under: and ſince that time the prieſthood has been uſually united to the monaſtical profeſſion.

Monks, *Profeſſed*. See Professed.

Monks, *Proprietary*. See Proprietary.

Monk-*Fiſh*, called alſo *Angel-fiſh*, in *Ichthyology*, a ſpecies of *ſqualus*. See Squalus *Squatina*.

Monk's-*Hood*, a name given to ſeveral ſpecies of aconite, or wolf's-bane. See Aconitum.

Monk's-*Rhubarb*. See Rhubarb, and Rumex.

Monk's-*Seam*, among *Sailors*, is, when the ſelvedges of ſails are laid a little over one another, and ſewed on both ſides.

MONKAH, in *Geography*, a town of Bengal; eight miles S. of Palamow.

MONKEARY, a town of Bengal; 20 miles S.S.E. of Palamow.

MONKEDOO, a town on the W. coaſt of Borneo. S. lat. 2 40′. E. long. 109° 51′.

MONKEY, in *Zoology*, a name given by way of diſtinction to thoſe apes which have tails; the others, or thoſe without tails, being more properly called *apes*.

The ſame diſtinction holds in Latin, the tailed ones being called *papiones* or *baboons*, when they have ſhort tails; *cercopitheci*, when their tails are longer; and thoſe without tails *ſimiæ*. See Cercopithecus and Simia.

Monkey *of the Weſt Indies*. See Guariba, and Simia *Beelzebub*.

Monkey, *Green*. See Callitrichus, and Simia *Sabæa*.

Monkey, in *Ship Building*, a machine for driving bolts where more force is required than the common method, by a mall. It is compoſed of a long pig of iron traverſing in a groove, or in a frame, with handles, with a groove on the underſide, and ſlides upon a ridge of iron fixed in a bed. The whole is fixed to centre the bolt to be driven, and then the monkey is forcibly drawn, to ſtrike the bolt, by ropes and pullies.

It alſo denotes the ſtand for the pinion and winch-handle, which draw the lock-paddles in a canal, &c. *Plate* V. *Canals*, *fig.* 38 and 39, *k*, *k*.

Monkey-*Boat*, a name ſometimes applied to a long narrow ſort of boat.

Monkey-*Blocks*, in *Ship-Building*. See Blocks.

Monkey's-*Bread*, in *Gardening*. See Adansonia.

Monkey-*Flower*, the common name of a flower plant. See Mimulus.

Monkey-*Iſland*, in *Geography*, a ſmall iſland in Currituck ſound, near the coaſt of North Carolina. N. lat. 36° 22′. W. long. 76 4′.

Monkey-*Key*, a ſmall iſland in the bay of Honduras, near the coaſt of Mexico. N. lat. 16° 25′. W. long. 89° 35′.

Monkey-*Point*. See Punta *Chica*.

MON-KIEU-TCHIN-HOTUN, a town of Corea. N. lat. 43° 1′. E. long. 129 50′.

MONKTON, a poſt-town of America, in Addiſon county, Vermont, E. of Ferriſburg; containing 1080 inhabitants.—Alſo, a townſhip of Annapolis county, in Nova Scotia, inhabited by Acadians, and a few families from New England; it conſiſts chiefly of wood-land and ſalt-marſh, and contains about 60 families.

MONLIRAS, a town of the iſland of Cuba; 45 miles E. of Bayamo.

MONMOUTH, a large maritime county of New Jerſey, in the United States, of a triangular ſhape; 80 miles in length, and from 25 to 40 in breadth; it is divided into ſix townſhips, and contains 19,872 inhabitants, including 1633 ſlaves. The face of the country is generally level, with few high lands, the moſt noted of which are Naveſink and Centre-hill. The ſoil is for the moſt part ſandy; but other parts are fertile. At the mouth of Naveſink river there is a curious cave, now in a ruined ſtate, 30 feet long, and 15 wide, containing three arched apartments.

Monmouth, or *Freehold*, a poſt-town and capital of the fore-mentioned county, ſituated 22 miles N.E. by E. of Allentown, 34 E. of Trenton, and 64 N.E. by E. of Philadelphia. It contains a court-houſe, gaol, and a few compact dwelling houſes, with a Preſbyterian and Baptiſt meeting-houſe.

Monmouth, a poſt-town of Lincoln county, on the E. ſide of Androſcoggin river; 49 miles N. of Portland, containing 701 inhabitants.

Monmouth, *Cape*, lies on the E. ſide of the ſtraits of Magellan.

Monmouth-*Iſland*, one of the four iſlands of Royal Reach, in the ſtraits of Magellan, and the ſecond from the weſtward.

Monmouth-*Iſland*, one of the Baſhee iſlands in the Eaſt Indian ſea.

Monmouth, a market-town and borough in the hundred of Scenfreth and county of Monmouth, England,

land, ſtands on a narrow peninſula, formed by the confluence of the rivers Monnow and Wye. It is a town of great antiquity, and according to Horſley (in his Britannia Romana) was the Bleſtium of Antoninus. No Roman remains, however, have been found here to corroborate this opinion, which, though probable, is chiefly founded on the fact of the coincidence of diſtances between that and the connecting ſtations, northward and ſouthward, with the actual diſtances between thoſe and the preſent ſcite of Monmouth. The caſtle at this place is mentioned in ancient records as being one of the ſtrong holds garriſoned by the early Saxons, to ſecure their conqueſts of the country between the Severn and the Wye; and to curb the depredatory incurſions of the Welſh. Very little, however, beſides this bare fact, is known concerning this fortreſs, till the era of the Norman conqueſt, when it appears, from a paſſage in Domeſday book, to have belonged to the king. William, the ſon of William Fitz-Baderon, to whom four "carucates of land in the caſtle of Monmouth, part of the royal demeſne, were given in cuſtody" about this time, took the ſurname of de Monmouth, from the place, which continued in the poſſeſſion of his deſcendants till the reign of Henry III., when John de Monmouth became the proprietor. During the reign of that monarch, which is recorded to have been one continued ſcene of civil ſtrife, this fortreſs was occaſionally beſieged and occupied by both parties; and was ultimately reſigned, together with the honour, to prince Edward and his heirs for ever, in conſideration of certain lands granted for life. The prince ſoon afterwards ſurrendered it to the king, who beſtowed it on his younger ſon Edmund, earl of Lancaſter, from whom it deſcended to John of Gaunt, king of Caſtile and duke of Lancaſter, who, as well as his ſon, Henry of Bolingbroke, (afterwards Henry IV.) made it their favourite reſidence. Henry V., the celebrated hero of Agincourt, was born in one of the rooms of Monmouth caſtle in the year 1387, and ſeems alſo to have paſſed his infancy here. This caſtle ſubſequently became the property of Henry VI. as part of the duchy of Lancaſter, which had deſcended to him by inheritance. Upon his dethronement and attainder, it fell to Edward IV., who granted it to William, lord Herbert, whom he created earl of Pembroke; but having once more reverted to the crown, Henry VII. poſſeſſed it by the ſame right that he aſcended the throne. Since that period, the caſtle has become private property, but at what date its alienation from the duchy took place is not aſcertained. Previouſly, however, to the cloſe of the 17th century, we find it in the poſſeſſion of Henry, the firſt duke of Beaufort, and it is now the property of his illuſtrious deſcendant, the preſent duke.

Under the auſpices of its lords, Monmouth early became a privileged place, and particularly enjoyed many immunities as forming a parcel of the duchy of Lancaſter. The earlieſt charter, however, which appears in the archives, is dated in the year 1549, and was granted by the monarch then reigning "to the burgeſſes of his burgh and town of Monmouth, in the marches of Wales, and within his duchy of Lancaſter." This deed confirms various franchiſes and privileges beſtowed upon the inhabitants by Henry VIII.; and in addition confers the power of electing a mayor and two bailiffs. Since that time therefore Monmouth has been governed by officers under that denomination, who are aſſiſted by a common council, compoſed of eighteen members.

The ſituation of this town is extremely pleaſant and highly pictureſque: it ſtands near the extremity of an expanded vale, ſurrounded by gentle hills and ſwelling eminences, either covered to their ſummits with rich woods, or laid out in fields of corn and paſture. It is a place of conſiderable extent, and contains many reſpectable buildings, but has only one principal ſtreet, which leads from the bridge over the Monnow, to the market place. In this ſtreet ſtands the town-hall, an edifice of modern erection, built upon pillars, which form a handſome colonnade. A ſtatue of Henry V. is placed in a niche over the front entrance. The other ſtreets are moſtly narrow. One of them leads from the market place to St. Mary's church. That edifice formerly belonged to an alien priory for black monks of the Benedictine order, an inſtitution which was founded in the time of Henry I. by Wihenoc, grandſon of Fitz-Baderon and third lord of Monmouth. Only a few veſtiges of the monaſtery can now be diſcovered a little to the north of the church, which, with the exception of the tower and ſpire, is entirely a new building. The church of St. Thomas, now ſubordinate to St. Mary's, is an ancient ſtructure. Coxe, in his hiſtorical tour through this county, ſays, "that the ſimplicity of its form, the circular ſhape of the door-ways, and of the arch ſeparating the nave from the chancel, and the ſtyle of their ornaments, which bear a Saxon character, ſeem to indicate that it was built before the conqueſt." Some authors even ſuggeſt, that there is a probability of the more ancient parts being of Britiſh origin. It is certainly, for Wales, a moſt curious ſpecimen of early architecture; and in no mean degree deſerves the attention of the antiquary, particularly the ſemicircular arch of the northern door-way.

The county gaol is a new maſſive edifice, well adapted to its purpoſe; the apartments are airy; and much attention is paid to the health and morals of the priſoners. This building ſtands at one extremity of the town, on the banks of the Monnow. Here is a free ſchool founded by William Jones in the reign of James I.; alſo an alms-houſe for 20 poor people, eſtabliſhed and endowed by the ſame individual.

The remains of walls, lines of circumvallation, curtains, baſtions, and other works of defence, clearly ſhew that this town muſt have been, at one time, a ſtrongly fortified place, and from its ſituation, there is little doubt but it might eaſily be made ſo again. On thoſe ſides which were unprotected by the river, it has been evidently environed by ſtrong walls, and a deep foſſe capable of being filled with water. It had four gates, only one of which is now ſtanding. The ſuburb of St. Thomas was defended in the ſame manner as the town, with which it communicated, as now, by a ſtone bridge with baſtion-towers on each ſide thrown over the Monnow. There are two other bridges in the immediate vicinity of the town, the Wye-bridge and Tibb's-bridge; the former of which is conſtructed of ſtone, and the latter of wood.

The ruins of the caſtle of Monmouth, the ancient reſidence of its powerful lords, are diſcovered occupying the ridge of an eminence ſituated between the market place and the river Monnow. From a view of theſe it is evident, that this fortreſs has been the work of ſeveral and even diſtant periods. Some portions of them beſpeak a Saxon if not a Roman origin, while others are of a date poſterior to the reign of Henry III. The maſſive ſtructure of part of the walls is particularly remarkable, being from ſix to ten feet thick, and are compoſed of pebbles and liquidated cement, ſo cloſely compacted as not to yield in hardneſs to ſtone itſelf. The chamber, in which king Henry was born, is wholly demoliſhed, but ſome of the beams, which ſupported the flooring, ſtill remain viſible. Adjoining to it is a large apartment, which probably formed the baronial hall, and was afterwards uſed for the county aſſizes till about the middle of the laſt century. A handſome domeſtic edifice, conſtructed of ſtone, ſtands in the middle of this vaſt pile of ruins. From the date over the principal door it appears to have been built in 1673, for the occaſional reſidence of the Beaufort family. Two hoſpitals, founded here by John de Monmouth about the year 1240, are now entirely levelled with the ground.

The manufactures of Monmouth, at the preſent period, are trifling; ſo that the inhabitants are chiefly ſupported by the navigation of the river Wye, the trade with Hereford and Briſtol, the ſupply of the neighbouring diſtrict with various kinds of ſhop-goods, and the number of perſons of independent fortune, who reſide either conſtantly or occaſionally in the town, or its vicinity. The paring and cleanſing of bark brought from the foreſts of the Upper Wye, for the purpoſe of exportation, conſtitutes, during the ſeaſon, the employment of a number of men, women, and children among the lower ranks. But though fallen in reſpect of its manufacturing importance now, Monmouth ſeems to have carried on a very conſiderable trade ſome centuries ago.

Monmouth caps are celebrated by Shakſpeare in his play of Henry V.; "If your majeſties is remembered of it, the Welſhmen did goot ſervice in a garden, where leeks did grow, wearing leeks in their Monmouth caps." Fuller likewiſe praiſes them highly, by calling them the moſt "ancient, general, warm, and profitable coverings of men's heads in this iſland." The old ballad of the caps, printed in "The Antidote againſt Melancholy," ſays,

> "The ſoldiers that the Monmouth wear,
> On caſtles' tops their enſigns rear."

Monmouth has ſent one member to parliament ſince the reign of Henry VIII. The right of election is in the burgeſſes inhabitants, in conjunction with the burgeſſes inhabitants of the towns of Newport and Uſk, as decided by the houſe of commons on a petition of right in 1680. According to the parliamentary returns of 1801, the population of this town then amounted to 3345 perſons, but Mr. Coxe, in his "Hiſtorical Tour," fixes it at about 2600 ſouls.

The vicinity of this town diſplays much beautiful and intereſting ſcenery. The views from the high conical hill, called the Kymin, are particularly fine, extenſive, and diverſified. A walk leads to the ſummit of this hill, which terminates in a level plain crowned with a wood, through which ſix viſtas have been cut. Each of theſe exhibits in fine perſpective a rich, grand, and varied proſpect, of an expanſive tract of country. In the centre of the wood, a pavilion, intended for a naval monument, has been lately erected by ſubſcription. It is a circular edifice, conſiſting of two ſtories, and built in the form of an embattled tower. The frieze round it is ornamented with medallions of the moſt eminent Britiſh admirals, accompanied with emblematical and appropriate devices. The view from the ſummit of this pavilion is perhaps the fineſt and moſt extenſive in England, embracing a circumference of nearly 300 miles, and including within its range all the materials of ſublime and beautiful ſcenery.

Troy-houſe, the ancient ſeat of the family of Herbert, and afterwards of that of Somerſet, is ſituated about a mile from the town on the banks of the Trothy, from which river its name is corruptly derived. Of the original edifice few traces can now be diſcovered, except an old gate-way with a pointed arch. The preſent manſion was built under the direction of the celebrated Inigo Jones, but though well proportioned and commodious, it poſſeſſes no features of peculiar beauty. This place was formerly much famed for its excellent and luxuriant gardens, particularly in the time of Charles I. when they were the property of ſir Thomas Somerſet, brother to the marquis of Worceſter. Two miles weſt from hence is a Treowen, the ſeat of the Jones family, but now converted into a farm-houſe. In the pariſh of Lanvihangel Tavanbarch', at the diſtance of three miles to the north, ſtand the remains of Grace-Dieu abbey, which was founded by John of Monmouth in the year 1229. In the pariſh of Landeilo Creſſeney appear the magnificent ruins of White Caſtle, anciently called Lanteilo caſtle, or Caſtell-Gwin. This fortreſs, at the time of the conqueſt, formed part of the poſſeſſions of Brian-Fitzcount, earl of Hereford, from whom it came, firſt to the Cantalupes, and afterwards to the Braoſes. Coxe's Hiſtorical Tour through Monmouthſhire, 4to. 1801. Beauties of England and Wales, vol. x.

MONMOUTHSHIRE, one of the weſtern counties of England, is bounded on the ſouth-eaſt by the Severn ſea or Briſtol channel; on the weſt by Glamorganſhire and part of Brecknockſhire; on the north by part of the latter county, and that of Hereford; and on the eaſt by Glouceſterſhire. It extends about 33 miles in length, and 20 in breadth, and compriſes, according to the lateſt ſurveys, an area of 550 ſquare miles, or 352,000 acres. By the returns made to parliament in 1801, it contained 9365 houſes, and a population of 45,582 inhabitants. The whole county is now divided into ſix hundreds: Scenfreth, Abergavenny, Wentloog, Caldecot, Uſk, and Raglan; and comprehends 127 pariſhes, and ſeven towns. The latter are Monmouth, Caerleon, Chepſtow, Uſk, Abergavenny, Newport, and Pontypool. All the pariſhes, with reſpect to eccleſiaſtical juriſdiction, are included in the province of Canterbury, and alſo in the dioceſe of Landaff, with the exception of ſix, *viz.* Welſh-Bicknor, Dixon, and St. Mary's being in the dioceſe of Hereford; and Oldcaſtle, Llanthony, and Cwmyoy, belong to St. David's.

At the period of the Roman invaſion Monmouthſhire formed part of the territory inhabited by the Silures, who, beſides this diſtrict, poſſeſſed the counties of Glamorgan, Brecknock, Radnor, Hereford, and ſuch parts of Glouceſterſhire as lay between the Severn, the Teme, and the Towy. On the diviſion of Britain into provinces by the Romans, this county was included in Britannia Secunda. From the period at which theſe illuſtrious conquerors left our iſland, till the eſtabliſhment of the Saxon heptarchy, the hiſtory of Monmouthſhire, in common with that of almoſt every portion of Britain, is uncertain and contradictory. In the legends of theſe times, however, it makes a moſt conſpicuous figure. Many of the heroic exploits of Uther Pendragon, and of the celebrated Arthur, are ſaid to have taken place within its boundaries. Caerleon was long the capital of the Britiſh dominions, and is frequently deſcribed by the bards as equalling Rome in ſplendour and magnificence. After the full eſtabliſhment of the Saxon power in England, this county ſeems to have formed a petty principality of itſelf, under the name of Gwent, whoſe princes were ſometimes bold enough to aſpire at independence, but who, for the moſt part, paid tribute to the princes of South Wales. The invincible courage which had marked their character at a more remote period, ſtill continued in full force during this era, and oppoſed a moſt effectual barrier to the attempts of the Saxon monarchs to ſubjugate the principality. Canute, the Dane, entered Gwent with a powerful army, in the year 1034, but though he defeated Rytherch-ap-Jeſtin, prince of of South Wales, he was unable to hold poſſeſſion of the country. It was not, indeed, till the reign of Edward the Confeſſor, that the Gwentians could be regarded as conquered, when Harold, having penetrated into the heart of Wales, forced the inhabitants to ſwear fealty to the crown of England, and retained military poſſeſſion of this county, in order the more effectually to ſecure the advantages he had gained. The Norman invaſion, however, was the ſignal to all the Welſh tribes for renewing the war, and throwing off the yoke which had been thus impoſed. In order again to reduce them, the conqueror, too politic to weaken his own army in ſuch a warfare as Wales preſented, encouraged his powerful barons to make incurſions into that country at their own expence, and with their own retainers, and, as a reward, granted them the privilege of holding the lands they conquered in capite. Monmouthſhire was accordingly overrun in this way after a long and bloody ſtruggle for its independence; but the conquerors having built numerous caſtles and fortreſſes in order to overawe the inhabitants, ſoon began, in their turn, to arrogate to themſelves an independent authority. Continual diſputes took place betwixt them, with reſpect to the extent and boundaries of their lands, which not unfrequently terminated in open hoſtility to each other, and even to the crown of England. The power poſſeſſed by theſe barons marchers, within the limits of their property, was little inferior to that of a prince. They held courts and adminiſtered juſtice at will to their tenants and dependants, in all queſtions both civil and criminal. This ſyſtem of juriſprudence, perhaps the moſt wretched and deplorable that could poſſibly be adopted, continued in this county, as well as in the other marches of Wales, till the reign of Henry VIII., when the government of the lords marchers was aboliſhed, and Monmouthſhire was detached from the principality, and included among the counties of England. The ſtatute, however, authoriſing this change, does not ſeem to have been immediately acted upon, for we find Monmouth regarded as a Welſh county ſo late as the reign of Charles II., when it firſt began "to be reckoned an Engliſh county, becauſe the judges kept the aſſizes here on the Oxford circuit." From this circumſtance it is difficult to fix, preciſely, the period at which Monmouthſhire might be ſtrictly conſidered as an Engliſh county: probably, however, not before the juriſdiction of the ſupreme "court of lords marchers," uſually held at Ludlow, was finally aboliſhed in the firſt year of William and Mary.

The general aſpect of Monmouthſhire preſents to the eye a continual recurrence of hill and dale, wood and water, corn fields and meadows; "the ſublime of wildly magnificent, and the beauty of mild and cultivated ſcenery combine to delight the traveller at every turn he makes in this uncommonly diverſified diſtrict." Nor is the air leſs favourable to health, than the face of the country is intereſting to the view. Except on the more elevated ridges, which are no doubt cold and bleak, it is, for the moſt part, mild and temperate. It is a remarkable circumſtance, that the fogs here, during winter, ſhift periodically; ſo that it is no uncommon thing to ſee the hills enveloped ſeveral days with a thick fog, while the valley beneath has the ſplendour of a genial ſun: but on a ſudden theſe effects are entirely reverſed; the fog deſcends into the valley, and the mountains are, in their turn, left open to the rays of heaven. Monmouthſhire abounds with rivers, of which the principal are the Severn, the Wye, the Uſk, the Rumney, the Monnow, or Mynwy, and the Ebwy. The Wye is particularly remarkable for the beauty and variety of its ſcenery, exhibiting a continued ſeries of enchanting views, which have been amply deſcanted on by Gilpin, Ireland, Warner, and many other touriſts; and latterly by Bloomfield, in a poem expreſsly devoted to the ſubject. (See Wye.) The Uſk likewiſe diſplays many charming ſcenes, and when ſwelled by mountain torrents ſpreads itſelf out into expanſive lakes, and occaſionally inundates the adjacent country. This river is navigable for barges up to Tredonnoc-bridge. There is only one canal in this county, which was begun in 1792, and finiſhed in 1798. It enters Monmouthſhire from Brecknockſhire, and divides it nearly into two equal parts, paſſing in its courſe cloſe to the towns of Abergavenny and Pontypool, and falls into the eſtuary of the Uſk at a ſhort diſtance below Newport. About a mile above that town, a branch ſtrikes off to Cramlin-bridge, near Llanhiddel, where it terminates. Still further to facilitate the conveyance of the more weighty articles which this county produces, rail-roads have been formed in different parts of it. One, which connects the iron-works at Blaenavon with the canal at Pontnewydd, is particularly remarkable. It only extends five miles and a quarter in length, and riſes no leſs than 610 feet. The roads in Monmouthſhire, with the exception of thoſe from New-Paſſage to Newport, Caerdiff, and Uſk, and thence to Abergavenny, were, till lately, proverbially bad; and though improved, are capable of ſtill further amendment.

Monmouthſhire, conſidered in an agricultural point of view, may be properly divided into three diſtricts. The firſt, compriſing the ſouthern part of the county, conſiſts, almoſt entirely, of moor, or marſh lands, with a portion of meadow-grounds. The ſecond diviſion, which takes in the eaſtern line of the county, is particularly fertile. The third diviſion forms the weſtern and moſt hilly part of the county. The kinds of corn generally raiſed are wheat, barley, and oats, with a very ſmall proportion of peas and beans. Theſe are, of courſe, principally produced in the eaſtern diviſion, the other two being much more paſtoral, or grazing, than farming diſtricts. The cattle reared are oxen, ſheep, and mules. The firſt are principally bred in the northern parts, and fed in the ſouthern. Theſe generally grow to a large ſize, are extremely docile, and well fitted for the labours of the field. The ſheep are naturally of an inferior kind, but the ſtock has been greatly improved of late years, by various croſſes with the Coteſwold, Southdown and Dorſet breeds. Mules are very abundant here, and are a peculiarly fine race, ſtrong in the bone, and of exquiſite ſymmetry, running from fourteen to ſixteen hands high, and are ſo valuable as to ſell for thirty or forty pounds each. The breed is conſtantly kept up to its priſtine ſtandard of excellence by the importation of ſtallion aſſes from Spain. But whether this traffic ſhould be encouraged is extremely doubtful, conſidering the ſuperior qualifications of the horſe, the breeding of which animal is, in conſequence, almoſt wholly neglected in this county. Indeed the Monmouthſhire horſes are by far the moſt miſerable race of their ſpecies in our iſland, neither adapted for the ſaddle, nor uſeful for agricultural purpoſes.

Monmouthſhire was formerly celebrated for its manufacture of ſtockings and knit caps, but that trade almoſt entirely diſappeared ſoon after the eſtabliſhment of the iron works in the reign of queen Elizabeth. Since that period the iron buſineſs, though in different degrees at different times, has conſtituted the chief employment of the manufacturing claſſes in the county. This branch of trade has of late years increaſed to a prodigious extent, ſo that Monmouthſhire will, in all probability, ſoon take the precedence, as an iron diſtrict, of every other county in Great Britain.

At Pontypool and at Uſk there are ſtill conſiderable manufactories of japanned goods, generally diſtinguiſhed by the name of Pontypool ware, becauſe firſt invented in that town, but this trade has ſuffered much from the competition of Birmingham, joined to the unfavourable ſtate of our foreign relations. The commerce of Monmouthſhire, which is very conſiderable, is almoſt entirely confined to the towns of Chepſtow and Uſk: under theſe reſpective names the reader will find the different articles of export mentioned. See Newport and Usk.

Monmouthſhire, to the antiquary, is particularly intereſting: Caerwent was firſt the capital of the Silurian dominions, and afterwards a Roman ſtation. The other ſtations of that people in this diſtrict were Iſca-Silurum at Caerleon, Gabannum at Abergavenny, Burrium at Uſk, and Bleſtium at Monmouth; but ſome antiquaries place the two laſt at Oldcaſtle and at Caerphilly. To trace the direction of the Roman roads, particularly of the Julia Strata, in their paſſage through this country, is a ſubject of much difficulty. This has ariſen chiefly from the diſagreement of antiquaries with reſpect to the point at which the legionary troops uſually croſſed the Severn, which ſome have fixed at Ameſbury, and others at Oldbury, Auſt, New Paſſage, Henbury, and Portiſhead. The Julia Strata is moſt diſtinctly viſible in the vicinity of Caerwent, running in the direction of Penhow. A few traces of it can likewiſe be diſcovered near Caerleon and Newport, but its courſe between theſe towns is wholly uncertain. Mr. Evans, however, conjectured that it proceeded along the right bank of the Uſk, leaving Malpas church on the weſt, and Crindahouſe on the eaſt, and paſſed to the ſcite of St. Woolo's church, on the hill north of Newport, where is a large encampment, and a tumulus, now nearly deſtroyed, which Mr. Harris regarded as an *arx ſpeculatoria*. Of the roads which ſtruck off from the Julia Strata, one led from Iſca-Silurum to Burrium, where dividing into two ramifications, one proceeded to Gobannium and the other to Bleſtium. Another has evidently run in a ſouth-weſtward direction, from Abergavenny to Neath, or to ſome ſtation in Glouceſterſhire. This road is called by the natives *Sarn-hir*, or the long paved cauſeway, and in the neighbourhood of Bydwelly ſtill remains almoſt entire. Beſides theſe, various other marks of Roman civilization have been diſcovered in this county at different periods, conſiſting of aqueducts, baths, teſſellated pavements, columns, ſtatues, bas-relievos, ſudatories, hyppocauſts, altars, votive and ſepulchral ſtones, ſarcophagi, urns, medals, coins, fibulæ, &c. Numerous encampments of different forms and ſizes are likewiſe diſtributed over this county, ſome of them no doubt originally Britiſh, and afterwards altered by the Romans, Saxons, or Danes, and others of them originally Roman, and altered in the ſame way by the warriors of a later period. A few ſeem to be Saxon or Daniſh entirely. Caſtles and other places of more permanent defence, are no leſs frequent here than encampments. Several of theſe have claims to very high antiquity, but the preciſe period of their erection is unknown. The moſt diſtinguiſhed among them are the caſtles of Caerleon, Uſk, and Scenfreth, which are ſaid to be of Britiſh origin. The reſt are no doubt of a much later date, and moſt probably not earlier than the period of the Norman conqueſt. Some of the churches in this county are very ancient, as appears from the ſtyle of their architecture, the circular arch, and the crenellated and billetted moulding for which they are ſo conſpicuous, being characteriſtic of the Saxon and early Norman eras. The cuſtom of whitewaſhing theſe edifices is unhappily too much practiſed here, and deſtroys the venerable appearance which they would otherwiſe diſplay. The diſguſting and highly injurious practice of burying in churches is likewiſe extremely prevalent in Monmouthſhire.

In concluding this article, it may be remarked, that though Monmouthſhire is an Engliſh county, the inhabitants more generally ſpeak the Welſh than the Engliſh language, particularly in the north-weſtern and ſouth-weſtern diſtricts. Their manners and cuſtoms bear a very ſtrong reſemblance in every reſpect to thoſe of the principality. They diſplay the ſame antipathy to the language and manners of the Engliſh, and an attachment to their own ancient practices. Catholics are very numerous in this county, and not only they, but the Proteſtants alſo, retain many veſtiges of Romiſh ſuperſtition. Thus the cuſtom of begging bread for the ſouls of the departed, ſtill continues to be practiſed, on All-Souls' day, among the lower orders. A very intereſting and ſatisfactory account of the antiquities, ſcenery, &c. of this county, will be found in Coxe's "Hiſtorical Tour in Monmouthſhire," 4to.

MONNEROU, a ſmall iſland in the channel of Tartary, between the iſland of Saghalien, and the continent. N. lat. 46° 20′. E. long. 142° 21′.

MONNIER, Peter le, in *Biography*, an eminent profeſſor of philoſophy, was born at Vire, in Normandy, about the year 1685. By his talents he became profeſſor in the college of Harcourt, at Paris, and was elected a member of the Royal Academy of Sciences. He died Nov. 27, 1767. He was author of "Curſus Philoſophicus," in ſix volumes 12mo., which was made a text-book in many of the French colleges. Monnier contributed alſo a variety of papers, that form a part of the "Memoirs" of the academy of which he was a member. He left behind him two ſons, inheritors of his abilities, and both of them admitted to ſeats in the Academy of Sciences, of whom the eldeſt is the ſubject of the following article; the youngeſt, Lewis William, was made phyſician to the king at St. Germain-en Laye. Du Freſnoy.

Monnier, Peter-Charles le, a celebrated French aſtronomer, was born at Paris in 1715. From a very early period of his life he devoted himſelf to the ſtudy of aſtronomy, and is ſaid to have made very accurate obſervations when he was only ſixteen years old. At the age of twenty he had the high honour of being nominated a member of the Royal Academy of Sciences at Paris. At this period he accompanied Maupertuis in his expedition to Lapland for the purpoſe of meaſuring a degree of latitude. In 1748 he went to Scotland, to join lord Macclesfield in obſerving an annular eclipſe of the ſun, and he was the firſt aſtronomer who had the ſatisfaction to meaſure the diameter of the moon on the ſun's diſk. The king of France, Lewis XV., was much attached to aſtronomy, and patronized thoſe who ſucceſsfully purſued that ſcience; and it is ſaid he not only reſpected, but honoured and even loved Le Monnier. "I have ſeen the king," ſays Lalande, "come out of his cabinet, and look around for Le Monnier, and when his younger brother was preſented to him, on his appointment to the office of firſt phyſician, his majeſty was pleaſed to wiſh him the merit and reputation of his brother the aſtronomer." Mommier was always with the king when he obſerved the remarkable celeſtial phenomena. Thus they were together to witneſs the two tranſits of Venus, in the year 1761 and 1769. While theſe important obſervations were making, at which the celebrated La Condamine was preſent, the king was particularly careful not to diſturb, by the ſmalleſt motion, the aſtronomers in their occupation. It is ſo deſcribed by the aſtronomer himſelf, in his diſſertation on the ſubject: "His majeſty," ſays he, "perceiving that we judged the laſt contacts to be of the greateſt importance, a moſt profound ſilence, at that moment, reigned around us." In the year 1750, Le Monnier was directed to draw a meridian-line at the royal chateau of Bellevue, where the king was accuſtomed to make his obſervations. On this occaſion Lewis preſented him with fifteen thouſand livres, which the aſtronomer expended in inſtruments, with which he afterwards made his beſt and moſt important obſervations. The king had already preſented him with a beautiful houſe at Paris, where he reſided till the revolution, and purſued his aſtronomical labours. Le Monnier was inceſſant in his application to his favourite ſcience, and apparently unwearied in thoſe obſervations which tended to perfect it. Le Monnier was the preceptor of Lalande, and was worthy of ſuch a ſcholar, as the ſcholar was of his inſtructor. Le Monnier foreſaw in young Lalande, when he was but ſixteen years old, the acute, learned, and indefatigable aſtronomer. When Lalande was ſent to Berlin in 1742, to make obſervations for the purpoſe of determining the parallaxes of the moon, Le Monnier lent him his five feet mural quadrant. Le Monnier died at Lizieux, in Normandy, on the ſecond of April 1799, at the advanced age of eighty-four years. He was ardent in his friendſhips, but his hatred was implacable. Lalande once diſpleaſed him, and he could never after regain his favour, but his pupil's gratitude and reſpect for him were always the ſame, and were, on every occaſion, publicly declared. In 1797, Lalande wrote an eulogium on Le Monnier for the "Connoiſſance des Temps," in the language of gratitude, reſulting from ſentiments of profound veneration and eſteem for the venerable aſtronomer, but Le Monnier refuſed to read it. This great man left behind him a number of valuable MSS. with ſome good obſervations. He had by him a ſeries of lunar obſervations, and a multitude of obſervations of the ſtars, which he had announced as early as the year 1741, but he refuſed to publiſh them, nor could the moſt earneſt entreaties of thoſe whom he moſt eſteemed, lead him to alter his intentions. Annual Regiſter 1799. See Le Monnier.

MONNIERIA, in *Botany*, ſo named by Lœfling and Linnæus, in honour of M. le Monnier, firſt phyſician to the French king Louis XV., who accompanied Caſſini through the ſouthern provinces of France, in the ſummer of 1739, and ſubjoined an account of their natural hiſtory, particularly their more curious plants, to the geometrical remarks of that aſtronomer. M. le Monnier was greatly inſtrumental in promoting the introduction of hardy exotics into France. He had a choice garden at Verſailles, where the writer of this viſited him in 1786, and a very extenſive and valuable herbarium. Of the time of his death we have no information. Another genus had been previouſly dedicated to this able botaniſt, by Bernard de Juſſieu; but this was reduced by Linnæus, and ſubſequent writers, to *Gratiola*. Mr. R. Brown has however re-eſtabliſhed it, under the appellation of Herpestis; ſee that article, and Gratiola.—Lœfl. It. 197. Linn. Gen. 363. Schreb. 480. Willd. Sp. Pl. v. 3. 856. Mart. Mill. Dict. v. 3. Juſſ. 421. Lamarck Dict. v. 4. 261. Illuſtr. t. 596.—Claſs and order, *Diadelphia Pentandria*. Nat. Ord. uncertain; ſuſpected by Juſſieu and Lamarck to be near the *Borragineæ*, (*Aſperifoliæ* of Linnæus,) or poſſibly akin to *Spigelia*. We perceive ſtrong indications of the *Euphorbiæ* in ſome of its characters, however diſcordant others may appear.

Gen. Ch. *Cal.* Perianth inferior, in five deep, unequal, permanent ſegments; the upper one longeſt, linear, incurved over the flower; the lateral one on the outer ſide lanceolate, half as long, the reſt ſtill ſhorter and obtuſe. *Cor.* of one petal, ſhorter than the upper ſegment of the calyx, ringent; tube cylindrical, narroweſt in the middle, curved; upper lip ovate, obtuſe, undivided; lower in four equal, parallel, ſtraight, oblong, obtuſe, deep ſegments. Nectary an ovate ſcale, at the baſe of the germen, within the lower filament. *Stam.* Filaments two, dilated, membranous; the uppermoſt concave, cloven at the extremity; the lowermoſt flat, three-cleft; anthers on the upper filament two, combined, hairy within, embracing the ſtigma; on the lower three, very minute, cylindrical, probably ſterile. *Piſt.* Germen ſuperior, roundiſh, five-angled, five-lobed; ſtyle ſolitary, thread-ſhaped; ſtigma capitate, oblong, flattened within, orbicular, ſharp-edged. *Peric.* Capſules five, ovate, ſhort, compreſſed, of one cell, divided half way down into two valves. *Seeds* ſolitary, ovate, tubercular, filling the capſule, ſtraighter and blunter at their inner margin, each encloſed in a tunic, of two ſmooth elaſtic valves.

1. M. *trifolia.* Linn. Sp. Pl. 986. Aubl. Guian. v. 2. 730. t. 293.—Gathered by Lœfling at Cumana in South America; by Aublet in the meadows and cultivated land of Cayenne and Guiana. A ſpecimen, ſent by Mr. Alex. Anderſon, from the Dutch ſettlements in the laſt-mentioned country, was given us by ſir Joſeph Banks, there being none in the Linnæan herbarium. The *root* is annual and fibrous. *Stem* about a foot high, repeatedly forked, leafy, round; the upper part rough with minute hairs, curved upward. *Leaves* ternate, on hairy ſtalks, the lower ones oppoſite, the reſt uſually alternate; leaflets nearly equal, above an inch long, ovate, entire, pale green, hairy, eſpecially the edges and ribs, thickly beſprinkled on both ſides with ſmall reſinous dots; the middle one ſlightly ſtalked. *Flowers* in terminal, ſolitary, cloven, divaricated, ſimple cluſters, rather than ſpikes, with a ſolitary flower between, at the baſe. *Calyx* hairy. *Corolla* white. The *leaves*, though they have been dried 20 years, retain an acrid or burning flavour, without any fragrancy.—The natural affinity of this rare plant has puzzled the greateſt botaniſts. We venture to hint its relationſhip to the *Euphorbiæ*, rather as a conjecture than otherwiſe. The *capſules* are pale, dotted like the leaves. *Seeds* dark grey, almoſt black, rough with prominent points. S.

MONNOYE, Bernard de la, in *Biography*, was born at Dijon in the year 1641. He was brought up to the bar, but his taſte and eagerneſs for polite literature gave him diſguſt for legal purſuits. He contented himſelf therefore with a very trifling office, the duties of which gave him an opportunity to employ much time in his favourite ſtudies. He acquired an accurate knowledge of the Greek, Latin, Spaniſh, and Italian languages, and attained conſiderable excellence in the compoſition of French poetry. In 1671, he obtained a prize of the French academy for a poem entitled "Le Duel aboli." Several of his other pieces, written in praiſe of Lewis XIV., obtained ſimilar honours. He was free from ambition, and notwithſtanding the celebrity which he had acquired, he preferred living in his native province to a reſidence in the capital. He paſſed his time in an eaſy ſtate of independence, till the fatal ſyſtem of Law reduced him, with thouſands, to abſolute poverty. (See Law.) In this ſituation his merit was not overlooked; his diſtreſs was alleviated by a penſion from the duke of Villeroi, and he lived to the advanced age of eighty-eight. He was extremely converſant with literature in all its branches, and was accounted the oracle of bibliographers of his time. The works by which he is principally known are "Poeſies Françoiſes," coiſes," and "Nouvelles Poeſies," which conſiſt of miſcellaneous pieces of different degrees of merit. There are annexed to them Latin poems and ſmall pieces which may be ranked with fables, epigrams, and tales, written with elegance and true claſſical ſimplicity, but many of them have a licentious tendency. The Latin poems were alſo publiſhed by the abbè d'Olivet, together with thoſe of Huet, Maſſieu, and Fraugier; "Noels Bourguignons," a ſet of Chriſtmas carols in the Burgundian dialect, much applauded for their humour, but on account of the groſſneſs of ſome of them, they were condemned by the Sorbonne. Monnoye was author alſo of "Remarques ſur le Menagiana avec une Diſſertation ſur le Livre De tribus Impoſtoribus;" "Remarques ſur les Bibliotheques de du Verdier et de la Croix-du-Maine." He was editor of "Recueil des Pieces choiſies." His own works have been printed in three vols. 8vo. Moreri.

MONOCASY, in *Geography*, a river of America, in Maryland, which, after a S.S.W. courſe, diſcharges itſelf into the Patowmac, about 50 miles above Georgetown.

MONOCEROS, Unicorn, in *Aſtronomy*, a ſouthern conſtellation formed by Hevelius, containing in his catalogue, nineteen ſtars, and in the Britannic Catalogue thirty-one. See Constellation.

Monoceros, in *Ichthyology*, a ſpecies of *monodon;* which ſee.—Alſo, a ſpecies of *Baliſtes*, with the fin of the head unirradiated, and the caudal rays carinated. This is the *Baliſtes unicornu* of Bloch, with 51 rays in the anal fin, the *Capriſcus longus*, &c. of Klein, and the Acaramucu of Marcgrave and Willoughby. There is a variety of this, or a diſtinct genus of *Baliſtes*, denominated *Scriptus β*, the unicorn fiſh of Bahama, deſcribed in Cateſby's Carolina. It is found in the ſea that waſhes the coaſts of Aſia and South America; its colour is varied with cinereous and brown; the firſt is ſomewhat more than a foot in length; the ſecond is three feet long; they feed on young crocodiles, and the latter is held to be poiſonous.

Monoceros, a name which has been given to ſeveral animals, among which are, the *unicorn*, generally ſuppoſed to be a fabulous animal, but the exiſtence of which, in the interior of Africa, is inſiſted upon by ſeveral writers. A Mahometan African prince is ſaid to have ſent two of them to Mecca in the year 1799; an inſect called Meloë monoceros by Linnæus, and Notoxus monoceros by Fabricius. See the preceding article.

MONOCHORD, a muſical inſtrument with which to try the variety and proportion of muſical ſounds.

The monochord, according to Boethius, is an inſtrument invented by Pythagoras, for meaſuring geometrically, or by lines, the quantities and proportions of ſounds.

The ancient monochord was compoſed of a rule divided and ſubdivided into divers parts, on which there was a ſtring pretty well ſtretched upon two bridges, at each extremity. In the middle between both was a moveable bridge, called *magas*, by means of which, in applying it to the different diviſions of the line, the ſounds were found to be in the ſame proportion to one another, as the diviſions of the line cut by the bridge were.

The monochord is alſo called the *harmonical canon*, or *canonical rule;* becauſe ſerving to meaſure the degrees of gravity, and acuteneſs of ſounds. Ptolemy examines his harmonical intervals by the monochord.

There are alſo monochords with divers ſtrings, and a multitude of fixed bridges; but the uſe of all theſe may be ſupplied by one ſingle moveable bridge; by only ſhifting it under a new chord or ſtring, which is placed in the middle, and repreſents the entire ſound, or open note, anſwering to all the diviſions on the other bridges.

When the chord was divided into equal parts, ſo that the terms were as 1 and 1, they called them uniſons; if they were as 2 to 1, octaves, or diapaſons; when they were as 8 to 2, fifths, or diapentes; if they were as 4 to 3, they called them fourths, or diateſſarons; if the terms were as 5 to 4, diton, or a greater third; if as 6 to 5, demi-diton, or a leſſer third; laſtly, if as 24 to 25, demi-diton, or dieſis.

The monochord, being thus divided, was probably what they call a ſyſtem, of which there were many kinds, according to the different diviſions of the monochord.

Dr. Wallis has taught the diviſion of the monochord in the Philoſophical Tranſactions; but that inſtrument is now diſuſed, the modern muſic not requiring ſuch diviſion.

Cenſorinus informs us that Apollo found the monochord in the ſound of the ſtring of his ſiſter Diana's bow; and it ſeems at leaſt probable, that the firſt ſtringed inſtrument was a monochord, and that that ſingle ſtring was the ſtring of a bow.

Ariſtides Quintilianus ſays that the monochord was recommended by Pythagoras on his death-bed as the muſical inveſtigator, the criterion of truth. It appears to have been in conſtant uſe among the ancients, as the only means of forming the ear to the accurate perception, and the voice to the true intonation of thoſe minute and difficult intervals which were then practiſed in melody.

Monochord, Μονοχορδος, formed of μονος, *ſolus*, *ſingle*, and χορδη, *chord*, is alſo uſed for any muſical inſtrument, conſiſting of only one chord or ſtring.

The monochord, called alſo the *vielle*, and vulgarly the *hurdy-gurdy*, has frets which are raiſed by the action of the fingers on a row of keys; and inſtead of a bow, the ſtring is made to vibrate by the motion of a wooden wheel: there is alſo a ſecond ſtring ſerving as a drone, producing always the ſame ſound: this is furniſhed with a bridge looſely fixed, which ſtrikes continually againſt the ſounding board, and produces a peculiar naſal effect. The trumpet marine, or trumpet Marigni, was a ſtring of the ſame kind, which was lightly touched at proper points, ſo as to produce harmonic notes only: it was impelled by a bow. The Æolian harp is alſo an inſtrument, which, when agitated by the wind, affords a very ſmooth and delicate tone, frequently changing from one to another of the harmonics of the ſtring, according as the force of the wind varies, and as it acts more or leſs unequally on different parts of the ſtring. See Æolus's *Harp*.

MONOCHROMA, Μονοχρωμα, compounded of μονος, *ſingle*, and χρωμα, *colour*, a picture all of one colour.

MONOCOLI, Μονοκωλοι, a kind of fabulous men, who, as the Arabians give out, inhabit the country of Segir, in Arabia Felix; and are but half formed.

The word is Greek, compounded of μονος, *one*, and κωλον, *a member*.

MONOCOTYLEDONES, in *Botany*, from μονος, *one*, and κοτυληδων, *a cotyledon*, or *ſeminal leaf*, one of three great tribes or aſſemblages of plants, into which the whole vegetable kingdom is divided, by botaniſts who ſtudy a natural ſyſtem of arrangement, the other two being the Acotyledones and Dicotyledones; ſee thoſe articles, eſpecially the latter. Some plants indeed have been eſteemed polycotyledonous, as Flax, and the Fir tribe. But theſe are ſo very few, and agree ſo perfectly in their nature and phyſiology with the *Dicotyledones*, that they are beſt comprehended under the ſame denomination. The only vegetables for which we ſhould be diſpoſed to eſtabliſh a claſs of *Polycotyledones*, are the Ferns and Moſſes, hitherto referred, by Juſſieu and his followers, to the *Acotyledones*, but phyſiologiſts are not agreed on the ſubject of the germination of theſe plants. (See FILICES and MUSCI). A ſtill greater difficulty exiſts as to a diſtinction between the *Monocotyledones* and the *Acotyledones*, to which we have already ſufficiently adverted; ſee COTYLEDONES and GERMINATION. We ſhall therefore here conſider thoſe two ſuppoſed families as but one, for which the denomination of *Acotyledones* would be the moſt proper of the two, the other term having originated in an old opinion, that what is now known to be the *albumen* of the plants in queſtion, (and was obſerved in palms and graſſes, which make a part of the number,) was really a ſimple cotyledon.

But although we conſider the above two families as but one, as far as concerns the preſence, or rather abſence, of a cotyledon, we mean not to ſay the *Fungi*, *Algæ*, and *Hepaticæ*, which make the firſt three orders of Juſſieu's *Acotyledones*, have any conſiderable affinity to thoſe of his orders which he refers to *Monocotyledones*. On the contrary, they are, as well as the *Filices* and *Muſci*, his 4th and 5th orders, ſo very diſtinct, that no ſyſtem which combines them all together can be called natural. As to his remaining order of *Acotyledones*, the *Naiades*, they are too heterogeneous for us to decide upon with any certainty; but their natural affinity to the *Monocotyledones* of Juſſieu, and their diſſimilitude to his *Acotyledones*, are equally obvious. In the following remarks therefore we wiſh to be underſtood as ſpeaking of thoſe natural orders which the great French botaniſt comprehends under his diviſion of *Monocotyledones*, though we conſider them as not having properly any cotyledon at all. Theſe are fixteen in number, *Aroideæ*, *Typhæ*, *Cyperoideæ*, *Gramineæ*, *Palmæ*, *Aſparagi*, *Junci*, *Liliа*, *Bromeliæ*, *Aſphodeli*, *Narciſſi*, *Irides*, *Muſæ*, *Cannæ*, *Orchideæ*, and *Hydrocharides*. Under the laſt however Juſſieu, by miſtake, comprehends ſome dicotyledonous plants.

The plants in queſtion are remarkable for a great ſimplicity or plainneſs of ſtructure. Their leaves are for the moſt part alternate, ſimple, with ſimple parallel ribs. The number three prevails in the parts of fructification inſtead of five, which belongs to the *dicotyledones*. Their germination is lateral; their interior ſubſtance peculiarly ſoft and cellular. It is a favourite hypotheſis of Juſſieu that theſe flowers have no corolla, the gorgeous integument of the liliaceous plants being conſidered by him as a coloured calyx. His arguments in ſupport of this opinion only prove the great ſimplicity, and want of decided diſtinction, in their ſeveral parts. Thus, the petal of a tulip is alike liable to become half leaf, or half ſtamen. The outſide of petals of lilies, however richly they may be adorned within, in many inſtances approaches to the colour and texture of a calyx; while in *Pancratium* and *Narciſſus*, there is a ſuperabundance, or doubling as it were, of the more delicate part of the flower, ſo that theſe genera, far from wanting a corolla, appear to have two.

The internal ſtructure of the *Monocotyledones*, as explained by the learned Desfontaines and Mirbel, is extremely peculiar, and differs very eſſentially from that of other plants. They have no proper bark and wood, augmented gradually by concentric layers. (See CORTEX, and CIRCULATION *of the Sap*). Their cuticle indeed is like that of the *Dicotyledones*, generally ſpeaking; except that in ſome it abounds with a flinty ſecretion, in no ſmall quantity, nor is that ſecretion always confined to the cuticle; witneſs the order of graſſes. Their woody ſubſtance is depoſited round their numerous longitudinal tubes, as ſo many centres, ſuch tubes uniting here and there, compoſing a ſort of network, which gives firmneſs and tenacity to the body of the plant. Indeed the depoſition of wood, though not in concentric layers, is regular, according to ſome determinate arrangement in each family, and in ſeveral acquires a great degree of denſity and hardneſs. The peculiar ſecretions of this tribe are very frequently of a ſacccharine nature; and ſcarcely ever of a mucilaginous, never, we believe, of a reſinous kind. In their conſtitutions, ſome of them are very tender with regard to cold, others, in every reſpect nearly, the moſt hardy of plants; all are generally of rather rapid growth, though ſome very long-lived. Their roots are very generally perennial, to which there is ſcarcely an exception, beſides what occur in the natural order of graſſes. In conſideration of the order laſt mentioned, the *Monocotyledones* deſerve to be conſidered as the moſt important of all plants for the ſupport of mankind.

MONOCULUS, in *Entomology*, a genus of inſects of the order Aptera, of which the generic character is as follows: legs from four to eight, formed for ſwimming, and very long; body covered with a cruſt or ſhell divided into ſegments; ſome have four, ſome two antennæ, and ſome are without any; it has *one* or *two* eyes, notwithſtanding its name *monoculus*; when there are two eyes they approximate and are fixed in the ſhell; there are four feelers, in continual motion when ſwimming; the hind ones are very ſmall, and hook-ſhaped.

There are ſixty-eight ſpecies, ſeparated into eight diviſions, named according to the firſt eight letters in the alphabet. Theſe are found chiefly in Europe, a few in India, commonly in muddy ditches, frequently in ſea-waters, often paraſitic on fuci, confervæ, ulvæ, and other aquatic plants. Many inhabit our own ditches or ſea-coaſts.

Of all the monoculi by far the greater part are very ſmall water inſects, requiring the aſſiſtance of the microſcope for the inveſtigation of their particular organs; ſome, however, as we ſhall ſee, are ſo large as to require no very minute inſpection, and one ſpecies is of a ſize ſo gigantic that it is generally conſidered as the largeſt of the whole cruſtaceous tribe. This is the polyphemus, and will be found in the diviſion G.

The inſects in diviſion A have a ſingle eye and cruſtaceous body.

Species.

OCULUS. In this ſpecies there are no antennæ, but two feelers, which are long and branched; the tail is inflected. The inſects of this ſpecies are found in the pools and ſtagnant waters in many parts of Europe; they ſwim in ſwarms upon their back; each inſect has a large black eye, which appears to occupy the whole of the head.

* QUADRICORNIS. The antennæ in this ſpecies are four; the tail is ſtraight and bifid, the diviſions are branched. It is deſcribed in Donovan's Engliſh Inſects. It is found in different parts of Europe, and in the ſtagnant waters of this country. The body is ſometimes greyiſh or greeniſh, ſmooth or covered with hair; it has eight legs that are hairy; the female poſſeſſes an oval bag, containing the eggs on each ſide the tail. This is a very minute inſect, it derives its ſpecific name from its four horns, and is well known, being very common in almoſt every ſtagnant water, and ſometimes makes its appearance in that of pumps and wells, and is accordingly obſervable frequently in water brought to table.

Its ſize is not greatly ſuperior to that of the common mite.

Minutus. Here the antennæ are two and linear; the tail ending in two briſtles. This inſect is found at the banks of ditches, generally among duck-weed, and at firſt ſight is thought to reſemble the Lepiſma ſaccharina. The number of legs is ten, which are long and hairy; the tail ends in two papillæ.

Cæruleus. Antennæ two, linear; body blueiſh, with a ſtraight two-lobed tail. It inhabits Germany in muddy ditches. The head, the tail, and antennæ are red; the eyes black; abdomen green; legs eight.

* Rubens. Antennæ two, linear; body reddiſh, with a ſtraight forked tail. Found in ditches and rivulets, and is common through the whole year; it has eight legs.

Lacinulatus. In this the antennæ are two, linear and white; tail curved forked. It inhabits Germany, in ditches.

Longicornis. Antennæ two, linear and very long; tail bifid. It inhabits the ſea round Finmark. The tail ends in two briſtles.

Captivus. Antennæ two, linear; head covered with a dilated ſhield; tail ſtraight cleft. This is found in Germany. It has ſix legs; and the tail has ſix joints.

Minuticornis. In this the antennæ are two, ſhort and linear; the tail is cleft and ending in two briſtles. It is ſometimes though not often found in ſea-water. The feelers are about half as long as the antennæ.

Claviger. The antennæ two, ſubclavate, rigid; tail bifid. It inhabits, though very rarely, the rivers of Germany, and glides ſlowly along, alternately on its back, ſides, and belly, and ſometimes it will raiſe itſelf upright. The body above is white, and red beneath; the tail is without joints, and the legs are eight.

Crassicornis. The antennæ two, dilated and ſhort; tail bicuſpidate. Sometimes found in marſhy places. The body is in five ſegments; the antennæ branched at the baſe.

Curticornis. Antennæ two, which are minute and ſtraight, with three hairs at the tip; the body is inarticulate; the hands unarmed; the tail forked.

Chelifer. Antennæ two, ſhort and recurved; body inarticulate; hands chelate; tail forked. Found in ſea-water.

Brevicornis. Antennæ two, thoſe of the male hooked; the tail is ſet with very ſhort briſtles. It inhabits ſea-marſhes, and reſembles the quadricornis. The antennæ of the female are forked at the tip.

The inſects in diviſion B have a ſingle eye and bivalve ſhell; the antennæ are branched.

Species.

* Pulex. Tail inflected; ſhell mucronate behind. This inſect derives its ſpecific name, *pulex* or *water-flea*, on account of its peculiar ſtarting or ſpringing motion; it is almoſt an univerſal inhabitant of ſtagnant waters, appearing ſometimes in ſuch vaſt ſwarms as to cauſe an apparent diſcolouration of the water. It is an inſect of a highly ſingular and elegant appearance, exhibiting, when magnified,, a beautiful diſtribution of internal organs. It is generally about $\frac{1}{10}$th of an inch in length, but ſometimes conſiderably larger. It is of an oval ſhape, ſomewhat truncated in front, and ſharply pointed behind; the body is incloſed in a bivalve tranſparent ſhell, which, when examined by the microſcope, appears finely reticulated. The eyes of theſe animals are of a ſingular conſtruction, they are large in proportion to the inſect, and placed very near each other, and appear to conſiſt of many ſeparate globules of a black colour, united under a common ſkin. In the female inſect the ovarium is generally very conſpicuous, filling the greater part of the ſpace between the ſhells; the ova are very large in proportion to the ſize of the animal, and the young are hatched before their excluſion from the parent. This animal is ſaid to poſſeſs, in an inferior degree, the ſurpriſing property of the genus aphis, *viz.* that of producing a ſeries of already impregnated deſcendants.

Longispinus. Tail inflected; ſhell ſerrulate before and prickly behind. Found in freſh water. The ſhell is ovate, white, and pellucid, ending behind in a ſtrong ſpine ſerrate each ſide, and half as long as the ſhell; it has eight legs.

Quadrangula. The tail is inflected; ſhell quadrangular unarmed. Found in ſtagnant pools; the body is ſometimes red, and it has ſix legs.

Simus. Tail inflected; ſhell oval unarmed; found in marſhes; the ſhell is pellucid and yellowiſh.

Rectirostris. Tail inflected; hind head with two projecting horns: inhabits marſhes. The ſhell is oval pellucid, with gaping valves, and ciliate on the fore-margin; the tail two long briſtles; legs ſix to eight.

Curvirostris. Tail inflected; the front has two inflected horns. It is found in pools; the ſhell is hairy on the fore-margins; front has two pendent horns; the tail ends in two hooks; it has eight legs.

* Mucronatus. Tail inflected; ſhell ovate, beneath inflected, and prickly behind. It is found in marſhes. Swims on its back on the ſurface of the water. The ſhell has four black dorſal ſtreaks; it has twelve legs.

Crystallinus. Tail inflected; oblong cryſtalline; head with two ſhort horns at the tip. Found in freſh water. The body is white pellucid, with twelve hairy legs.

Pediculus.. The tail of this ſpecies is inflected. It inhabits freſh water.

Setifer. The tail is ſtraight; ſhells with long tufts of hair at the angles of the valves. It inhabits ſtagnant pools. The ſhell is oblong, pellucid, and cryſtalline; the antennæ have three branches; the legs, which are eight or more, are very hairy; and the tail is divided at tip.

The inſects in diviſion C have a ſingle eye and bivalve ſhell; the antennæ are ſimple.

Species.

Viridis. Shell ovate, downy, green; the fore-legs falcate, and ſerrate within. It is found in ſea-water on fuci and confervæ.

* Luteus. Shell ovate, gibbous, glabrous, pale yellow. Found on fuci.

* Flavidus. Shell oblong, glabrous, pale yellow. It is found frequently on the Fluſtra lineata. The ſhell is pellucid; fore-legs round.

Gibbosus. Shell ovate, hiſpid, and gibbous each ſide. Found on ulvæ. The ſhell is ovate, pale, and briſtly.

Coarctatus. Shell ovate, glabrous, and contracted in the middle. It inhabits fuci. The ſhell is of a greeniſh hue, with a black eye.

The inſects in diviſion D have a ſingle eye and bivalve ſhell; antennæ tufted at the tip.

Species.

Detectus. Shell oblong, white, pellucid; tail with two briſtles. Inhabits ditches. It has four legs, the fore ones are recurved; hind-ones reflected.

Strigatus. Shell kidney-ſhaped, brown, with three white bands. Found in muddy ruts. The ſhell is glabrous; the antennæ have eleven briſtles.

Ornatus. The ſhell of this ſpecies is ovate, ſituate beneath, on the fore-part, and variegated with white, green, and fulvous.

Pilosus. The ſhell is ovate, brown, ciliate before and behind. This ſpecies is found in the nectaries of the Utricularia minor. The ſhell is ſmooth, glabrous, and opaque.

Candidus. Shell ovate, ſnow-white, immaculate. It is found in marſhes. Shell obtuſe before and behind.

Lævis. Shell ovate, glabrous, greeniſh. Inhabits ditches. The ſhell is obtuſe and opaque; tail ending in a ſpire.

Vidua. Shell ovate, white, with three black bands. Found in muddy water. In this ſpecies two of the bands are in the middle, and one on the fore-margin. The valves are gibbous and whitiſh.

Telemus. Shell ſub-globular, three-toothed behind with a truncate lip on the fore-part. It is found at Algira, and is pellucid. Some naturaliſts imagine that it does not belong to this genus.

Lenticularis. Shell compreſſed and lentiform. Found in Finland.

* **Conchaceus.** Shell ovate, downy. Found in ſtagnant water. This is an Engliſh inſect, and has been deſcribed and figured by Mr. Donovan. The body is green, opaque, with yellowiſh legs; its abdomen nearly two-lobed, and fulvous, with a black circle in the middle: it contracts itſelf within the ſhell, and ſwims on the belly.

Fasciatus. The ſhell is oblong, whitiſh, with a green band. Found in ſtagnant water, and reſembles a grain of barley. The green band is placed in the middle behind the eye.

Monachus. Shell glabrous, yellow, edged with black; the ſhell is opaque, truncate before, and rounded behind.

Crassus. Shell oblong, gibbous, yellowiſh, with an oblique, abbreviated, fulvous band. It inhabits fenny places.

Inſects in diviſion E with a ſingle eye and univalve ſhells, and two antennæ.

* **Satyrus.** Shell ovate, pellucid, and emarginate behind; antennæ obtuſe. This ſpecies is noticed by Baker and Adams on the microſcope. The ſhell is flat and membranaceous; fore-legs with a double ſhank; tail truncate, and cleft in the middle.

Silenus. Shell is ovate, opaque, and ſub-marginate behind; laſt joint of the antennæ ſubulate. It is found in ditches filled with the leaves of trees. The ſhell is ſometimes yellowiſh.

Mænus. Shell oval; antennæ horizontally extended; body truncate at the baſe. Inhabits ſea-water. Swims on its back; ſhell with a convex fulvous back.

Faunus. Shell ovate, pellucid, and emarginate behind; laſt joint of the antennæ ſubulate. Found in ditches among duck-weed. Shell gibbous; antennæ bent back.

Bacchus. The ſhell is ovate, emarginate behind, and ending in two briſtles. It inhabits rivers. The antennæ are ſtretched forwards.

Thyas. The ſhell of this ſpecies is dilated, linear; the antennæ are incumbent. Found in ſtinking ſea-water. The fore-legs are branched.

Bracteatus. The ſhell is globular, and unarmed; it has ſix legs. Is found in freſh water. The antennæ are obtuſe; ſhell very pellucid.

* **Saltatorius.** Shell oval-oblong, and briſtly behind. This is deſcribed by Baker and Adams. The ſhell is pellucid, and terminated by briſtles.

Inſects in diviſion F have their ſhells univalve, and two eyes placed beneath.

Charon. Shell pellucid, and four legs. Found in ditches. The eyes are ſpherical, remote, deep black, with four capillary circles round them.

* **Delphinus.** Shell gibbous; eight legs. Inhabits rivers. It is deſcribed by Baker on the microſcope.

Armiger. This ſpecies has ſix legs.

Inſects in diviſion G have their ſhells bivalve; two eyes placed on the back.

Species.

Polyphemus. Shell orbicular; the ſuture lunate, and toothed behind; tail ſubulate, and very long. This ſpecies is commonly diſtinguiſhed by the title of molucca, or king-crab. Specimens have ſometimes been ſeen two feet in length, excluſive of the tail. It is a native of the Indian ocean, and is generally found in pairs. The colour of the whole animal is of a yellowiſh-brown; the ſhell is very convex, rounded in front, and lunated behind, where it joins the lower part of the body. The ſhell, which is of a cruſtaceous nature, is marked on each ſide into ſeveral ſpiny inciſions. It has ſeven legs on each ſide, which are ſituated beneath the concavity of the large or round part of the ſhell, and are each terminated by a double claw; the branchiæ, or reſpiratory organs, are diſpoſed in the form of ſeveral flat, rounded, imbricated lamellæ, on each ſide the lower part of the body; the tail, which is ſtraight, triangular, and of the ſame cruſtaceous nature with the reſt of the ſhell, is equal in length to the whole body, and gradually tapers to a ſharp point. The eyes in this ſpecies are diſtant from each other, of a ſemi-lunar form, and the ſurface is divided into a great number of minute conical convexities: this part is, however, regarded as conſtituting the cornea, or exterior covering of the eye, the organs themſelves being placed on a pedicle, beneath each of the ſemi-lunar corneæ. A writer in the Philoſophical Tranſactions, ſpeaking of this inſect, ſays, "the eyes, inſtead of being approximated, as is required in the Linnæan generic character, are extremely diſtant from each other, being ſituated towards the ſides of the ſhell. The whole ſtructure of the animal is very remarkable, and particularly his eyes, which are between the fourth and laſt pair of claws on each ſide, reckoning from his mouth, and excluding the ſmall pair there placed, are inſerted the rudiments of another pair, or a claw broken off on each ſide, at the ſecond joint or elbow: on theſe extremities are the eyes, like thoſe of the horns of ſnails, but under the covert of a thick and opaque ſhell, nature in that place hath wonderfully contrived a tranſparent lanthorn, through which the light is conveyed.

Cyclops. Shell convex, with three lines of raiſed ſpines; tail very long, and unarmed. It is about one-third the ſize of the polyphemus, and is found in India. Shell lunate before, with three raiſed dorſal lines, and two acute teeth, finely ſerrate behind, with a raiſed line in the middle, in which are three teeth.

* **Apus.** Shell oblong, truncate, and ſerrate behind; tail ending in two briſtles. It is found in ſtagnant water. This is the largeſt of the European monoculi. It is a rare ſpecies in this country, having been only obſerved in a few particular ſituations. In its general ſhape it is conſiderably

allied to the large exotic ſpecies above-deſcribed, but the form of the body is more lengthened. The branchiæ, or reſpiratory organs, are large, and diſtributed into numerous imbricated rows on the under part of the body: beneath the front is a pair of jointed trifid arms, extending on each ſide to a conſiderable diſtance; the eyes are placed near each other in front of the ſhell; the tail is terminated by a pair of long forks, or ſetaceous proceſſes; the colour of the whole inſect is of a pale greeniſh-brown above, and reddiſh beneath. An account has been given in the 40th vol. of the Phil. Tranſ. that this ſpecies has been ſeen in numbers in a pond at Bexley, in Kent. It is alſo added, that the ſame pond, having been perfectly dried, and being ſuddenly filled, during a heavy thunder-ſtorm, ſwarms of the ſame animals were again obſerved in it within the ſpace of forty-eight hours after.

* Piscinus. Shell heart-ſhaped and flat; body ſhort; tail bifid, and compoſed of one thin flap. It is a native of European ſeas. Found on flounders, cod-fiſh, ſalmon, &c. adhering on the outſide between the ſcales, running ſwiftly, with its tail elevated, both on the fiſh and on the water. Shell pellucid, with yellowiſh marks; abdomen very ſhort, with a long bifid tail.

Pennigerus. Shell hemiſpherical, with a linear future; tail feathered. Inhabits freſh water.

Salmoneus. Shell oblong; tail imbricate, and four-leaved. It is found, as its name denotes, ſticking to the ſalmon, between the ſcales.

Inſects of diviſion H have bivalve ſhells, two eyes, and capillary antennæ.

Species.

Brachyurus. Shell globular; tail deflected; four antennæ. It is found in marſhes. The ſhell is pellucid, reddiſh-brown when young, and green as it grows older, with a white eye on the fore-part, and a black one behind; legs are twenty to twenty-four.

* Sphæricus. Shell globular; tail inflected; two antennæ. This ſpecies is found among the duck-weed in ſtagnant water. It is a native of Europe, and found frequently in this country. It is very minute; the ſhell is reddiſh; it has two antennæ; twelve legs; and the tail is furniſhed with a ſmall hook at the extremity, and concave beneath; the ovariæ are green.

Quadrangularis. Shell quadrangular, hence its ſpecific name; tail inflected; antennæ two; legs in number are from twelve to ſixteen, beſides numerous ſmaller ones; the tail is armed with two minute ſpines at the tip.

Lamellatus. Shell ventricoſe; tail inflected lamellate; antennæ two. Found in ſtagnant water. The ſhell is convex; eyes are green; legs capillary; the tail has a broad ſerrate lamina beneath, and two ſpines at the tip.

Trigonellus. Shell gibbous before; tail inflected, ſerrate; four antennæ. Found in ditches. The ſhell is ciliate, with a ſharp proboſcis; antennæ with three briſtles at the tip; ovaries black.

Truncatus. Shell ovate, and toothed behind; tail inflected, ſerrate; four antennæ. Inhabits ſtagnant waters. Shell oblique, ſtriated, ciliate before, and ſerrate behind; the tail is broadiſh, and ending in a claw.

Longirostris. Shell roundiſh; tail inflected; ſhell prickly on the fore-part. It inhabits rivulets. The proboſcis is longer than the head, curved, and ſubulate.

Macrourus. Shell oblong; tail ſtraight; antennæ four. It is found in lakes. The ſhell is pellucid, whitiſh; legs eight; nail lanceolate.

Socors. Shell ovate; tail projecting, curved; antennæ two. Found in almoſt all kinds of waters. The ſhell is pellucid, without ſtriæ, teeth, or fringe. It has four legs, and the tail is bicuſpidate at the tip.

Monoculus, or *Monophthalmus*, (from μονος, *ſingle*, and *oculus*, or οφθαλμος, *an eye*,) a bandage in *Surgery*, formerly much more employed than at preſent. It conſiſted of a roller, ten or twelve feet in length, and about three inches in breadth. It was firſt fixed on the occiput, about a foot of the bandage being left hanging down. It was then carried obliquely round the head, over the forehead, to the occiput again. After being applied thrice round the head in this oblique direction, the remainder of the bandage was expended in more horizontal turns. The end, hanging down behind, was laſtly brought over the vertex to the forehead, and the whole was ſecured with pins. The chief uſe of the monoculus was to retain dreſſings and application on diſeaſes about the eye. The old ſurgeons had alſo a double monoculus; but it ſcarcely merits deſcription, as it is now ſeldom or never made uſe of.

MONODON, in *Ichthyology*, a genus of fiſhes of the order Cete. The generic character is: two teeth in the upper jaw, extending ſtraight forwards, long, ſpiral; ſpiracle on the fore and upper part of the head. Dr. Shaw has altered the generic character, by uſing the ſingular, *tooth* projecting, inſtead of *two teeth*, becauſe though he admits there are ſometimes two teeth, yet as the animal is generally found with one only, and becauſe the generic name *monodon* is derived from that very circumſtance, the alteration ſeems neceſſary. According to Gmelin there is but one ſpecies, *viz.* the *monoceros*, but Dr. Shaw mentions two ſpecies. We ſhall deſcribe them both:

Species.

Monoceros, or *Narwal*, is a native of the northern ſeas, where it is ſometimes ſeen of more than twenty feet in length from the mouth to the tail. It is at once diſtinguiſhable from every other kind of whale, by its very long, horn-like tooth, which is perfectly ſtraight, of a white or yellowiſh-white colour, ſpirally wreathed throughout its whole length, and gradually tapers to a ſharp point. It meaſures from ſix to nine or ten feet in length, and proceeds from a ſocket on one ſide of the upper jaw, having a large cavity at its baſe or root, running through the greater part of the whole length. In young ones, and ſometimes in thoſe that are full grown, there are two teeth, but in general the narwal is found with a ſingle tooth, the ſocket of the other being cloſed, or at moſt but obſurely viſible, and now and then the appearance of a ſecond tooth in an extremely ſmall ſtate, or juſt beginning to emerge, is perceptible, as if intended by nature to ſupply the place of the other, if broken or caſt. The head of the narwal is ſhort, and convex above, the mouth is ſmall; the ſpiracle or breathing-hole is duplicated within; the tongue is long; the pectoral fins are ſmall. The general form of the animal is rather long than thick in proportion to its ſize. The colour, when young, is nearly black, but the belly is lighter. As, however, it advances in age, it becomes marbled, or variegated with black and white on the back and ſides, while the belly is nearly white. The ſkin is ſmooth, and there is a conſiderable depth of oil or blubber beneath it. It is chiefly found in the northern parts of Davis's ſtraits, and its food is ſuppoſed to conſiſt of ſmall flat fiſh, as well as of actiniæ, meduſæ, and other marine animals. It is commonly ſeen in the ſmall open or unfrozen ſpots towards the coaſts of the northern ſeas. To ſuch places the narwals reſort in multitudes, for the conveniency of breathing, and becauſe they are ſure to find, near the ſhores, a due ſupply of food: they are taken by means of harpoons, and the fleſh is eaten by the Greenlanders, raw, boiled, and dried; the inteſtines and oil are alſo uſed as a food; the tendons make good thread, and the teeth ſerve the purpoſe of hunting horns, as well as that of building tents and houſes. A throne made for the Daniſh monarchs is ſaid to be ſtill preſerved in the caſtle of Roſenberg, compoſed entirely of narwals' teeth, which were formerly conſidered as more valuable than gold.

Spurius. This, if it be a diſtinct ſpecies of the monodon, has a pinnated back, and two ſmall teeth in the upper jaw.

It is deſcribed by Fabricius, in his *Fauna Groenlandica*, as a ſpecies moſt allied to the narwal, but not perhaps, ſtrictly ſpeaking, of the ſame genus; it has no teeth in the mouth, but from the extremity of the upper mandible project two minute, conic, obtuſe teeth, a little curved at the tips, weak, and not above an inch long; the body is elongated, cylindric, black. Beſides the pectoral fins and horizontal tail, there is alſo a minute dorſal fin. Its fleſh and oil are conſidered as purgative; it is among the rareſt of whales, and inhabits the main ocean, ſeldom coming to the ſhore. It has a ſpiracle like other whales. It is very ſeldom taken alive, but found dead on the ſhores.

MONODY, Monodia, compounded of μονο;, *ſolus*, and ωδη, *a ſong*, in the *Ancient Poetry*, a kind of mournful ſong or ditty, ſung by a perſon alone, to utter his grief.

Monody, in *Muſic*, a ſong for a ſingle voice, in oppoſition to what the ancients called chorodies, or muſic executed by a chorus.

MONOECIA, in *Botany*, from μονος, *one*, and οικια, *a houſe*, the 21ſt claſs of the artificial ſyſtem of Linnæus, conſiſting of ſuch plants as have barren, or male, flowers on the ſame individual with fertile, or female, ones; whereas in the 22d claſs ſuch flowers grow upon diſtinct individuals of the ſame ſpecies. (See Dioecia.) How far theſe claſſes are natural or not, we have explained under that article.

The orders of *Monoecia* in Linnæus are eleven, diſtinguiſhed upon the ſame principles as thoſe of *Dioecia*. 1. *Monandria* is exemplified by *Aegopricon* and *Zannichellia*, permanently monoecious genera, as having a different ſtructure in the acceſſory parts of their male and female flowers. 2. *Diandria* is ſcarcely tenable, one of its two genera, *Anguria*, having no ſuch difference of ſtructure, and the other, *Lemna*, having certainly the ſtamens and piſtil in the ſame flower, except by accidental or partial imperfection. 3. *Triandria* contains *Carex*, *Sparganium*, &c., with ſome plants of the order of *Tricoccæ*, or *Euphorbiæ*, all properly placed here. 4. *Tetrandria* conſiſts of the *Littorella*, *Betula*, *Buxus*, *Urtica* and others. 5. *Pentandria* embraces a remarkable tribe, cloſely allied, for the moſt part, to the Syngeneſious, or compound, claſs; but their anthers are ſeparate, and in ſome of them, as *Xanthium* and *Nephelium*, the female flowers have no reſemblance to that claſs, nor to their own males. 6. *Hexandria* conſiſts chiefly of a very few graſſes. 7. *Heptandria* depends only on *Guettarda*, much better placed in *Pentandria Monogynia*. (See Guettarda and Matthiola.) 8. *Polyandria*, (having eight or more ſtamens,) is beſt illuſtrated by the important genera *Fagus*, *Quercus*, *Juglans*, &c. whoſe male flowers are, in moſt caſes, amentaceous. 9. *Monadelphia* has the no leſs important genus *Pinus*, with ſome of the *Euphorbiæ*. 10. *Syngeneſia* conſiſts of the Gourd or Cucumber tribe; but it is difficult to account for their being placed here, their anthers being in no manner combined. On the contrary, their filaments are more or leſs united, inſomuch that Willdenow removes them to the 9th order, *Monadelphia*. This does not ſeem correct with reſpect to any of the tribe; and in thoſe we have examined the filaments are united, more or leſs completely, into three ſets, ſo as ſtrictly to conſtitute an order of *Monoecia Polyadelphia*, which ſhould take place of this 10th Linnæan order. (See Momordica.) 11. *Gynandria*, compoſed of *Andrachne* and *Agyneia*, does not appear to exiſt in nature at all, theſe genera belonging more properly to the 9th order, *Monadelphia*, where ſome of their allies already find a place.

We cannot too often proteſt againſt the abolition of the monoecious and dioecious claſſes, whether we conſider them in the light of natural or commodious arrangements, although ſome plants may have been improperly referred to them.

MONOEMUGI, or Nimaama, in *Geography*, a kingdom of Africa, having, as it is ſaid, great extent, and reaching northward to Abyſſinia; bounded on the E. by the kingdoms of Mongallo, Mozambique, and other ſmall ſtates along the coaſt of the Indian ſea; on the S. by Mocaranga, and on the W. by Congo and Angola; but its real limits have not been aſcertained. The ſovereign, however, is repreſented as a rich and powerful prince, and has ſubdued moſt of the ſurrounding and adjacent kingdoms. To this ſovereign belong many rich gold, ſilver, and copper mines, which enable him to carry on commerce with Abyſſinia and other countries, as well as with ſome of the eaſtern coaſters, with whom he is under a neceſſity of exchanging the precious metals for Indian and European commodities, as he has no port of his own in either the eaſtern or weſtern ſea. Elephants being numerous ſupply vaſt quantities of ivory for this trade, and afford to the emperor conſiderable profit, as well as benefit to his ſubjects. M. de Liſle, in his Atlas, divides this kingdom into the five following provinces or ſovereignties: *viz.* the Maracates, the Moſſagueras, the kingdom of the Bengas, of Maſty, and of Maravi; and this laſt M. d'Anville places on the ſouthernmoſt border of the lake of that name.

MONOGAMIA, in *Botany*, from μονος and γαμος, *a ſimple marriage*, the fixth order of the claſs *Syngeneſia* in the Linnæan ſyſtem, as left by its author, deſtined to admit ſuch genera as have their anthers combined, the flowers being ſimple. Such were ſuppoſed to be *Lobelia*, *Viola*, *Impatiens*, *Jaſione*, among Britiſh plants, and the exotic *Seriphium*, *Strumpſia*, and *Corymbium*, to which might be added *Calicera*, Cavan. Ic. t. 358, and *Barreria* of Schreber. But the union of the anthers is found by no means univerſal throughout all the ſpecies of theſe genera, at leaſt of the two firſt, which are very natural genera; and on the other hand this union occurs here and there among the ſpecies of others no leſs natural, as *Gentiana*. In ſhort, the character in queſtion proves of no avail in ſimple flowers; nor is there any natural affinity, between the above Britiſh genera at leaſt, and the moſt natural claſs of compound flowers with combined anthers, the true *Syngeneſia*. *Seriphium* and *Corymbium* cauſe no difficulty; for they are in every reſpect genuine Syngeneſious plants, and though the florets are ſolitary in each partial calyx, the flowers are aggregate, or collected in a common calyx; ſo that they readily go to the 5th order of *Syngeneſia*, termed *Polygamia-ſegregata*, and ſerve but to ſtrengthen and confirm that moſt natural claſs. The order *Monogamia* is now therefore generally aboliſhed, certainly with great advantage. The plants which compoſed it are removed to *Pentandria Monogynia*, where moſt of them meet with many natural allies. *Calicera* of Cavanilles appears to be referrible to *Syngeneſia Polygamia-ſegregata*. The affinity of *Strumpſia* is doubtful. *Barreria*, Aublet's *Poraqueiba*, is conſidered by Juſſieu as akin to his *Berberides*.

MONOGAMY, compounded of *μονος*, *ſolas*, and *γαμος*, *marriage*, the ſtate or condition of thoſe who have only married once, or are reſtrained to a ſingle wife. See POLYGAMY.

MONOGASTRIC, in *Anatomy*, a name given by Vieuſſens, and ſome of the French writers, to one of the muſcles of the ear, called by Cowper the internus auris, and more properly by Albinus, the tenſor tympani.

MONOGRAM, MONOGRAMMUS, a cipher, or character, compoſed of one or more letters interwoven; being a kind of abbreviation of a name; anciently much uſed as a badge, ſeal, arms, &c.

Among medalliſts, a monogram is the name of a prince, city, or the like, of which the characters are, as it were, woven together, and the limb of one character applies to three or four others; ſo that in the ſmall ſpace of one or two characters a whole name is comprehended.

Under the eaſtern empire, it is uſual to find M I K, which are the monogram of Maria, Jeſus, Conſtantine.

The uſe of monograms is of an ancient ſtanding, as appears from Plutarch, and from ſome Greek medals of the time of Philip of Macedon, Alexander his ſon, &c. The Roman labarum bore the monogram of Jeſus Chriſt, conſiſting of two letters, a P placed perpendicularly through the middle of an X, *e. gr.* ☧, as we find it in ſeveral medals of the time of Conſtantine, thoſe being the two firſt letters of the word Χριστος, *Chriſt.*

Kings formerly marked their coins with their monograms: of this we have inſtances in Charlemagne's coins. That prince alſo uſed the monogram for his ſignature. Eginhard gives us this reaſon for it, *viz.* that Charlemagne could not write; and that, having attempted in vain to learn in his grown age, he was reduced to the neceſſity of ſigning with a monogram.

The ancients alſo uſed monograms as notes, or abbreviations of inſcriptions; for the underſtanding of which we have expreſs treatiſes of Valerius Probus, Sert. Urſatus, &c.

MONOGRAPHI, in *Botany*, authors who have written expreſs treatiſes on only one plant; as Douglas on the Guernſey lily, &c.

MONOGYNIA, from *μονος*, *one*, and *γυνη*, *a female*, is the name of ſuch orders in the firſt thirteen claſſes of the Linnæan ſyſtem, as have a ſingle ſtyle, or ſeſſile ſtigma, in each flower. A ſingle ſtyle however is by no means confined to theſe claſſes, being univerſal in the 14th and 15th as well as in the 17th and 19th, all very extenſive and natural claſſes of the ſame ſyſtem, and it occurs here and there amongſt the others; though in none of theſe inſtances does it give a denomination to any order, or ſection. See DIGYNIA.

MONOK, in *Geography*, a town of Hungary; 12 miles W.N.W. of Tokay.

MONOKA, a river of Maryland, which runs into the Cheſapeak, N. lat. 38° 10′. W. long. 76° 53′.

MONOLOGUE, Fr. an opera tune by one actor alone, who only ſpeaks or rather ſings to himſelf. In declamation it is a ſoliloque. "It is in monologues (ſay the French) that all the powers of muſic are diſplayed; the performer giving way to all the ardour of his genius, unreſtrained in the length of his air or recitative by the preſence of an interlocutor." The accompanied recitatives of the Italians, which produce ſuch great effects, are always monologues.

MONOMACHIA, Μονομαχια, from *μονος*, *ſolus*, and *μαχη*, *combat*, a duel, or ſingle combat of man againſt man.

Monomachia was anciently allowed by law, for the trial or proof of crimes. It was even permitted in pecuniary cauſes, as appears by ancient records. It is now forbidden both by the civil and canon laws. See COMBAT.

Alciat has written a treatiſe "De Monomachia."

MONOMERES, a word uſed by the ancients alone, but more frequently joined with the word *phorbeia*, to expreſs one ſort of the bandage uſed to confine the breath, by thoſe who played on the ancient pipe. This conſiſted only of one ſtraight and one tranſverſe piece; and the latter came fully over the mouth, and cloſed it up, except that a hole was cut in it to receive the mouth-piece of the pipe. The *diemeres* conſiſted of ſeveral pieces, and only tied up the lower-lip.

MONOMIAL, in *Algebra*, a root or quantity that has but one name; or conſiſts but of one part or member. Such are *a b*, *a a b*, *a a a b b*. See QUANTITY, BINOMIAL, TRINOMIAL, ROOT, &c.

Monomials may be either rational, or irrational.

MONOMIES CASTLE, in *Geography*, a fort of America, on the river Winebago. N. lat. 44° 18′. W. long. 87° 34′.

MONOMIES *River*, a river of North America, from which is derived the name of a tribe of Indians, and which runs into that part of lake Michigan, called "Green bay," N. lat. 44° 46′. W. long 87° 27′.

MONOMONIL, a town of N. America, on the W. ſide of Green bay. N. lat. 44° 32′. W. long. 87° 28′.

MONOMOTAPA. See MOCARANGA.

MONONGAHELA RIVER, a branch of the Ohio, 400 yards wide at its junction with the Alleghany at Pittſburg; navigable with batteaux and barges beyond Redſtone creek, and ſtill farther with lighter craft. It riſes at the foot of the Laurel mountain in Virginia, paſſes into Pennſylvania, ſeparates Fayette and Weſtmoreland from Waſhington county, and then joining the Alleghany river at Pittſburg, forms the Ohio.

MONONGALIA, a county in the N.W. part of Virginia, about 40 miles long and 30 broad; containing 8540 inhabitants.

MONOPAGIA, a word uſed by ſome *medical* writers, for that ſpecies of head-ache which affects only one point, or ſmall part of the head.

MONOPETALOUS, in *Botany*, a flower whoſe *corolla* conſiſts of but one piece, or petal, as in the Primroſe. A monopetalous corolla is almoſt univerſally tubular. Very rarely the tube is ſlit, from top to bottom, at one ſide, as in *Goodenia* and *Scævola.* There are indeed a few monopetalous flowers which ſeem to be ſo from a partial defect, as *Amorpha*, the only petal of whoſe corolla is the ſtandard (*vexillum*), the wings and keel being wanting, though the form of every part of the fructification, as well as the habit of the ſhrub, indicates its ſtrictly papilionaceous nature. Another genus, *Rittera* of Schreber, (*Poſſira* of Aublet and Juſſieu,) which is alſo of the leguminous kind, though not papilionaceous, has a ſingle lateral petal, of a broad roundiſh figure, with a very ſhort claw. (See RITTERA.) The diſtinction between a monopetalous and polypetalous corolla, is the moſt abſolute of all, in the ſyſtems of thoſe who arrange plants by this part; and is indeed leſs liable to variation than even the abſence or preſence of the corolla itſelf. See COROLLA and CLASSIFICATION.

MONOPHAGI, Μονοφαγοι, in *Antiquity*, a deſignation given to thoſe who celebrated the Æginean feſtival, becauſe they feaſted or eat together without the aſſiſtance of their ſervants; none but the denizens of that iſland being allowed to be preſent.

MONOPHYSITES, from μονος, *ſolus*, and φυσις, *natura*, in *Eccleſiaſtical Hiſtory*, a general name given to all thoſe ſectaries in the Levant, who only own one nature in Jeſus Chriſt; and maintain, that the divine and human natures of Chriſt were ſo united, as to form only one nature, yet without any change, confuſion, or mixture of the two natures. See EUTYCHIANS.

The Monophyſites, however, properly ſo called, are the followers of Severus, a learned monk of Paleſtine, who was created patriarch of Antioch in 513, and Petrus Fullenſis, whence they were called "Severians."

The Monophyſites were encouraged by the emperor Anaſtaſius, but depreſſed by Juſtin and ſucceeding emperors. However, this ſect was reſtored by the eloquence, activity, and diligence of Jacob Baradæus, an obſcure monk, inſomuch, that when he died biſhop of Edeſſa, A.D. 578, he left it in a moſt flouriſhing ſtate in Syria, Meſopotamia, Armenia, Egypt, Nubia, Abyſſinia, and other countries. The laborious efforts of Jacob were ſeconded in Egypt, and the adjacent countries, by Theodoſius, biſhop of Alexandria, and he became ſo famous, that all the Monophyſites of the Eaſt conſidered him as their ſecond parent and founder, and are to this day called Jacobites, in honour of their new chief. The Monophyſites are divided into two ſects or parties; the one African, the other Aſiatic: at the head of the latter is the patriarch of Antioch, who reſides, for the moſt part, in the monaſtery of St. Ananias, near the city of Merdin, his epiſcopal ſeat; and alſo at Amida, Aleppo, and other Syrian cities: the former are under the juriſdiction of the patriarch of Alexandria, who generally reſides at Grand Cairo, and are ſubdivided into Cophts and Abyſſinians. From the fifteenth century downwards, all the patriarchs of the Monophyſites have taken the name of Ignatius, in order to ſhew that they are the lineal ſucceſſors of Ignatius, who was biſhop of Antioch in the firſt century, and conſequently the lawful patriarchs of Antioch. In the 17th century, a ſmall body of the Monophyſites in Aſia, abandoned, for ſome time, the doctrines and inſtitutions of their anceſtors, and embraced the communion of Rome: but the African Monophyſites, notwithſtanding that poverty and ignorance which expoſed them to the ſeductions of ſophiſtry and gain, ſtood firm in their principles, and made an obſtinate reſiſtance to the promiſes, preſents, and attempts employed by the papal miſſionaries, to bring them under the Roman yoke: and in the 18th century, thoſe of Aſia and Africa have perſiſted in their refuſal to enter into the communion of the Roman church, notwithſtanding the earneſt intreaties and alluring offers, that have been made from time to time by the pope's legates, to conquer their inflexible conſtancy. The Monophyſites propagate their doctrine in Aſia with zeal and aſſiduity, and have not long ago gained over to their communion a part of the Neſtorians, who inhabit the maritime coaſts of India. Moſheim's Eccl. Hiſt.

MONOPIN HILL, in *Geography*, a hill on the iſland of Banca, which forms the N.E. point of the entrance of the Straits. S. lat. 2° 3'. E. long. 105° 18'. The difference of longitude between the iſland Luſepara, which lies in the S. entrance of the ſtraits of Banca, and Monopin hill, which forms one ſide of the entrance from the north, is 55'. See *Straits of* BANCA.

MONOPOLI, a town of Naples, in the province of Bari, on the coaſt of the Adriatic ſea; the ſee of a biſhop; containing ſix churches and nine convents; 144 miles E. of Naples. N. lat. 41° 8'. E. long. 17° 19'.

MONOPOLY, ſtrictly ſpeaking, in the language of the law, is very ſimilar to engroſſing: the latter is the act of buying up corn and other proviſions, for the purpoſe of ſelling them again; the former is the ſame offence, extended to other branches of trade: both are ſuppoſed to be done for the purpoſe of gaining the entire command of the market, and by this means raiſing the prices of the commodities engroſſed or monopoliſed.

Monopoly is alſo a term applied to a "licence or privilege allowed by the king, for the ſole buying, ſelling, making, working and uſing of any thing whatſoever, whereby the ſubject is reſtrained from that liberty of manufacturing or trading which he had before." Theſe licences and privileges, in all deſpotic governments, have been made uſe of to favour and enrich individuals; or, by the ſale of them, to contribute to the wants of the ſovereigns: and even in freer governments, ignorant of the real mode of promoting induſtry and enriching the people, licences and privileges of this kind have been too frequently granted on the erroneous idea, that their commerce would be foſtered and protected in its infancy. In this kingdom, during the reigns of Elizabeth and James I. monopolies were carried to a moſt vexatious and deſtructive extent; ſo that many branches of trade and manufacture were abſolutely cloſed, except to thoſe who had obtained licences to engage in them, and the great body of conſumers were inadequately ſupplied with bad articles at an exorbitant rate. Theſe evils at laſt became ſo oppreſſive and glaring, that by the 21ſt James I. c. 3. all ſuch monopolies were declared to be contrary to law and void (except patents to the authors of new and uſeful inventions, for a term not exceeding fourteen years). By the ſame ſtatutes, monopoliſts are liable to be puniſhed by treble damages and double coſts, if they diſturb any perſons engaged in a trade to which they claim the privilege of monopoly. This ſtatute evidently refers only to thoſe caſes where a monopoly licence is claimed, and endeavoured to be acted upon, ſo as to diſturb the trade of thoſe engaged in the ſame line.

The engroſſing or monopoly of corn and proviſions is an offence at common law, and is deſcribed by ſtatute 5 and 6 Edw. VI. c. 14.; by this ſtatute, the penalty is the forfeiture of the goods or their value, and two months impriſonment for the firſt offence; double value, and ſix months impriſonment for the ſecond; and for the third, the offender to forfeit all his goods, to be ſet in the pillory, and impriſoned at the king's pleaſure.

Monopoly, as a ſubject in political economy, may be conſidered under three points of view. In the firſt place, the practicability of the alleged crime of getting into one's poſſeſſion, or buying up, all, or ſuch a quantity of, any commodity as will give the command of the market, and conſequently of the price. In the ſecond place, the monopoly, which by patent is given for a term of years, to the authors of new and uſeful inventions: the propriety and policy of this kind of monopoly afford ample room for diſcuſſion; of courſe, if this kind of monopoly were to be ſet aſide, ſome other mode of rewarding the authors of new inventions, leſs objectionable, muſt be ſuggeſted: this kind of monopoly will be conſidered under the article PATENT. In the third place, that ſpecies of monopoly, wherein a government grants either to a body of men, which ſecures them any particular trade; or to the nation at large, by which the colonial trade is not ſuffered to be touched by any foreign nation. This laſt ſpecies of monopoly, or the monopoly of the colonial trade, will be conſidered under the article NAVIGATION *Act*: at preſent, therefore, we ſhall confine our obſervations to the alleged crime of engroſſing or monopolizing any commodity, for the purpoſe of commanding the market, and raiſing the price; and to that monopoly which a government grants to any particular body of men, by which they alone can carry on the trade which is the object of the monopoly.

Smith's opinion reſpecting engroſſing and foreſtalling is well known: the popular fear reſpecting them he compares to the popular terrors and ſuſpicions of witchcraft, and he concludes by obſerving, that the law which ſhould reſtore entire freedom to the inland trade of corn would probably prove as effectual to put an end to the popular fears of engroſſing and foreſtalling; as the law which put an end to all proſecutions for witchcraft, deſtroyed the fear and ſuſpicion of it, by taking away the great cauſe which encouraged and ſupported them.

Indeed, when we conſider the numerous and great obſtacles and difficulties which muſt lie in the way of every perſon who attempts to get into his poſſeſſion the whole, or the greater part of any commodity; the immenſe capital, or credit which he muſt poſſeſs; the confidence he muſt place on the integrity of his agents, and the reliance he muſt have on their ſkill and judgment; the effect on the price of the commodity, which his attempts to monopolize it muſt neceſſarily produce; and the great probability that he will be compelled to deſiſt from his undertaking, long before he has brought it to a cloſe, from an erroneous calculation of his means: it will appear evident that it cannot be the intereſt of any man to riſque his capital in ſuch an abſurd and impracticable undertaking. If there ſhould be perſons ſo blind to their own intereſts as to begin the attempt, their puniſhment may ſafely be left to flow from their own meaſures, as, long before they can materially, or even in a trifling degree, injure the public, they will either open their eyes to their own folly, or be incapacitated by their own ruin from proceeding in their enterpriſe.

But though monopoly, ſtrictly ſpeaking, appears thus impracticable, yet there is no doubt that the price of commodities may be partially and temporarily affected by the quantity of capital poſſeſſed by thoſe who have them for ſale. It is well known that if the farmer, for inſtance, be ſtraightened for money, he will be compelled to bring his grain to market early in the ſeaſon, in a much larger proportion than if his capital were ſufficient to enable him to pay his rent, and carry on his agricultural labour, without having recourſe to this meaſure: if, on the other hand, his capital is ſuch, that he has no occaſion for the money the early ſale of his corn would produce, he will bring it to market only in thoſe quantities, and at thoſe ſeaſons, which he thinks will conduce moſt to his own intereſt. At firſt ſight it might ſeem as if the public would be moſt benefited by farmers of the former deſcription; but a very little reflection will convince us, that the temporary reduction in the price of corn, occaſioned by their want of adequate capital, will be much more than balanced, in a national point of view, by the unequal diſtribution of it through the year, to which this will give riſe, as well as by the want of economy in the uſe of it, which the forced and unauthorized reduction of it will produce.

It may then ſafely be inferred that the attempt to monopolize any commodity is ſo abſurd, and ſo contrary to the moſt narrow and obſcure views of ſelf-intereſt, that no law is neceſſary to prevent or puniſh it; and that, with reſpect to the ſuppoſed effect of capital, in raiſing the price of commodities, in many points of view capital, by enlarging the quantity produced, and giving riſe to competition, muſt have the oppoſite effect; while an inadequate capital muſt narrow and thwart the induſtry and operations of the poſſeſſor, and even at the time that it compels him to diſpoſe of his produce, is injurious, not only to himſelf, but to the nation at large.

In a monopoly of the colony trade, no particular body of men in the nation are favoured: the monopoly regards the whole nation as contradiſtinguiſhed from foreigners: but in the monopoly of any trade granted by government to a particular body of men, the privilege is granted at the expence, and to the loſs of the reſt of the nation. This is the firſt and moſt ſtriking evil, but there are others not inferior in magnitude and extent. Not only is a large portion of the nation excluded from the means of increaſing their induſtry and conſequently their wealth; but they are compelled to purchaſe the articles of the monopoly trade at the monopoly price, and to ſell ſuch articles as they manufacture for that trade, at the price which the holders of the excluſive privilege may chooſe to give. Nothing ſupplies a market ſo regularly, or ſo cheaply, or with goods of ſuch good quality, as open and fair competition; nothing, on the contrary, renders the ſupply ſo irregular, or the goods ſo high priced, or of ſuch inferior quality, as monopoly. For theſe and various other ſubordinate reaſons, therefore, a monopoly trade muſt be injurious to the nation at large; and it not unfrequently happens that it is conducted with ſuch negligence, ignorance, and extravagance, as not to be beneficial to thoſe who poſſeſs it. Under certain circumſtances, when there was little ſpirit of enterprize, when individual capital was ſmall, and combined with theſe circumſtances, in caſes where the riſque was great, where great length of time was neceſſary to eſtabliſh the trade, and where the returns, at firſt, were ſlow and trifling, it might have been wiſe and politic to grant excluſive privileges of trade; but certainly it cannot be wiſe and politic to grant or to continue them, under circumſtances of an oppoſite deſcription.

MONOPS, in *Natural Hiſtory*, a name given by Ælian, and ſome other of the old Greek writers, to the bonaſus. The name *monapus* was given this animal, according to Ariſtotle, by the people of the country where the creature was moſt frequent, and therefore is not to be attempted on any Greek etymology. Some of the Greeks have called the ſame creature *monepos*, and ſome *bolinthos*.

MONOPTERE, Μονοπτερος, a kind of temple among the ancients, round, and without walls; having its dome ſupported by columns.

MONOPTOTE, Monoptoton, in *Grammar*, a noun, which has only one caſe; as *inficias*.

MONOPTRAL Temple, in *Architecture*, an edifice, conſiſting of a circular colonnade ſupporting a dome. The monoptral temple is open, or without any incloſing wall, and conſequently without a cell, as in other temples.

MONOPYRENEOUS Fruits, in *Botany*, are ſuch as only contain one kernel or ſeed.

MONORCHIS, the ſpecific name of an *Ophrys* in Linnæus, Sm. Fl. Brit. 936. Engl. Bot. t 71, which remains in the ſame genus in Dr. Swartz's new arrangement of this tribe. It is ſo called from having but one apparent globular bulb, or rather knob, to the root; the other being formed at the end of a longiſh ſhoot, about, or after, the time of flowering, ſo as commonly to eſcape obſervation.

Monorchis. Beſide the common ſignification of this word as the name of a plant, phyſicians have alſo uſed it to expreſs a man who has but one teſticle.

MONORHYMÆ, from μονος, *ſolus*, and ῥυθμος, *rhyme*, a poetical compoſition, all the verſes of which end with the ſame rhyme.

Monorhymes are ſaid to have been invented by the old French poet Leonin, who addreſſed ſome Latin verſes of this kind to pope Alexander III., whence they are alſo called Leonine verſes.

MONOS, in *Geography*, a river of Guinea, which runs into the Atlantic, 15 miles S. of Tombi.

MONOSPERM-ALTHÆA, in *Botany*, a name contrived by Iſnard for the *Waltheria* of Linnæus, and intended to expreſs a plant of the Marſh-mallow kind, with a ſingle ſeed. See WALTHERIA.

MONOSTICH, MONOSTICHON, an epigram, or poetical piece, conſiſting of one ſingle verſe.

MONOSYLLABLE, MONOSYLLABUM, a word of a ſingle ſyllable; or, that conſiſts of one or more letters which are pronounced together.

The French language abounds in monoſyllables more than any other. This renders it the more perplexing to foreigners, and yet the beauty of the language ſeems to conſiſt in it. One of the beſt and ſmootheſt lines in Malherbe conſiſts of twelve monoſyllables: ſpeaking of Caliſta, he ſays, "Et moi je ne voi rien quand je ne la voi pas." In this the genius of the Engliſh tongue differs very much from the French, an uninterrupted ſeries of monoſyllables in the former having always an ill effect. This Mr. Pope both intimates and exemplifies in the ſame verſe. "And ten low words oft creep in one dull line." Paſquier cites an elegy of forty-two verſes, conſiſting wholly of monoſyllables.

MONOTHELITES, compounded of μονος, *ſingle*, and ϑελεμα, *will*, of ϑελω, *volo*, *I will*, in *Eccleſiaſtical Hiſtory*, an ancient ſect, which ſprung out of the Eutychians and Monophyſites; thus called, as only allowing of one will in Jeſus Chriſt.

The opinion of the Monothelites had its riſe in 630, and had the emperor Heraclius for an adherent, who, by publiſhing an edict in favour of it, hoped thus to reſtore peace and concord both in church and ſtate: it was the ſame with that of the Acephalous Severians.

They allowed of two wills in Chriſt, conſidered with regard to the two natures; but reduced them to one, by reaſon of the union of the two natures; thinking it abſurd there ſhould be two free wills in one and the ſame perſon. See ECTHESIS and TYPE.

They were condemned by the ſixth general council, in 680, as being ſuppoſed to deſtroy the perfection of the humanity of Jeſus Chriſt, depriving it of will and operation. Moſheim gives the following account of the ſtate of this ſubtile controverſy; the grounds of which are not, indeed, eaſily underſtood and explained. 1. The Monothelites declared, that they had no connection with the Eutychians and Monophyſites; but maintained, in oppoſition to both theſe ſects, that in Chriſt there were two diſtinct natures, which were ſo united, though without the leaſt mixture or confuſion, as to form by their union only one perſon. 2. They acknowledged, that the ſoul of Chriſt was endowed with a will, or faculty of volition, which is ſtill retained, after its union with the divine nature. For they taught, that Chriſt was not only perfect God, but alſo perfect man; whence it followed, that his ſoul was endowed with the faculty of volition. 3. They denied that this faculty of volition in the ſoul of Chriſt was abſolutely inactive; maintaining, on the contrary, that it co-operated with the divine will. 4. They, therefore, in effect, attributed to our Lord two wills, and theſe, moreover, operating and active. 5. They, however, affirmed, that, in a certain ſenſe, only one will and one manner of operation were in Chriſt. Their ſentiments were afterwards embraced by the Maronites.

MONOTOCA, in *Botany*, from μονος, *one*, and τοκος, *a fœtus*, or *conception*, becauſe the germen has, from the firſt, the rudiments of but one ſeed, by which this genus is diſtinguiſhed from others of its natural order. Brown. Prodr. Nov. Holl. v. 1. 546.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of five equal, erect, concave, permanent leaves, with a pair of ſmaller ones at the baſe, which are ſometimes deciduous. *Cor.* of one petal, funnel-ſhaped, twice the length of the calyx; its limb in five equal, ſpreading, ſmooth, beaked ſegments; throat naked and pervious. Nectary a lobed cup-ſhaped gland, ſurrounding the baſe of the germen. *Stam.* Filaments five, thread-ſhaped, equal, inſerted into the tube of the corolla, ſhorter than its limb; anthers oblong, incumbent. *Piſt.* Germen ſuperior, roundiſh; ſtyle columnar, ſhort; ſtigma obtuſe. *Peric.* Drupa oval, pulpy. *Nut* ſolitary, oval, of one cell. *Seed* ſolitary.

Eſſ. Ch. Outer calyx of two leaves. Corolla five-cleft, funnel-ſhaped, naked at the mouth and border. Germen ſingle-ſeeded. Drupa pulpy.

A New Holland genus of ſhrubs, or ſmall trees, ſeparated by Mr. Brown from the *Styphelia* of preceding authors, on account of the above characters. The *leaves* are ſcattered, ſimple. *Spikes* axillary, rarely terminal, of few *flowers*, which are ſmall, white, often becoming dioecious, by a partial defect in their organs of impregnation.

Section 1. *Outer calyx deciduous. Small trees, with dioecious flowers.*

1. M. *elliptica*. (Styphelia elliptica; Sm. Bot. of New Holl. 49.)—Cluſters erect, either nearly terminal and aggregate, or axillary and ſolitary. Leaves elliptic-oblong, four times as long as broad.—Sent by Dr. J. White, in 1793, from the neighbourhood of Port Jackſon, New South Wales, where it was alſo gathered by Mr. Brown. The *branches* are variouſly divided, round, leafy, downy when young. *Leaves* numerous, ſcarcely an inch long, obovate or elliptic-lanceolate, entire, tipped with a ſpinous point; dark glaucous green and ſmooth above; pale, convex, with ſomewhat radiating, but nearly parallel, ribs beneath. *Footſtalks* broad and ſhort. *Cluſters* about the length of the leaves, their ſtalks angular and downy. *Bracteas* ſolitary, concave, at the baſe of each partial ſtalk. *Flowers* ſcarcely a line in length. The outer calyx is permanent in our ſpecimens.

2. M. *albens*. Br. n. 2.—Cluſters erect, ſolitary, either terminal or axillary. Leaves oblong-linear, acute, ſpinous-pointed, white beneath.—Native of Port Jackſon. Like the former, but the *leaves* are longer, narrower, and paler, more tapering at the point, their edges appearing minutely crenate under a microſcope.

3. M. *lineata*. Br. n. 3. (Styphelia glauca; Labill. Nov. Holl. v. 1. 45. t. 61.)—Spikes axillary, very ſhort, drooping, ſtalked. Leaves elliptic-oblong, acute, ſpinous-pointed, nearly flat.—Native of Van Diemen's land, where it was gathered by both the above authors. The ſhape of the *leaves* is moſt like the firſt ſpecies, but the very ſhort, axillary, ſtalked, obtuſe *ſpikes* (not *cluſters*), which Mr. Brown ſays are drooping, though the French author repreſents them erect, diſtinguiſh the preſent plant. The *germen* is, erroneouſly it ſeems, drawn with five cells in Labillardiere's plate.

Section 2. *Outer calyx permanent. Shrubs, with both organs of the flower perfect.*

4. M. *ſcoparia*. (Styphelia ſcoparia; Sm. Bot. of New Holl. 48.)—Spikes axillary, very ſhort, nearly ſeſſile, drooping, of few flowers. Leaves linear-oblong, ſomewhat revolute,

revolute. Stem erect.—Native of Port Jackſon, New South Wales. The *ſtem* is very buſhy, branched in a determinate manner, ſmooth throughout. *Leaves* numerous, about half an inch long, narrow, but ſomewhat elliptical, entire, ſpinous-tipped, the edges reflexed. *Flowers* ſmall, three or four, in a little, recurved, minutely bracteated, ſpike.

5. M. *empetrifolia*. Br. n. 5.—"Spikes axillary, drooping, of two or three flowers. Leaves oblong-oval, pointed, divaricated; convex above; ſtriated and whitiſh beneath. Stem proſtrate."—Gathered by Mr. Brown in Van Diemen's land. Of this we have ſeen no ſpecimen.

MONOTONIA, Monotony, in *Rhetoric*, a want of variation, or inflexion of the voice; or a fault in pronunciation, where a long ſeries of words is delivered with one unvaried tone. This is one of the principal faults of our Engliſh orators.

Dr. Blair obſerves, that monotony is the great fault into which writers are apt to fall, who are fond of harmonious arrangement; and to have only one tune, or meaſure, is not much better than having none at all. A very vulgar ear will enable a writer to catch ſome one melody, and to form the run of his ſentences according to it; which ſoon proves diſguſting. But a juſt and correct ear is requiſite for varying and diverſifying the melody; and hence we ſo ſeldom meet with authors, who are remarkably happy in this reſpect.

In pronunciation, care ſhould be taken to guard againſt monotony. It is juſtly obſerved by a good writer on this ſubject, that for an orator always to uſe the ſame tone or degree of his voice, and to expect to anſwer all his views by it, would be much the ſame thing, as if a phyſician ſhould propoſe to cure all diſtempers by one medicine. From hence it is evident, that though various inflections and tones of the voice are requiſite to make it harmonious and pleaſing to the ear, yet the degree of it ſhould differ according to the nature of the ſubject, and deſign of the ſpeaker. And as a perfect monotony is always unpleaſant, ſo it can never be neceſſary in any diſcourſe. Lect. on Rhet., &c. vol. i. Ward's Orat., vol. ii. See Period, Pronunciation, Sentence, and Voice.

Monotonia is oppoſed to chanting or ſinging in ſpeaking.

MONOTONOUS, Monotony, uſed figuratively in muſic, except in ſpeaking of drums, implies dull, pſalmodic ſtrains, always in the ſame ſtyle or key.

MONOTRIGLYPH, in *Architecture*, denotes the ſpace of one triglyph, between two pilaſters or two columns.

MONOTROPA, in *Botany*, received that appellation from Linnæus, in exchange for *Hypopitys*, though the alteration ſeems, in our humble opinion, by no means for the better. The word is formed from μονος, *one*, and τρεπω, *to regard* or *conſider*, alluding to the regard paid by its author to the ſingle terminal flower, for the determination of the claſs and genus, in preference to the lateral ones, according to a favourite principle aſſumed by himſelf, and exemplified in this genus, *Ruta*, *Adoxa*, *Chryſoſplenium*, and others. He appears in the *Philoſophia Botanica*, p. 186, to have loſt ſight of this original idea, claſſing the name in queſtion with thoſe deduced from the ſoil, ſtumbling, as it were, between *ſolum* and *ſolus;* an error rather to be lamented than cenſured, when we reflect that this immortal book was dictated haſtily from a ſick bed. (See Linnæus.) We muſt nevertheleſs ſtill contend, that the name previouſly beſtowed on this plant by Bauhin and Dillenius, from ὑπο, *under*, and πιτυς, *a fir-tree*, alluding to its perhaps invariable ſtation, was liable to no exception. Linn. Gen. 214. Schreb. 291. Willd. Sp. Pl. v. 2. 573. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 440. Juſſ. 430. Michaux Boreali-Amer. v. 1. 266. (Hypopitys; Dill. Gen. 134. t. 7.)—Claſs and order, *Decandria Monogynia*. Nat. Ord. doubtful, Linn. Juſſ. The latter obſerves, that it is "a genus by itſelf, akin to no other." Its habit is that of *Cytinus*, whatever difficulty there may be in bringing them together by technical characters. The want of green in the colour of ſuch paraſitical plants is remarked by Linnæus, in Fl. Suec. 135, though the diſcovery has lately been attributed to one of his pupils.

Gen. Ch. *Cal.* none, unleſs the five outer petals be conſidered as a coloured calyx. *Cor.* Petals ten, inferior, oblong, erect, parallel, ſerrated at the extremity, deciduous; the five outermoſt, or alternate, ones gibbous at the baſe, concave, and bearing honey, at the inſide. *Stam.* Filaments ten, awl-ſhaped, erect, ſimple; anthers ſimple, two-lobed. *Piſt.* Germen ſuperior, roundiſh, pointed; ſtyle cylindrical, the length of the ſtamens; ſtigma capitate, obtuſe. *Peric.* Capſule ovate, with five angles, obtuſe, of five valves. *Seeds* numerous, chaffy.

Obſ. This deſcription is taken from the terminal flower, according to the rule in *Phil. Bot.* ſect. 178. The lateral flowers, in ſuch ſpecies as have any, loſe one-fifth, in the number of every part of the fructification.

Eſſ. Ch. Calyx none. Petals ten; the five outermoſt concave and honey-bearing at their baſe. Capſule ſuperior, of five valves.

1. M. *Hypopitys*. Yellow Bird's-neſt. Linn. Sp. Pl. 555. Engl. Bot. t. 69. Fl. Dan. t. 232. Ehrh. Phytoph. 44. (Orobanche hypopitys lutea; Mentz. Pugill. t. 3. Moriſ. ſect. 12. t. 16. f. 13.)—Flowers ſpiked, externally ſmooth, as well as their bracteas; the lateral ones octandrous.—Native of fir woods in Europe and North America, growing paraſitically on the roots of thoſe trees, and flowering in July. Dillenius ſays, on the authority of Mr. Manningham, that it grows alſo in beech woods. Michaux aſſerts the American plant to be but half the ſize of the European. With us it is nearly a ſpan high. The whole herb ſucculent, of a pale ſtraw-colour, turning browniſh when arrived at maturity, and then acquiring a fragrant ſmell, like that of primroſe flowers, though generally compared to their roots. The *ſtem* is ſimple, thick, round, clothed with ſcattered ovate *ſcales*, rather than *leaves*, and terminating in a *ſpike* of ſeveral *flowers*, at firſt drooping, finally erect. Each *flower* is accompanied by a *bractea*, exactly reſembling the ſcales of the ſtem, rather ſhorter than the *flower*, which, with its very ſhort partial ſtalk, is nearly an inch long. Sometimes the *ſtamens*, and inner ſide of the *petals*, are hairy. Willdenow ſays there is a variety with upright flowers, which is occaſionally ſingle-flowered. We have ſometimes found the lateral bloſſoms with only ſix petals and ſtamens.

2. M. *lanuginoſa*. Downy Bird's-neſt. Michaux n. 2.—Flowers ſpiked, all over downy, as well as their bracteas.—Sent from North America, by Kalm, to Linnæus, who confounded it with the former. Michaux gathered the ſame in the woods of North Carolina. He juſtly deſcribes it as having the habit of the foregoing, but ſmaller in all its parts, varying with a drooping or upright *ſpike*, the *flowers* turned all one way. The *ſcales* of the *ſtem* are rather pointed. The *ſtem*, *ſcales*, *petals*, and every other part of the *flowers*, are clothed with fine, ſoft, denſe hairs, peculiar to this ſpecies. The ſpecimen of the former in the Linnæan herbarium, as well as one we have from France, has indeed ſcattered hairs on the *ſtamens*, as well as on the inner ſide of the *petals*, near the edge. Whether theſe indicate a ſpecific

diſtinction, we have not materials to decide, but we have ſeen them in no Britiſh ſpecimen.

3. M. *uniflora*. Drooping Single-flowered Bird's-neſt. Linn. Sp. Pl. 555. Michaux n. 3. (Orobanche virginiana, flore pentapetalo cernuo; Pluk. Phyt. t. 209. f. 7.) — Stem ſingle-flowered. Scales bluntiſh. Flower pendulous.—Native of Maryland, Virginia, and Canada; *Linn.*; of ſhady woods in South Carolina; *Michaux*. *Root* a denſe congeries of entangled fibres. *Stem* about ſix inches high, ſeldom quite ſtraight in any part, angular, ſmooth. *Scales* obovate, bluntiſh, ſmooth, ſcattered, not numerous. *Flower* terminal, ſolitary, perfectly pendulous, the upper part of the ſtem, for about an inch, being curved into an arch. *Corolla* bell-ſhaped, the ſize of the firſt ſpecies, or bigger. *Stamens* ten, hairy. Plukenet's figure is very good.

4. M. *Moriſoniana*. Upright Single-flowered Bird's-neſt. Michaux n. 4. (Orobanche monanthos virginiana, flore majore; Moriſ. ſect. 12. t. 16. f. 5.)—Stem ſingle-flowered, ſtraight. Scales lanceolate. Flower erect.—Native of the ſhady woods of Carolina. *Michaux*. A ſpecimen, ſent by Kalm from North America, is confounded in the Linnæan herbarium with the laſt. The *ſtem* of the preſent ſpecies is nearly twice the height of *M. uniflora*, perfectly ſtraight, except its taper baſe, which is ſlightly flexuoſe. *Scales* larger, more lanceolate and acute, eſpecially the upper ones. *Flower* always perfectly erect, about the ſize of the laſt, or rather bigger, with ten *petals*, and as many hairy *ſtamens*.

Moriſon's figure, with which Linnæus finds fault, ſuppoſing it done for the foregoing, expreſſes this ſpecies ſufficiently well. Michaux has firſt diſtinguiſhed the two, and, as it appears to us, very juſtly. He deſcribes the *ſcales* as more diſtant in the preſent, which is not the caſe in the only ſpecimen we have ſeen, any more than in Moriſon's plate. The *ſtem*, in five ſpecimens of the *uniflora* before us, is alſo the moſt ſlender of the two; Michaux terms it thick, as well as ſhorter than the other.

No ſucceſsful attempt, as far as we have heard, was ever made to cultivate any of this genus; yet as gardeners now ſucceed with ſeveral of the *Orchideæ*, at one time thought quite as unmanageable, we know not why they ſhould deſpair, even of theſe paraſitical plants. Rotten ſtumps of fir, placed ſo as to receive their minute ſeeds, and then removed into a fit ſituation, might poſſibly attain the deſired end. S.

MONOU, in *Geography*, a country of Africa, north of the Grain coaſt.

MONOVAC, a town of Spain, in the province of Valencia; 21 miles W. of Alicant.

MONOULLAH, a town of Bengal; 12 miles N.W. of Goragot.

MON-PADRE, a town of the iſland of Margaretta.

MONPARA, a river on the weſt coaſt of the iſland of Borneo, which runs into the ſea, N. lat. 0° 36′. E. long. 109° 33′.

MONPAZIER, a town of France, in the department of the Dordogne, and chief place of a canton, in the diſtrict of Bergerac; 18 miles S.W. of Sarlat. The place contains 1028, and the canton 4691 inhabitants, on a territory of 245 kiliometres, in 14 communes. N. lat. 44° 40. E. long. 0° 59′.

MONPON, a town of France, in the department of the Dordogne, and chief place of a canton, in the diſtrict of Riberac. The place contains 1500, and the canton 5615 inhabitants, on a territory of 247½ kiliometres, in 10 communes.

MONQUEGNA, a juriſdiction of South America, in the dioceſe of Arequipa; about 40 leagues S. of the city of Arequipa, and 16 from the coaſt of the South ſea. This juriſdiction extends at leaſt 40 leagues in length, in an agreeable climate, adorned with large vineyards, from the produce of which great quantities of wine and brandy are made, which conſtitute its whole commerce. They ſupply all the provinces bordering on the Cordilleras, as far as Potoſi, by land carriage; while they are exported by ſea to Callao, where they are greatly valued. Here are alſo papas and olives. The principal town, which bears the ſame name, is inhabited by Spaniards, among whom are ſeveral noble and opulent families. S. lat. 17° 24′. W. long. 70° 56′.

MONREAL, a town of Spain, in Aragon; 23 miles W. of Calataiud.—Alſo, a town of Spain, in Navarre; 8 miles S.E. of Pamplona.

MONREALE, a town of Sicily, in the valley of Mazara, ſituated on a lofty hill; 3 miles W.S.W. of Palermo.

MONRO, Alexander, M.D., in *Biography*, an eminent anatomiſt, and the father of the medical ſchool of Edinburgh, was deſcended both by his paternal and maternal parents from diſtinguiſhed families in the north of Scotland. He was born in London, in September 1697, where his father, then a ſurgeon in the army of king William in Flanders, reſided upon leave of abſence in the winter. On quitting the army, Mr. Monro ſettled in Edinburgh; and perceiving early indications of talent in Alexander, his only child, he took great intereſt in ſuperintending his education. After having given him the beſt inſtruction which Edinburgh then afforded, he ſent him to London, where he attended the anatomical courſes of Cheſelden, and was extremely aſſiduous in diſſections: he made numerous anatomical preparations, which he ſent home; and, while here, even laid the foundation of his moſt important work on the bones, a ſketch of which he read before a ſociety of young phyſicians and ſurgeons, of which he had been elected a member. From London, Alexander went to Paris, where he purſued the ſame object; and in the autumn of 1718, repaired to Leyden, with the view of profiting by the tuition of the great Boerhaave, who conceived a high opinion of his talents and induſtry, and wrote a favourable account of him to his friends. On his return to Edinburgh, in the autumn of 1719, he was appointed profeſſor and demonſtrator of anatomy to the company of ſurgeons, the joint demonſtrators having ſpontaneouſly reſigned in his favour. Soon after accepting this appointment, he began alſo to give public lectures on anatomy, illuſtrating them by the preparations which he had made when abroad; and at the ſame time Dr. Alſton, then a young man, united with him in the plan, and began a courſe of lectures on the materia medica and botany. Theſe were the firſt public courſes that had ever been given at Edinburgh, and may be regarded as the opening of that medical ſchool, which has ſince extended its fame, not only throughout Europe, but over the new world. Mr. Monro ſuggeſted this plan; and by the following circumſtance, probably, contributed to lead his ſon into a mode of lecturing, which ſubſequently carried him to excellence. Without the young teacher's knowledge, he invited the preſident and fellows of the College of Phyſicians, and the whole company of ſurgeons, to honour the firſt day's lecture with their preſence. This unexpected company threw the doctor into ſuch confuſion, that he forgot the words of the diſcourſe, which he had written and committed to memory.

Having left his papers at home, he was at a loſs for a little time what to do: but, with much preſence of mind, he immediately began to ſhew ſome of the anatomical preparations, in order to gain time for recollection; and very ſoon reſolved not to attempt to repeat the diſcourſe which he had prepared, but to expreſs himſelf in ſuch language as ſhould occur to him from the ſubject, which he was confident that he underſtood. The experiment ſucceeded: he delivered himſelf well, and gained great applauſe as a good and ready ſpeaker. Thus diſcovering his own ſtrength, he reſolved henceforth never to recite any written diſcourſe in teaching, and acquired a free and elegant ſtyle of delivering lectures.

In the ſame year, 1720, a regular ſeries of medical inſtruction was inſtituted at Edinburgh, through the intereſt of Dr. Monro's father: theſe two lectureſhips were put upon the univerſity eſtabliſhment, to which were ſoon after added thoſe of Drs. Sinclair, Rutherford, Innes, and Plummer. This ſyſtem of medical education was, however, incomplete, without affording ſome opportunity to the ſtudents of witneſſing the progreſs and treatment of diſeaſes, as well as of hearing lectures. A propoſal was, therefore, made to erect and endow an hoſpital by ſubſcription; and Dr. Monro publiſhed a pamphlet, explaining the advantages of ſuch an inſtitution. The royal infirmary was ſpeedily raiſed, endowed, and eſtabliſhed by charter; and the inſtitution of clinical lectures, which were commenced by Dr. Monro on the ſurgical caſes, and afterwards by Dr. Rutherford, in 1748, on the medical caſes, completed that admirable ſyſtem of inſtruction, upon which the reputation and uſefulneſs of the medical ſchool of Edinburgh have been ſubſequently founded.

None of the new profeſſors contributed ſo much to the celebrity of this ſchool as Dr. Monro, who was indefatigable in the labours of his office, and in the cultivation of his art, and ſoon made himſelf known to the profeſſional world by a variety of ingenious and valuable publications. During a period of nearly forty years he continued, without any interruption, to deliver a courſe of lectures, extending from the end of October to the beginning of May: and ſo great was the reputation which he acquired, both for himſelf and the univerſity, that ſtudents flocked to him from the moſt diſtant corners of the kingdom.

His firſt and principal publication was his "Oſteology, or Treatiſe on the Anatomy of the Bones," which appeared in 1726, and was intended for the uſe of his pupils; but it became a very popular work among the faculty in general: for he had the ſatisfaction of ſeeing it paſs through eight editions during his life, and it was tranſlated into moſt of the languages of Europe. The French edition, in folio, publiſhed by Mr. Sue, demonſtrator of ſculpture to the Royal Academy of Paris, was adorned with moſt elegant and maſterly figures. To the later editions of this work he ſubjoined a conciſe *neurology*, or deſcription of the nerves, and a very accurate account of the lacteal ſyſtem and thoracic duct.

Dr. Monro was alſo the father and active ſupporter of a ſociety, which was eſtabliſhed by the profeſſors and other practitioners of the town, for the purpoſe of collecting and publiſhing papers on profeſſional ſubjects, and to which the public is indebted for ſix volumes of "Medical Eſſays and Obſervations by a Society at Edinburgh," the firſt of which appeared in 1732. Dr. Monro was the ſecretary of this ſociety; and after the publication of the firſt volume, when the members of the ſociety became remiſs in their attendance, the whole labour of collection and publication was carried on by himſelf; "inſomuch that after this," ſays his biographer, "ſcarce any other member ever ſaw a paper of the five laſt volumes, except thoſe they were the authors of, till printed copies were ſent them by the bookſeller." Of this collection, many of the moſt valuable papers were written by Dr. Monro, on anatomical, phyſiological, and practical ſubjects: the moſt elaborate of theſe is an "Eſſay on the Nutrition of the Fœtus," in three diſſertations. Haller, ſpeaking of theſe volumes as highly valuable to the profeſſion, adds, "Monrous ibi eminet."

After the concluſion of this publication, the ſociety was revived, at the ſuggeſtion of the celebrated mathematical profeſſor, Colin Maclaurin, and was extended to the admiſſion of literary and philoſophical topics. Dr. Monro again took an active part in its proceedings, as one of its vice-preſidents, eſpecially after the death of Maclaurin, when two volumes of its memoirs, entitled "Eſſays Phyſical and Literary," were publiſhed, and ſome materials for a third collected, to which Dr. Monro contributed ſeveral uſeful papers. The third was not publiſhed during his life. His laſt publication was an "Account of the Succeſs of Inoculation in Scotland," written originally as an anſwer to ſome inquiries addreſſed to him from the committee of the faculty of phyſicians at Paris, appointed to inveſtigate the merits of the practice. It was afterwards publiſhed at the requeſt of ſome of his friends, and contributed to extend the practice in Scotland. Beſides the works which he publiſhed, he left ſeveral MSS. written at different times, of which the following are the principal; *viz.* A Hiſtory of Anatomical Writers;—An Encheireſis Anatomica;—Heads of many of his Lectures;—A Treatiſe on Comparative Anatomy;—A Treatiſe on Wounds and Tumours;—and, An Oration de Cuticula. This laſt, as well as the ſhort tract on comparative anatomy, has been printed in an edition of his whole works, in one volume, quarto, publiſhed by his ſon, Dr. Alexander Monro, at Edinburgh, in 1781. This tract had been publiſhed ſurreptitiouſly, in 1744, from notes taken at his lectures; but is here given in a more correct form.

In the year 1759, Dr. Monro reſigned his anatomical chair, which he had ſo long occupied with the higheſt reputation, to his ſon, juſt mentioned; but he ſtill continued to lecture as one of the clinical profeſſors on the caſes in the infirmary. His life was alſo a ſcene of continued activity in other affairs, as long as his health permitted. For he was not only a member, but a moſt aſſiduous attendant, of many ſocieties and inſtitutions for promoting literature, arts, ſciences, and manufactures in Scotland; he was alſo a director of the bank of Scotland, a juſtice of the peace, a commiſſioner of high roads, &c. and was punctual in the diſcharge of all his duties. His character in private life was as amiable and exemplary as it was uſeful in public. To the literary honours, which he attained at home, were added thoſe of a fellow of the Royal Society of London, and an honorary member of the Royal Academy of Surgery, at Paris.

Dr. Monro was a man of middle ſtature, muſcular, and poſſeſſed of great ſtrength and activity; but was ſubject for many years to a ſpitting of blood on catching the leaſt cold, and through his life to frequent inflammatory fevers. After an attack of the influenza, in 1762, he was afflicted with ſymptoms of a diſeaſe of a painful and tedious nature, which continued ever after, until it terminated his exiſtence. This was a fungous ulcer of the bladder and rectum, the diſtreſs of which he bore with great fortitude and reſignation, and died with perfect calmneſs, on the 10th of July, 1767, at the age of ſeventy.

Two of his ſons became diſtinguiſhed phyſicians. Dr. Alexander, his ſucceſſor, filled the anatomical chair with great credit to himſelf and to the univerſity, for upwards of forty years, and became known throughout Europe by his valuable publications; eſpecially by his Treatiſe on the Lymphatics, in 1770;—On the Anatomy of Fiſhes, 1785;—On the Nerves, 1783;—On the Burſæ Mucoſæ, 1788; and three treatiſes on the Brain, the Eye, and the Ear, in 1797. Advancing in years, and wiſhing to relieve himſelf from the fatigues of the profeſſorſhip, he aſſociated with himſelf, in 1801, his ſon, the third Alexander Monro, who now, 1812, continues to carry on the buſineſs of that chair with conſiderable zeal and credit, while the reſpected veteran ſpends his age in repoſe.

Dr. Donald Monro, the other ſon of the firſt Alexander, ſettled as a phyſician in London, and attained conſiderable eminence. He became known as the author of an Eſſay on the Dropſy, in 1765;—On the Diſeaſes of Military Hoſpitals, 1764;—On Mineral Waters, 1771;—On preſerving the Health of Soldiers; and ſome other works, and died in the year 1802. See Life of Dr. Monro, prefixed to his works. Gen. Biog.

MONROE, in *Geography*, a county of Virginia, taken from Green Briar, on the ſouth ſide; 320 miles from Waſhington.

MONROYO, a town of Spain, in Aragon, on the frontiers of Catalonia and Valencia; 20 miles S. of Alcaniz.

MONS VENERIS, in *Anatomy*, the elevation of the integuments over the pubes in the female ſubject. See GENERATION.

MONS, in *Geography*, a town of France, and principal place of a diſtrict, in the department of Jemmappe, or Gemmappe, of which it is the capital, ſo called from its ſituation on a hill. The river Trouide, which runs through it, joins the Haiſne in its fauxbourg. Its caſtle, which was demoliſhed in 1618, is ſaid to have been built by Julius Cæſar, and Quintus Cicero, brother to the celebrated orator, was beſieged in this place, and relieved by Cæſar, 50 years B.C. The town is large, the ſtreets are broad, and the great market-place, which is very ſpacious, contains the town-houſe, which is a fine old building, with a ſteeple erected by the ſtates in 1716, the palace of the government, and that of the council of the province. Theſe three palaces are adorned with ſculpture and painting. The great church is a fine building, the ſide altar and chapel being wholly conſtructed of fine marble: here is a marble tomb, finely embelliſhed; and the ſtatues, among which are the four cardinal virtues, and the reſurrection, are in high eſtimation. Mons is a place of good trade for various articles, particularly woollen ſtuffs, which are manufactured here in large quantities. The magiſtracy is compoſed of a chief, ten ſchevins, two penſioners, three greffiers, &c. This town has frequently ſuffered by the calamities of war. In 1746 its fortifications were demoliſhed by the French; and in this ſtate it was reſtored to the emperor by the peace of Aix-la-Chapelle. After the battle of Jemmappe, it was ſummoned by Dumourier, and ſurrendered the next morning. It contains 18,291 inhabitants, in 2 cantons; the north canton including 13,381, on a territory of 37½ kiliometres, in 5 communes; and the ſouth containing 14,252, on a territory of 45 kiliometres, in 8 communes. N. lat. 50° 27′ 10″. E. long. 3° 37′ 15″.

MONSEFU, a town of Peru, in the biſhopric of Truxillo; 12 miles S. of Lambayeque.

MONSEIGNEUR, compounded of *mon*, *my*, and *ſeigneur*, *lord*, in the plural meſſeigneurs, a title of honour and reſpect uſed by the French in writing to perſons of ſuperior rank or quality.

Dukes, peers, archbiſhops, biſhops, and preſidents *a la mortier*, are complimented with the title of monſeigneur.

In the petitions preſented to the ſovereign courts, they uſe the term meſſeigneurs.

MONSEIGNEUR, abſolutely uſed, was a title formerly reſtrained to the dauphin of France.

This cuſtom was unknown till the times of Louis XIV., till then the dauphin was ſtyled monſieur le dauphin.

MONSIEUR, a compound of *mon*, *my*, and *ſieur*, *ſir*, in the plural meſſieurs, a term or title of civility, uſed by the French, in ſpeaking to their equals, or thoſe a little below them; anſwering to Mr. or Sir, among the Engliſh.

The ſuperſcription of all letters begin *A monſieur, monſieur* ſuch a one.

The uſe of the word monſieur was formerly more extenſive than at preſent: they applied it to people who lived many ages before them. Thus monſieur St. Auguſtine, monſieur St. Ambroſe; and the vulgar ſtill ſay, monſieur St. Paul, monſieur St. Jaques, &c. The Romans, during the flouriſhing time of their liberty, were unacquainted with that term of parade and flattery, which they afterwards made uſe of in the word *dominus*. In ſpeaking or writing to each other, they only gave each other their proper names; which practice laſted even after Cæſar had brought the republic under his command: but after the Roman emperors were once well ſeated on the throne, the courtiers and minions, who by flattery ſought to procure favours from them, ſtudied new honours. Suetonius obſerves, that a comedian on the theatre having called Auguſtus *dominus, lord;* the ſpectators all ſtared at him; ſo that the emperor forbad, for the future, the title to be attributed to him. Caligula was the firſt who expreſsly commanded himſelf to be called *dominus*. Martial, entirely devoted to tyranny, calls Domitian *dominum deumque noſtrum*. In time, the title was alſo applied to the people; and of *dominus*, at length was formed *dom*.

MONSIEUR, abſolutely uſed, is a title or quality formerly appropriated to the ſecond ſon of France, or the king's brother.

In a letter of Philip De Valois, that prince, ſpeaking of his predeceſſor, calls him *monſieur le roy*, monſieur the king.

MONSIGNI, M. DE, in *Biography*, formerly maitre d'hotel to the duke of Orleans, father of l'Egalité, was one of the creators of the French comic opera, for which, between the years 1759 and 1777, he compoſed eleven or twelve different dramas, which, we believe, were all ſucceſsful; particularly "Le Cadé Dupé; on ne s'aviſe jamais de tout;" "Le Roi et le Fermier;" "Roſe et Colas, &c."

This kind of drama was eſtabliſhed at the theatre de la Foire, in 1754, upon the idea of the Italian burletta, in all things except the recitative, the dialogue in the French opera comique being ſpoken, and incidentally mixed with airs. This ingenious and pleaſing compoſer's name of Monſigni ſeems Italian; but his ſtyle of melody is neither Italian nor French, but a mixture of both. Nothing could be more pleaſing and amuſing than theſe dramas to the natives of all Europe, not great critics in ſinging; for it muſt be owned, that they were all well written, well ſet, and well acted; and in the principal man's part, when performed by the admirable Caillot, well ſung. Duni, Philidor, and Monſigni, were the patriarchs of the comic muſical dramas, and Gretry the king David.

MONSOL, in *Geography*, a town of Africa, in the kingdom of Anziko, and reſidence of the micocco or king. S. lat. 1°. E. long. 3° 50′.

MONSON, *Sir* William, in *Biography*, a naval commander, and a writer upon naval ſubjects, was born about the year 1569, and was ſent, at an early age, to Baliol college, Oxford, where he remained about two years. Being deſirous of engaging in the ſea-ſervice, to which, probably, his parents objected, he entered, without their knowledge, on board a ſmall veſſel, fitted out to cruiſe againſt the Spaniards. After ſome years' active ſervice, he accompained the earl of Cumberland in two expeditions, in the ſecond of which he was taken by the Spaniards, and was detained a priſoner two years. As ſoon as he was liberated, in 1593, he attached himſelf again to the earl's ſervice, in which he made two more voyages. In 1596, he was captain of a ſhip in the earl of Eſſex's expedition to Cadiz, and in the next year in that to the Azores. After the acceſſion of king James, he was appointed, in 1604, admiral of the narrow ſeas, an office which he ſuſtained twelve years with credit to his own well-earned reputation, and honour to the Britiſh flag, by protecting the trade and fiſheries from all encroachments. His zeal againſt the pretenſions of the Dutch, and his endeavours to promote an enquiry into the ſtate of the navy, againſt the will of the earl of Nottingham, lord high admiral, involved him in troubles, and occaſioned his committal to the Tower, in 1616; but upon examination into his conduct he was diſcharged. He was conſulted on the duke of Buckingham's expedition againſt Algiers, Cadiz, and the iſle of Rhé, all which he diſapproved, and his opinion was fully juſtified by their want of ſucceſs. To his country his oppoſition was unavailing, and to him it was unfortunate, having been kept out of employ for ſeveral years; but in 1635 he was appointed vice-admiral. After this he withdrew to a life of privacy, and employed himſelf in finiſhing his "Naval Tracts." He died in February, 1642-3, leaving a high reputation as a brave, prudent, and upright commander. He had not the good fortune to perform any very ſplendid ſervices, yet his zeal for the improvement of the navy of his country merits an honourable mention. His Naval Tracts contain plans and projects for the advancement of the intereſts of trade and navigation. They are inſerted in the third volume of Churchill's Collection of Voyages. Biog. Brit. Campbell's Lives of the Admirals, Stockdale's edition.

Monson, in *Geography*, a townſhip of Hampſhire county, Maſſachuſetts, E. of Brimfield.

MONSONIA, in *Botany*, is deſigned to commemorate the late lady Ann Monſon, a lady of diſtinguiſhed talents, as well as of eminent botanical taſte and knowledge, who by a long reſidence in the Eaſt Indies, had great opportunities of cultivating the ſtudy of plants, as well as inſects. We truſt we ſhall betray no inviolable ſecret, in recording that it was to this excellent lady the late Mr. Lee alluded, in the preface to his Introduction to Botany, firſt publiſhed in 1760, where he ſays he was enjoined not to acknowledge his obligations to thoſe who had kindly helped him in his undertaking. A moſt elegant Eaſt Indian *Illecebrum* was firſt choſen by Koenig, if we miſtake not, to bear the name of *Monſonia*, which remains as its ſpecific appellation; and a more diſtinct genus, of greater ſplendour, has been ſelected for the purpoſe. Some have thought this but too near to *Geranium*.—Linn. Mant. 14. Schreb. 459. Willd. Sp. Pl. v. 3. 717. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 3. 100. Juſſ. 269. Lamarck Illuſtr. t. 638. Cavan. Diſſ. 179. — Claſs and order, *Polyadelphia Dodecandria*. Nat. Ord. *Gruinales*, Linn. *Gerania*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five lanceolate, awned, equal, permanent leaves. *Cor.* Petals five, obovate, abruptly toothed, and jagged, longer than the calyx, inſerted into the ſhort annular receptacle, or nectary. *Stam.* Filaments fifteen, united into five ſets, three in each ſet, all inſerted into the nectary; anthers oblong. *Piſt.* Germen ſuperior, pentagonal, ſhort; ſtyle awl-ſhaped; ſtigmas five, oblong, ſpreading. *Peric.* Capſules five, aggregate, cartilaginous, oblong, lateral, ſeparating at their inſide, each attached upwards to a very long, ſpiral, elaſtic awn. *Seeds* ſolitary, lateral, oblong, ſomewhat cylindrical.

Eſſ. Ch. Calyx of five leaves. Petals five, abrupt, toothed. Stamens in five ſets, united by a common baſe. Style five-cleft. Fruit beaked, of five aggregate capſules, with long ſpiral awns.

1. M. *ſpecioſa*. Large-flowered Monſonia. Linn. Mant. 105. Curt. Mag. t. 73. Cavan. Diſſ. 179. t. 74. f. 1.—Leaves quinate; leaflets bipinnatifid.—Native of the Cape of Good Hope, like the whole genus. It was ſent to Kew in 1774, by Mr. Maſſon, and decorates the green-houſe magnificently in ſpring. *Root* perennial. *Stems* ſometimes very ſhort. *Leaves* numerous, moſtly radical, on long ſtalks, and compoſed of five radiating hairy leaflets, doubly pinnatifid; their ſegments linear-lanceolate, bluntiſh, decurrent. *Flowers* two or three inches broad, with deeply cut petals, variegated with ſhades of roſe-colour, ribbed, the eye purple and white; each on a long, bent, ſimple *ſtalk*, with a whorl of lanceolate *bracteas* at its joint. *Calyx-leaves* membranous at the edge, downy upward. Beak of the *fruit* three inches long, its awns hairy at the inſide.

2. M. *lobata*. Broad-leaved Monſonia. Dryand. in Ait. Hort. Kew. ed. 1. v. 3. 100. Willd. n. 3. (M. filia; Linn. Suppl. 341. Cavan. Diſſ. 180. t. 74. f. 2. Andr. Repoſ. t. 276.)—Leaves heart-ſhaped, deeply lobed, toothed.—Differs from the laſt in having the *leaves* lobed, not compound, though they are ſometimes ſo deeply cut as almoſt to approach the former. In the *flowers* there is ſcarcely a permanent diſtinction. The *petals* of the preſent ſpecies are uſually greeniſh at the back, white, with a tinge of red, above. It is much to be ſuſpected that theſe are but varieties of each other.

3. M. *ovata*. Undulated Monſonia. Willd. n. 4. Cavan. Diſſ. 193. t. 113. f. 1. (M. emarginata; L'Herit. Geran. t. 41. Geranium emarginatum; Linn. Suppl. 306.)—Leaves ovate-oblong, toothed, plaited; ſomewhat heart-ſhaped at the baſe.—Sent from the Cape to Kew garden, in 1774, by Mr. Maſſon, with both the former. This is more cauleſcent than thoſe, but more ſlender, and only a biennial. The *leaves* are nearly ovate, about an inch long. *Flowers* pale yellow, about an inch in diameter. Beak of the *fruit* two inches in length. The *branches*, *flower-ſtalks*, and *calyx* are clothed with very long ſpreading hairs.

4. M. *ſpinoſa*. Thorny Monſonia. Willd. n. 5. L'Herit. Geran. t. 42.—Leaves elliptical, pointed, entire. Footſtalks permanent, hardening into thorns.—*Stem* ſhrubby, branched, beſet with thorns, which are the hardened *footſtalks* of former leaves. *Flowers* larger than in the laſt.

M. *tenuifolia*, Willdenow's firſt ſpecies, is our *Grielum tenuifolium*. See Grielum.

Monsonia, in *Gardening*, contains plants of the herbaceous under-ſhrubby biennial and perennial kinds, for the green-houſe, of which the ſpecies cultivated are, the fine-leaved monſonia (M. ſpecioſa); the broad-leaved monſonia, (M. lobata); the undulated monſonia (M. ovata.)

Method of Culture.—The firſt ſort, as it rarely if ever ripens ſeeds in this climate, muſt be increaſed by cuttings of the

the root, which ſhould be planted in pots of good mould, and plunged in a tan hot-bed, watering them occaſionally, when in a little time buds appear on the tops of the cuttings which are left out of the ground. They ſhould be treated as hardy green-houſe plants, or be afterwards removed into ſeparate pots, and ſheltered under a good garden-frame in the winter ſeaſon. And the ſecond ſort may be beſt raiſed in the ſame manner.

But the third ſort ſhould be raiſed from ſeeds, which muſt be ſown in the early ſpring, in pots of light earth, and plunged in a mild hot-bed. When the plants are come up, they ſhould be removed into other pots ſeparately and be managed as the other kinds.

Theſe afford variety among other potted plants.

MONSOON, a regular or periodical wind in the Eaſt Indies, blowing conſtantly the ſame way, during ſix months of the year, and the contrary way the remaining ſix.

In the Indian ocean, the winds are partly *general*, and blow all the year round the ſame way, as in the Ethiopic ocean; and partly *periodical*, *i. e.* half the year blow one way, and the other half year on the oppoſite points: and thoſe points and times of ſhifting differ in different parts of this ocean. Theſe latter are what we call monſoons.

The ſhifting of theſe monſoons is not all at once: and in ſome places the time of the change is attended with calms, in others with variable winds, and particularly thoſe of China, at ceaſing to be weſterly, are very ſubject to be tempeſtuous: and ſuch is their violence, that they ſeem to be of the nature of the Weſt India hurricanes, and render the navigation of thoſe ſeas very unſafe at that time of the year. Theſe tempeſts the ſeamen call the *breaking up of the monſoons*.

Monſoons, then, are a ſpecies of what we otherwiſe call *trade-winds*.

They take the denomination monſoon from an ancient pilot, who firſt croſſed the Indian ſea by means of it. Though others derive the name from a Portugueſe word ſignifying *motion*, or change of wind, and ſea.

Lucretius and Apollonius make mention of annual winds which ariſe every year, *eteſia flabria*, which ſeem to be the ſame with what in the Eaſt Indies we now call monſoons. For the phyſical cauſe of theſe winds, ſee METEOROLOGY and WIND.

END OF VOL. XXIII

Strahan and Preſton,
New-ſtreet Square, London.